INTERIM NATIONAL GUIDELINES FOR COMMUNITY-BASED MANAGEMENT OF SEVERE ACUTE MALNUTRITION IN GHANA

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TABLE OF CONTENTS

Acknowledgements i
Foreword ii
Acronyms and Abbreviations iii
CHAPTER I: Introduction I
I.1 Acute Malnutrition as a Form of Undernutrition 2
I.1.1 What Is Undernutrition? 2
I.1.2 What Is Acute Malnutrition? 2
I.1.3 Assessing Acute Malnutrition 2
I.2 Principles of the Management of SAM 4
I.2.1 Community Outreach 5
I.2.2 Outpatient Care for Children 6-59 Months 6
I.2.3 Inpatient Care for Children 0-59 months 6
I.2.4 Supplementary Feeding of Children 6-59 Months and Pregnant and Lactating Women With MAM 6
CHAPTER II: Community Outreach 8
STEP 1: Community Assessment 9
STEP 2: Formulation of Community Outreach Strategy 9
STEP 3: Developing Messages and Materials 9
STEP 4: Community Mobilisation and Training 10
STEP 5: Case-Finding and Referral of New Cases With SAM 10
STEP 6: Follow-Up of Children With SAM 11
STEP 7: Linking With Other Community Services, Programmes and Initiatives 12
STEP 8: Continued Community Mobilisation (as in Step 4) 12
CHAPTER III: Outpatient Care for the Management of SAM Without Medical Complications 14
STEP 1: Screening Children for SAM 15
STEP 2: Admission Criteria 16
Admission Procedure 16
STEP 3: Medical Assessment and Decision-Making for Treatment 18
Appetite Test With RUTF 18
STEP 4: Referral to Inpatient Care 19
Upon Admission 19
At Follow-On Visits, Referral Based on Action Protocol 20
STEP 5: Medical Treatment in Outpatient Care 22
New Admission 22
Routine Medical Treatment for New Admission 22
Vaccination Schedule Update 23
STEP 6: Dietary Treatment in Outpatient Care 24

Quantities of RUTF to Provide 24
Feeding Procedure 24
STEP 7: Counselling, Health, Nutrition and Hygiene Education 25
Upon Admission 25
At Follow-On Visits 25
STEP 8: Individual Monitoring During Follow-On Visits at the Health Facility 26
Anthropometry 26
History and Physical Examination 26
Follow-Up Action 26
STEP 9: Follow-Up Home Visits for Children Requiring Special Attention 26
STEP 10: Discharge Criteria 27
Discharge Procedures 27
CHAPTER IV: Inpatient Care for the Management of SAM With Medical Complications for Children 6-59 Months 29
4.1 Admission Criteria 30
4.2 Admission Procedure 31
4.3 Stabilisation Phase 31
4.3.1 STEP 1: Treat/Prevent Hypoglycaemia 31
4.3.2 STEP 2: Treat/Prevent Hypothermia 32
4.3.3 STEP 3: Treat/Prevent Dehydration 33
4.3.4 STEP 4: Correct Electrolyte Imbalance 34
4.3.5 STEP 5: Treat/Prevent Infection 34
4.3.6 STEP 6: Correct Micronutrient Deficiencies 35
4.3.7 STEP 7: Start Cautious Feeding 36
4.3.8 Monitoring During the Stabilisation Phase 40
4.3.9 Criteria to Progress from the Stabilisation Phase to the Transition Phase 40
4.4 Transition Phase 40
4.4.1 Transition Using RUTF 40
4.4.2 Transition for Special Cases (Children Who Cannot Consume RUTF) 42
4.4.3 monitoring During the Transition Phase 42
4.4.4 Progression From the Transition Phase 43
4.5. Rehabilitation Phase (Catch-Up Growth) 44
4.5.1 Prepare for Follow-Up of Children in Outpatient Care 44
4.5.2 Medical Treatment 44
4.5.3 Dietary Treatment 44
4.5.4 Individual Monitoring 47
4.5.5 Criteria to Move Back from the Rehabilitation Phase to the Stabilisation Phase in Inpatient Care 47
4.5.6 Progression from the Rehabilitation Phase to Discharge 47
4.6 Provide Sensory Stimulation and Emotional Support 48
4.7 Failure to Respond to Treatment in Inpatient Care 48
4.8 Criteria for Discharge from Inpatient Care After Full Recovery 50
4.9 Discharge Procedures 51
CHAPTER V: Inpatient Care for the Management of SAM in INFANTS 0-6 Months Old 53
5.1 Breastfed Infants 0-6 Months Who Have a Lactating Mother or Caregiver for Wet Nursing 54

5.1.1 Routine Medicines and Supplements 54
5.1.2 Dietary Treatment 54
5.1.3 Individual Monitoring 57
5.1.4 Supportive Care for Mothers 57
5.1.5 Discharge Criteria 58
5.1.6 Follow-Up After Discharge 58
5.2 Infants 0-6 Months Without the Prospect of Breastfeeding 58
5.2.1 Stabilisation Phase 58
5.2.2 Transition Phase 60
5.2.3 Rehabilitation Phase 61
CHAPTER VI: Monitoring and Reporting 63
6.1 Monitoring Tools 64
6.1.1 Individual Monitoring 64
6.1.2 Monitoring of Services 67
6.2 Service Indicators 70
6.2.1 Indicators Measuring Output 70
6.2.2 Performance Indicators Measuring Outcome (Effectiveness) 70
6.2.3 Additional Indicators Measuring Effectiveness of the Treatment 71
6.3 Support and Supervision 72
6.3.1 Quality of Individual Treatment 72
6.3.2 Organisation and Management of Services 72
6.3.3 Performance of Services 73
6.3.4 Feedback System 73
6.3.5 Quality Control of Monitoring Data 73
6.4 Reporting 73
6.4.1 Minimum Reporting Standards 74
References 75
List of Annexes 77
Annex 1. Planning for Community Outreach 78
Annex 2. Community Outreach Messages 85
Annex 3. Admission and Discharge Criteria for the Management of SAM in Children 0-59 Months 88
Annex 4. Anthropometric Measurements 90
Annex 5. Guidance Table to Identify Target Weight for Discharge 97
Annex 6. Checklist for Medical History and Physical Examination 98
Annex 7. Routine Medicines Protocols 99
Annex 8. Supplemental Medicines Protocols 100
Annex 9. Drug Doses 101
Annex 10. Sugar-Water Protocol 106
Annex 11. Dietary Treatment 107
Annex 12. Alternative Recipes for F75, F100 and ReSoMal Using CMV 109
Annex 13. Preparing F75 Milk Using Pre-Packaged F75 111
Annex 14. RUTF Specification 112
Annex 15. Outpatient Care Action Protocol 116
Annex 16. Key Messages Upon Admission 117

Annex 17. Messages for Health and Nutrition Education....118
Annex 18. Play and Stimulation....121
Annex 19. Checklist for Home Visits....123
Annex 20. Inpatient Care Treatment Card (Critical Care Pathway-CCP)....124
Annex 21. Outpatient Care Treatment Card....130
Annex 22. Outpatient Care RUTF Ration Card....132
Annex 23. Health Facility Tally Sheet for the Management of SAM....133
Annex 24. Health Facility Monthly Report for the Management of SAM....134
Annex 25. District Monthly Report for the Management of SAM....135
Annex 26. Minimal Reporting Guidance for the Management of SAM....136
Annex 27. Supervision Checklists....138
Annex 28. Requisition Form for Therapeutic Food....144
Annex 29. Setup of Inpatient Care and Outpatient Care....145
Annex 30. Checklist of Materials Needed for Outpatient Care....147
Annex 31. Outpatient Care Staffing....148
Annex 32. Inpatient Care Staffing....151
Annex 33. Checklist of Materials Needed for Inpatient Care....152
Annex 34. Forecasting Nutrition Product Needs....153
Annex 35. List of Job Aids....154
APPENDIX: Clinical Management of SAM with Medical Complications in Inpatient Care....156

List of Tables

Table 1. Indicators and Clinical Signs of Acute Malnutrition With Cut-offs for SAM and MAM....3
Table 2. Classification of SAM for CMAM....4
Table 3. Admission Criteria for CMAM for Children Under 5....16
Table 4. Outpatient Care Admission Categories....17
Table 5. Look-Up Table for Amounts of RUTF to Give to a Child per Day or Week Based on 92 g Packets Containing 500 kcal....24
Table 6. Outpatient Care Exit Categories....28
Table 7. Stabilisation Phase Look-Up Tables for Volume of F75 for Persons With Severe Wasting ("Marasmus") of Different Weights....37
Table 8. Stabilisation Phase Look-Up Tables for Volume of F75 for Persons With Severe Bilateral Pitting Oedema ("Kwashiorkor") (+++)....38
Table 9. Look-Up Table for Amounts of RUTF to Give to a Child per Day Based on 92 g Packets Containing 500 kcal....41
Table 10. Doses of iron syrup if F100 is used during rehabilitation (catch up growth)....44
Table 11. Inpatient Rehabilitation Phase Look-Up Table for Quantity of F100 to Give to an Individual Child per Feed....46
Table 13. Inpatient Care Exit Categories....52
Table 14. Look-Up Table for Maintenance Amounts of F100-Diluted to Give to an Individual Infant per Feed....55
Table 15. Look-Up Table for Amounts of F100-Diluted (Marasmus) or F75 (Kwashiorkor) to Give to Non-Breastfed Infants in the Stabilisation Phase....59

Table 16. Look-Up Table for Amounts of F100-Diluted to Give to Non-Breastfed Infants 0-6 Months or Infants Over 6 Months Weighing Less Than 4.0 kg in the Transition Phase..... 61
Table 17. Look-Up Table for Amounts of F100-Diluted to Give to Non-Breastfed Infants 0-6 Months or Infants Over 6 Months Weighing Less Than 4.0 kg in the Rehabilitation Phase..... 62
Table 18. Filing System for Outpatient Care Treatment Cards, With a Separation per Discharge Category..... 66
Table 19. Summary of Entry and Exit Categories..... 69
Table 20. Outcome Indicators Based on CMAM Guidance and on International Cutoffs as per Sphere Standards..... 71

List of Figures

Figure 1. Diagrammatic Representation of Stages of Community Outreach..... 13
Figure 2. Admission and Treatment Flow Chart, Children 6-59 Months With SAM..... 21
Figure 3. Timeframe for the Management of SAM in Children (WHO 2003)..... 31
Figure 4. Supplementary Suckling Technique..... 57

List of Boxes

Box 1. Summary Steps in Community Outreach..... 8
Box 2. Summary Steps in Outpatient Care..... 14
Box 3. Community Screening and Referral for Treatment..... 15
Box 4. Admission Procedure..... 17
Box 5. Appetite Test..... 19
Box 6. Frequent Causes of Failure to Respond in Outpatient Care..... 20
Box 7. Information to be Recorded During Referral From Outpatient Care to Inpatient Care..... 22
Box 8. Iron and Folic Acid..... 23
Box 9. Key Messages at First Visit..... 25
Box 10. Criteria and Recommendations for Discharge..... 27
Box 11. Additional Guidance..... 30
Box 12. Admission Criteria for Inpatient Care for Children 6-59 Months..... 30
Box 13. Reasons for Using an NG tube to Feed the Child During Stabilisation..... 39
Box 14. Frequent Causes of Failure to Respond to Inpatient Treatment..... 49
Box 15. Discharge Criteria From Inpatient Care..... 51
Box 16. Admission Criteria for Breastfed Infants..... 54
Box 17. Discharge Criteria for Breastfed Infants..... 58
Box 18. Admission Criteria for Non-Breastfed Infants..... 58
Box 19. Discharge Criteria from Inpatient Care Rehabilitation Phase for Non-Breastfed Infants..... 62
Box 20. Information to be Recorded During Referral from Outpatient Care to Inpatient Care..... 66

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FOREWORD

Malnutrition is a highly complex and multifaceted problem with socioeconomic and cultural aspects that require a more integrated public health approach. Malnutrition remains a major public health and developmental challenge in Ghana. The prevalence of acute malnutrition remains high and contributes to morbidity and mortality of children under five years old in the country. Over the years, management and treatment of severe acute malnutrition (SAM) has been undertaken in inpatient facilities in hospitals and Nutrition Rehabilitation Centres (NRCs) attached to health facilities. These Interim National Guidelines are the first formal comprehensive guidelines for the management and treatment of SAM cases in Ghana.

It is against this background that the Ghana Health Service (GHS) is adopting the Community-Based Management of Severe Acute Malnutrition (CMAM) approach to facilitate the management of SAM beyond inpatient care. The approach is rooted in the public health principles of expanded coverage and access, timeliness and appropriate care. CMAM involves:

- Inpatient care for the management of SAM with medical complications and for all infants under six months with SAM
- Outpatient care for the management of SAM without medical complications
- Community outreach for active case-finding and referral and follow-up of problem cases

These Interim Guidelines are designed to be a practical guide for field implementers and policy makers in Ghana. The Guidelines reflect the most current global knowledge, experience and standards of CMAM. They were adapted specifically for the Ghanaian health system using lessons learned from the learning sites in Agona West Municipality and Agona East district in the Central Region and Ashiedu-Keteke Sub-Metro in the Greater Accra Region, in consultation with local and external experts.

All service providers, including clinicians, nurses, nutritionists, dietitians and other health care providers involved in the management of SAM in the country, should use these guidelines for the management of SAM in both inpatient and outpatient facilities. We believe that users will find the Interim National Guidelines useful. We encourage them to make suggestions for a review that is planned to take place in one year's time as part of the finalisation process before endorsing these guidelines as the National Guidelines for Community-Based Management of SAM in Ghana.

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ACRONYMS AND ABBREVIATIONS

>	Greater than
≥	Greater than or equal to
<	Less than
≤	Less than or equal to
AIDS	Acquired immune deficiency syndrome
ACT	Artemisinin-based combination therapy
ART	Antiretroviral therapy
ARV	Antiretroviral (drug)
AWG	Average weight gain
CBO	Community-based organisation
CCP	Critical Care Pathway
CD4	Cluster of differentiation 4
CHC	Child health card
CHN	Community health nurse
CHO	Community health officer
CHW	Community health worker
CHPS	Community-Based Health Planning and Services
cm	Centimetre(s)
CMAM	Community-based management of severe acute malnutrition
CMV	Combined mineral and vitamin mix
CTC	Community-based therapeutic care
CWC	Child welfare clinic
DDNS	Deputy Director Nursing Staff
DHMT	District Health Management Team
dl	Decilitre(s)
ENA	Essential Nutrition Actions
EPI	Expanded programme of immunisation
F75	Formula 75 Milk
F100	Formula 100 Milk
FANTA-2	Food and Nutrition Technical Assistance II Project
g	Gram(s)
GHS	Ghana Health Service
Hb	Haemoglobin
HEW	Health extension worker
HFA	Height-for-age
HIRD	High Impact Rapid Delivery, Child Survival Programme
HIV	Human immunodeficiency virus
HNP	Health and Nutrition Policy
IM	Intramuscular
IMCI	Integrated Management of Childhood Illness
INACG	International Nutritional Anaemia Consultative Group
IU	International unit(s)
IV	Intravenous
IYCF	Infant and young child feeding
KAP	Knowledge, Attitude and Practice
kcal	Kilocalorie(s)
kg	Kilogram(s)
L	Litre(s)

LOS	Length of stay
LSHTM	London School for Hygiene and Tropical Medicine
M&E	Monitoring and evaluation
M&R	Monitoring and reporting
MAM	Moderate acute malnutrition
MDG	Millennium Development Goal
mg	Milligram(s)
MICS	Multi Indicator Cluster Survey
ml	Millilitre(s)
mm	Millimetre(s)
mmol	Millimole(s)
MOH	Ministry of Health
MT	Metric ton(s)
MUAC	Mid-upper arm circumference
NCHS	National Centre for Health Statistics
NGO	Nongovernmental organisation
NGT	Nasogastric tube
NHIS	National Health Insurance Scheme
NID	National Immunisation Day
NRC	Nutrition rehabilitation centre
PD	Positive Deviance
ORS	Oral rehydration solution
PLHIV	People living with HIV
RDA	Recommended Daily Allowance
ReSoMal	Rehydration Solution for Malnutrition
RUTF	Ready-to-use therapeutic food
RWG	Rate of weight gain
SAM	Severe acute malnutrition
SAM TC	Severe Acute Malnutrition Technical Committee
SAM SU	Severe Acute Malnutrition Support Unit
SCN	United Nations Standing Committee on Nutrition
SD	Standard deviation(s)
SFP	Supplementary feeding programme
TB	Tuberculosis
TFC	Therapeutic feeding centre
TFU	Therapeutic feeding unit
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WFA	Weight-for-age
WFH	Weight-for-height
WFP	World Food Programme
WHO	World Health Organisation
µg	Microgram(s)

CHAPTER I: INTRODUCTION

These guidelines address the management and treatment of severe acute malnutrition (SAM) in Ghana and focus on community outreach, outpatient care and inpatient care for the Community-Based Management of Severe Acute Malnutrition (CMAM). They are intended to be used by health and nutrition care providers working at the national, regional, district, sub-district and facility levels of health and nutrition system in Ghana. These guidelines provide practical and easy-to-follow guidance based on current evidence and best practices in the management and treatment of SAM.

The CMAM guidelines seek to improve the management of SAM in children under five years old, through treatment of SAM cases with medical complications in inpatient care and those without medical complications in outpatient care. The rationale for managing SAM without medical complications in outpatient care is that these children do not require hospitalisation and can be successfully treated at the community level using ready-to-use therapeutic food (RUTF). Home-based management and treatment of SAM without medical complications make community outreach an essential component of CMAM. The primary goal of community outreach is to enable the early detection and referral of severely malnourished children and to increase the number of SAM cases accessing quality treatment.

The CMAM guidelines have been field-tested in the learning facilities of Agona East District, Agona West Municipality and Ashiedu Keteke Sub-Metropolitan Area. Adherence to the guidelines will contribute significantly to improving the performance of the management of SAM as measured in terms of incread recovery rates; reduced case fatality and defaulter and non-recovery rates; and increased service access and utilisation (coverage).

The CMAM guidelines will contribute to improved standardised treatment and monitoring and reporting (M&R). They can also be used as a mobilising force for addressing SAM and strengthening capacities. They should facilitate the integration of the management of SAM into the primary health care system, and compliance with the guidelines will contribute to the overall reduction of child mortality in Ghana.

I.I Acute Malnutrition as a Form of Undernutrition

I.I.I WHAT IS UNDERNUTRITION?

Malnutrition is a medical (pathological) state resulting from a deficiency in or excess of one or more essential nutrients. The prefix "mal" means "poor" or "bad." The condition can result from poor or bad nutrition. Malnutrition can be either undernutrition or overnutrition.

Undernutrition is caused by inadequate intake or poor absorption of nutrients in the body. There are four forms of undernutrition: acute malnutrition, stunting, underweight and micronutrient deficiencies. The four forms can be categorised as either moderate or severe and can appear isolated or in combination, but most often they overlap in one child or in a population. These guidelines specifically deal with the identification, treatment and management of SAM.

Undernutrition is identified through anthropometric (body) measurements, clinical signs and biochemical tests. These body measurements are then compared to a reference value and referred to as nutrition indices.

Nutrition indicators are the classification of specific measures of nutrition indices based on cut-off points. They measure the clinical occurrence of undernutrition and are used for making a judgment or assessment.

There are four common nutrition anthropometric indicators: mid-upper arm circumference (MUAC), which is used to assess wasting; weight-for-height (WFH), which is also used to assess wasting; height-for-age (HFA), which is used to assess stunting; and weight-for-age (WFA), which is used to assess underweight.

I.I.2 WHAT IS ACUTE MALNUTRITION?

Acute malnutrition is caused by a decrease in food consumption and/or illness resulting in bilateral pitting oedema or sudden weight loss. It is defined by the presence of bilateral pitting oedema or by wasting.

There are two forms of acute malnutrition:

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

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

- Marasmus (severe wasting)
- Kwashiorkor (bilateral pitting oedema)
- Marasmic kwashiorkor (mixed form of bilateral pitting oedema and severe wasting)

I.I.3 ASSESSING ACUTE MALNUTRITION

The **MUAC measurement** and **WFH index** are used to assess wasting, a clinical manifestation of acute malnutrition, reflecting the child's current nutritional status. In the context of Ghana, only the MUAC measurement is used to assess wasting.

MUAC involves measuring the circumference of a child's left mid-upper arm. MUAC < 11.5 cm for children aged 6-59 months indicates SAM. MUAC ≥ 11.5 cm and < 12.5 cm for children aged 6-59 months indicates MAM. MUAC is a better indicator of mortality risk associated with acute malnutrition than WFH z-score (World Health Organisation [WHO] standards).[1] MUAC is used for children six months and older. A child's date of birth is assessed based on the caregiver's proof or recall; no proxy of height to assess age is used.

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

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

Table 1. Indicators and Clinical Signs of Acute Malnutrition With Cut-offs for SAM and MAM

	Bilateral pitting oedema	MUAC	WFH z-score
SAM	Present	< 11.5 cm	< -3
MAM	Not present	≥ 11.5 cm and < 12.5 cm	≥ -3 and < -2

In most cases, anthropometric measurements or the presence of bilateral pitting oedema alone can confirm a clinical diagnosis of SAM. Nevertheless, it is essential to assess clinical signs because they will indicate the severity of illness. In the presence of anthropometric confirmation of SAM, it is essential to assess the following clinical signs:

- Anorexia, no appetite
- Intractable vomiting
- Convulsions
- Lethargy, not alert
- Unconsciousness
- Hypoglycaemia
- High fever
- Hypothermia
- Severe dehydration
- Lower respiratory tract infection
- Severe anaemia
- Skin lesion
- Eye signs of vitamin A deficiency
- Skin lesion

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

[1] See WHO, WFP, UN/SCN and UNICEF 2007 and WHO and UNICEF 2009.
[2] The WHO 2006 Child Growth Standards were developed from a multicentre growth reference study that followed optimal child growth of a cohort of children in Oman, Norway, Ghana, India and the United States.

1.2 Principles of the Management of SAM

For a number of years, many countries have treated SAM in inpatient care provided either in paediatric wards or specialised therapeutic feeding units or centres (TFUs, TFCs), following the WHO 1999 treatment protocol for SAM.[3] However, a new community-based approach was developed following innovations, such as the invention and use of RUTF, whereby children with SAM without medical complications can start treatment in outpatient care rather than inpatient care and continue drug and dietary treatment at home. Meanwhile, children with SAM with medical complications are admitted to inpatient care but are referred to outpatient care as soon as their medical complication is resolving and continue treatment until full recovery at home.[4] **Table 2** shows the classification of SAM that is used in the CMAM approach. Another innovation is the use of MUAC as an independent criterion for SAM for children six months and older. This has made detection of SAM in the community and the health facility simple and effective.

Table 2. Classification of SAM for CMAM

Management Approach	INPATIENT CARE	OUTPATIENT CARE
Classification	SAM **with** medical complication	SAM **without** medical complication
Admission Criteria		
Anthropometric and Clinical Measures	Children 6-59 months: Bilateral pitting oedema (+ + +) or Any grade of bilateral pitting oedema with severe wasting (MUAC < 11.5 cm) or SAM with medical complications Infants 0-6 months: Bilateral pitting oedema or Visible wasting Infants ≥6 months who weigh <4.0 kg	Children 6-59 months: Bilateral pitting oedema (+ +) or (+) or Severe wasting (MUAC < 11.5 cm)
Appetite Test	Failed	Passed
Clinical Status	SAM with any of the following medical complications: • Anorexia, no appetite • Intractable vomiting • Convulsions • Lethargy, not alert • Unconsciousness • Hypoglycaemia • High fever • Hypothermia • Severe dehydration • Lower respiratory tract infection • Severe anaemia • Skin lesion • Eye signs of vitamin A deficiency	Clinically well and alert
Caregiver Choice	Caregiver willing	Caregiver willing

[3] WHO. 1999. Management of Severe Malnutrition: A Manual for Physicians and Other Senior Health Workers, Geneva 1999.

[4] See the WHO 1999 treatment protocol and WHO, WFP, UN/SCN and UNICEF 2007.

Management Approach	INPATIENT CARE	OUTPATIENT CARE
Classification	SAM **with** medical complication	SAM **without** medical complication
Referral/Discharge Criteria		
	Children 6-59 months: Referral to outpatient care if oedema reducing and/or medical complication resolving, and clinically well and alert Infants 0-6 months: Discharge when successful re-lactation and appropriate weight gain (minimum 20 gram [g] weight gain per day on breastfeeding alone for five days) (see other guidance for non-breastfed children) Special cases 6-59 months: Discharge if 15% weight gain is attained for three consecutive weeks and/or oedema-free for two consecutive weeks and clinically well and alert	Discharge if attained 15% weight gain or more for two consecutive weeks, no bilateral pitting oedema for two consecutive weeks and clinically well and alert

Much evidence accumulated from early studies and field practice in Malawi, Ethiopia and Sudan has led to the decentralised community-based approach that makes a distinction in severity of the condition of the child with SAM. The majority of children over six months with SAM who have appetite and no medical complication can be treated in outpatient care without the need for residential treatment. Small numbers of children with SAM who have lost appetite or developed medical complications need inpatient care. The approach is built upon strong community outreach for community mobilisation, early case-finding and referral, and increasing service access and utilisation (coverage), thereby decreasing the risk of children developing medical complications. As evidence shows, the impact of this intervention contributes considerably to reducing mortality associated with SAM.

The following sections provide a brief overview of CMAM services based on a few key principles.

1.2.1 COMMUNITY OUTREACH

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

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

It is possible to link community outreach for SAM with existing community health and nutrition outreach systems or initiatives, such as child welfare clinics (CWCs), community-based growth promotion, the expanded programme of immunisation (EPI) and others.

1.2.2 OUTPATIENT CARE FOR CHILDREN 6-59 MONTHS

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

Before admission at an outpatient facility, a nutrition and medical assessment carried out by a qualified health care provider should determine if a child with SAM has good appetite (passed the appetite test, see **Section III, Step 3: Medical Assessment and Decision-Making for Treatment** and **Box 5**) and no medical complications. On admission to outpatient care, the child should receive routine medication, as well as a take-home ration of RUTF equivalent to 200 kilocalories (kcal) per kilogram (kg) bodyweight per day to last until the next weekly health visit. Treatment is managed by a qualified health care provider at the health facility, Community-Based Health Planning and Services (CHPS) compound, mobile clinic or decentralised health outreach point. Care then continues at home. The child returns weekly or biweekly to the outpatient care site for follow up on his/her health and nutrition progress and to replenish RUTF supplies.

1.2.3 INPATIENT CARE FOR CHILDREN 0-59 MONTHS

Anorexia (loss of appetite), severity of illness and presence of a medical complication are the main determinants for providing inpatient care to children with SAM. Only small proportions of children with SAM have poor appetite[5] or will develop medical complications that require intensive medical and nutrition care. Children requiring inpatient care for stabilisation can be treated in paediatric wards or specialised facilities that provide intensive 24-hour care or day care by skilled health care providers.

Inpatient care follows the WHO 1999 treatment protocol for SAM[6] but will refer the child 6-59 months to outpatient care as soon as the child's oedema is reducing, medical condition resolving and appetite returned.[7] The child then continues treatment in outpatient care in their home, receiving RUTF until full recovery. Few children less than 59 months remain in inpatient care until full recovery. All infants 0-6 months with SAM are treated in inpatient care until full recovery.

1.2.4 SUPPLEMENTARY FEEDING OF CHILDREN 6-59 MONTHS AND PREGNANT AND LACTATING WOMEN WITH MAM

Supplementary feeding programmes (SFPs) or services manage and treat MAM in children 6-59 months and other vulnerable groups. A commonly known supplementary feeding approach in food-insecure environments or emergencies is targeted supplementary feeding, where a supplementary food ration, normally a fortified-blended food, is targeted to individuals with MAM in specific vulnerable groups, such as malnourished pregnant women, lactating women with infants under six months, individuals with special needs such as people living with HIV (PLHIV), people with tuberculosis (TB) and the elderly. Specific anthropometric criteria for entry and discharge are usually used. In Ghana, supplementary feeding is common in the Northern, Upper West and Upper East regions, where food insecurity is common.
The dietary requirements and programmatic evidence for the management of MAM are under revision at the global level, and improved guidance is expected shortly.

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[5] Infection leads to loss of appetite in the acute phase. In addition, liver and metabolic disturbances that accompany Type 2 nutrient deficiency also lead to loss of appetite in children with SAM.
[6] WHO. 1999. *Management of Severe Malnutrition: A Manual for Physicians and Other Senior Health Workers*. Geneva: WHO.
[7] WHO, WFP, UN/SCN and UNICEF 2007.

Note: No guidance or best practices on individual care or population-based strategies for MAM are provided in these guidelines. Nevertheless, treatment for MAM with an appropriate dietary supplement is important. Also, children with SAM would benefit after recovery from a dietary supplement and regular monitoring. It is expected that the management of MAM will be addressed in separate guidelines or that this will become part of these guidelines in the future.

CHAPTER II: COMMUNITY OUTREACH

Effective community outreach is essential to the early identification and referral of children to CMAM. Community outreach raises community awareness of the aims of the services, builds support for the services, and at the same time helps CHWs understand the needs of the local community and the factors that might act as barriers to accessing care and improving child nutrition.

Community outreach is a critical component of CMAM and can be undertaken individually or integrated into ongoing community health outreach services, e.g., CWC outreach points, EPI outreach facilities or growth monitoring facilities.

Learning From Implementation Site
Continuously review strategy and, through dialogue, determine ways of enhancing participation and buy-in for CMAM services at all levels.

The main aims of community outreach for CMAM include:

- Empowering the community: Increasing knowledge of SAM and CMAM
- Increasing access and service uptake (coverage) of CMAM services
- Strengthening early case-finding/referral of new SAM cases and follow-up of problem cases
- Strengthening responsibility of the District Health Management Team (DHMT), community health committees and stakeholders for sustainability and ownership.

BOX 1. SUMMARY STEPS IN COMMUNITY OUTREACH

Planning for Community Outreach

1. *Community assessment*
2. *Formulation of community outreach strategy*
3. *Developing messages and materials*
4. *Community mobilisation and training*

Conducting Community Outreach

5. *Case-finding and referral of new cases with SAM*
6. *Follow-up of children with SAM*
7. *Linking with other community services, programmes and initiatives*
8. *Continued community mobilisation (as above in Step 4)*

STEP 1: Community Assessment

Community assessment is the first step of community outreach. The assessment is key in determining the factors that are likely to impact both service delivery and demand for services. The assessment itself is conducted by district health workers (community health nurses, members of the district health team) with the objective of answering two main questions:

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

The following steps form part of Community Assessment:

- Look for local terms for malnutrition, perceived causes and common local solutions.
- Engage with the community in a participatory discussion on the magnitude of the malnutrition problem, the causes and possible solutions. This can be done through local social structures, such as durbars,[8] or during child welfare outreach services.
- Identify the key community leaders, elders and other influential people. Traditional healers should be included and might be able to help screen or refer.
- Gather information on the ethnic groups and most vulnerable groups.
- Identify existing community structures and community-based organisations (CBOs) or groups.
- Identify formal and informal communication channels that are known to be effective.
- Identify health attitudes and health-seeking behaviours.
- Identify available childcare services and resources.
- Review Knowledge, Attitude and Practices (KAP) and coverage surveys or other sociological studies conducted on health-seeking, care and feeding practices and behaviours.

Learning from Implementation Site
Time must be invested in understanding key barriers to access and then identifying the health workers and volunteers who are best suited to address these barriers.

STEP 2: Formulation of Community Outreach Strategy

- Identify the best mechanisms for community outreach and mobilisation, such as the volunteers who are most respected in the community and can conduct screening, potential facilities for screening and the types of screening that will be conducted.
- Negotiate with community opinion leaders, members and stakeholders for the adoption of CMAM as the approach to manage malnutrition in their community.
- Agree on the relevant structures, groups and organisations to be involved in CMAM.
- Develop clear definitions of roles and responsibilities.
- Once services for the management of SAM have started, continue a dialogue to address concerns, maintain changes in behaviour and share success stories.

STEP 3: Developing Messages and Materials

Handbills or pamphlets, local radio and television messages, and meetings with community and religious leaders provide essential information about the CMAM service aims, methods and actors. In particular, communities must know what the CMAM service will mean to them in practice, i.e., what it

[8] Ghanaian traditional rulers sit in state and meet their people at events called "durbars" (an English word that comes from an Indo-Persian term for "ruler's court").

will do, who is eligible, where it will operate, who will implement it, how people can access it, and what the overall benefit of the service/programme is to the community. Steps at this stage include:

- Develop handbills (see **Annex 2. Community Outreach Messages**) and other relevant materials that can help provide information about CMAM services to the community and introduce the new service.
- Developing an orientation and dissemination plan on community mobilisation for key members of the health system (e.g., health care providers, health extension workers or other support staff, managers and supervisors) and outreach workers.
- Ensure that the orientation and dissemination plan includes specific CMAM-related messages with behaviour change messages that are targeted at key members of the community: opinion leaders, mothers, other family members and care providers, including traditional healers in the community.

Learning from Implementation Site
High default rates and absenteeism will be key challenges. Assigning clear responsibility to the CHWs and volunteers along with strong supervision is essential to ensure follow-up home visits.
What is an effective link between the community and the facility?

STEP 4: Community Mobilisation and Training

Community mobilisation aims to raise awareness of CMAM services, promote understanding of its methods and lay the foundation for community ownership in the future.

Community sensitisation messages are based on the handbill (see **Annex 2. Community Outreach Messages.**) Decisions on the communication channels and on engagement with different actors should be based on an understanding of the local community dynamics. Steps include:

- Discuss service aim and target population.
- Discuss basic information on the causes, types, identification and treatment of malnutrition.
- Practice in the identification of bilateral pitting oedema and wasting (using MUAC).
- Discuss case-finding strategies.
- Discuss case referral and follow-up checklist.
- Define and discuss a health and nutrition education strategy.
- Development of a detailed training plan for key members of the GHS, namely outpatient care health workers, outreach workers, health volunteers, other support staff, supervisors and data collectors

Learning from Implementation Site
Ensure that CHWs and other volunteers can fully comprehend the rationale behind CMAM, the importance of the community component and the links with other health education activities that they routinely undertake.

STEP 5: Case-Finding and Referral of New Cases With SAM

Case-finding should be carried out with the aim of early identification and referral of children with SAM in the communities. Active case-finding is important to ensure that children with SAM are identified before the development of severe medical complications. Identified children are referred to the nearest health facility that provides treatment for SAM, where a decision is made whether the child should be admitted to outpatient care or referred to the inpatient care facility.

Widespread identification of children with SAM at the community level is achieved through timely screening using MUAC tapes and assessment of the presence of bilateral pitting oedema. Case-finding and referral is carried out by CHWs or volunteers who identify children with SAM at all points of contact with the community.
Identify and refer malnourished children through the identified strategies:

- House-to-house visits by CHWs and/or community volunteers
- Screening during CWC services at health facilities and satellite service points
- Screening at community meetings, schools, CBOs and other available opportunities
- Self-referrals by communities
- Child assessment for SAM at all health facilities (including Integrated Management of Childhood Illness [IMCI])
- EPI and National Immunisation Days (NIDs)
- Other nongovernmental organisation (NGO) community activities and services

STEP 6: Follow-Up of Children With SAM

Children with SAM in treatment are monitored to ensure sustained improvement in their condition. Children discharged from the service should be monitored through regular community screening for any recurrence of malnutrition. Children with SAM require follow-up visits in their homes because they are at increased risk of death or developing other serious illness.

Severely malnourished children require follow- up after discharge as they have an increased risk of disease and death.

Follow-up home visits are critical for those children with SAM who are:

- Losing weight, have static weight or whose medical condition is deteriorating
- Not responding to treatment
- Caregivers have refused inpatient care
- Absent or defaulting

The need for follow-up is identified by the health care provider and discussed with the caregiver. The health care provider liaises with the CHW by direct contact or through available communication channels in the community to convey the message to arrange a home visit to high-risk children.

The CHW should follow up on Absentees from outpatient care. It is important to gain an understanding of the reason for the absence and to encourage a return to treatment. The absentee should not be reprimanded as this can discourage return.

Children with SAM in treatment should be linked with a CHW or community volunteer. It is the role of the CHWs to conduct home visits and ensure that children with SAM are identified and referred for treatment. They also provide feedback to the health facilities on problems related to the children's home environment.

Learning from Implementation Site
Integrate!

- Build on existing knowledge and skills.
- Understand current roles and responsibilities of CHW, health care providers, and integrate messages and training with current ongoing programs and priorities.

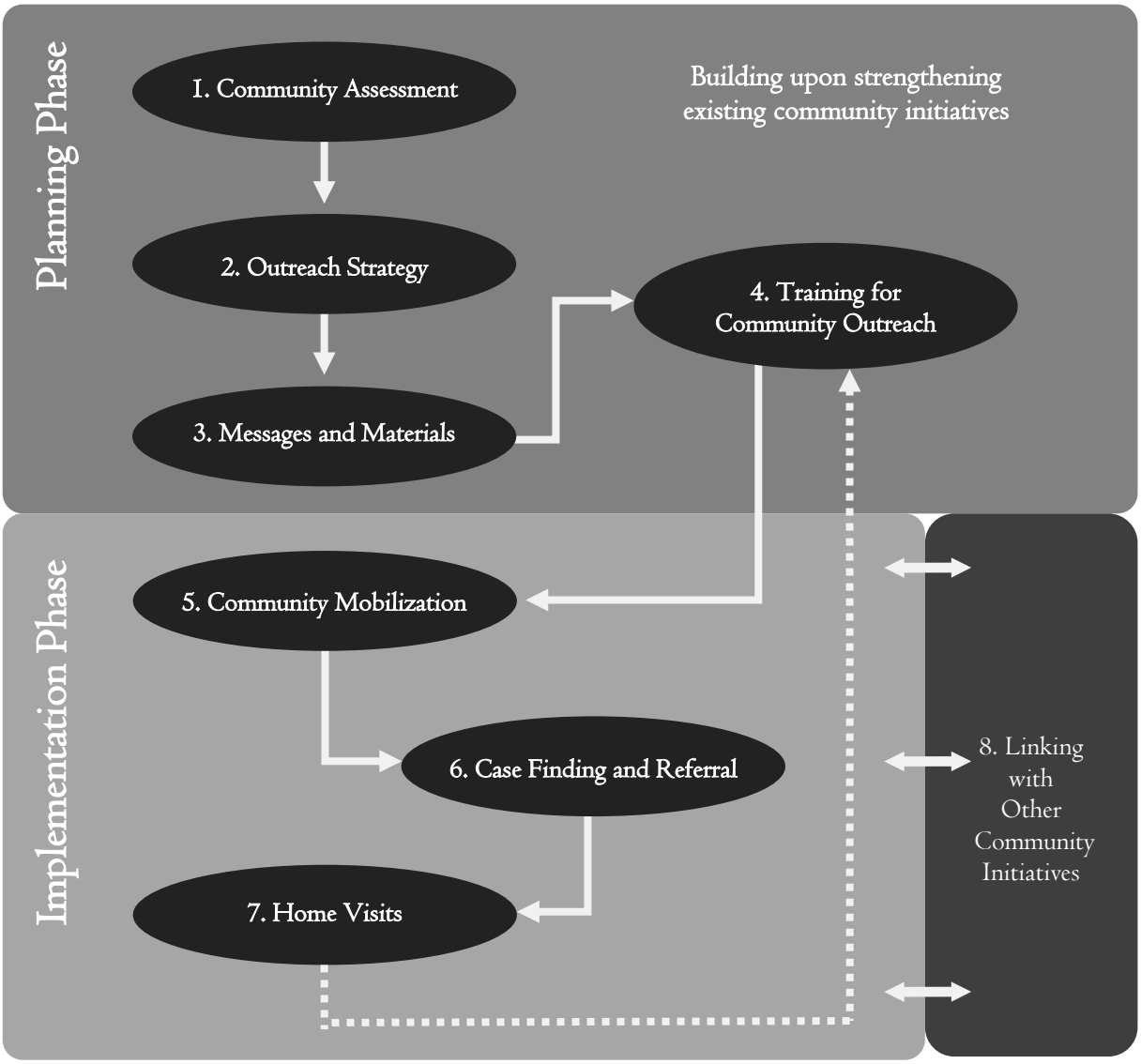
STEP 7: Linking With Other Community Services, Programmes and Initiatives

- Identify and link children who are being discharged from the treatment for SAM to programmes that prevent malnutrition such as Positive Deviance (PD)/Hearth, mother support groups, and community-based growth promotion and feeding programmes supported by the World Food Programme (WFP), to name a few examples.
- Children and caregivers should also be linked to other community health or livelihoods services/programmes in the area that might be complementary to CMAM. These could include NGO or CBO programmes or other government initiatives. Discuss with health workers and managers ways to link with CMAM, including involving their community volunteers and CHWs in education activities.
- Determine which services or programmes children can be referred to upon discharge from outpatient care.

STEP 8: Continued Community Mobilisation (as in Step 4)

Community mobilisation is an ongoing, not a one-time only activity. Many of the community interactions take place early in the programme but should be continuously reinforced throughout the implementation phase to be effective. Community mobilisation should be seen as a process of constant dialogue in which communities can periodically voice their views and suggest alternative courses of action.

Figure 1. Diagrammatic Representation of Stages of Community Outreach



CHAPTER III: OUTPATIENT CARE FOR THE MANAGEMENT OF SAM WITHOUT MEDICAL COMPLICATIONS

Outpatient care is aimed at providing home-based treatment and rehabilitation for severely malnourished children 6-59 months who have an appetite and no medical complications. CMAM achieves this objective through timely detection, referral and early treatment before the health condition becomes severe or before the onset of a complication. Effective community mobilisation, active case-finding, referral and follow-up are essential inputs to successful outpatient care. If the condition of a child in outpatient care deteriorates or if a medical complication develops, the child should be referred to inpatient care for stabilisation and return to outpatient care as soon as the medical complication is resolving.

It is recommended that outpatient care services be carried out on a weekly basis. However, sessions can be conducted every two weeks when:

1. Poor access or long distance to the health facility increases the opportunity cost for the caregivers and might prevent weekly participation.
2. Weekly sessions and high case loads overburden health facility schedules or staff at smaller health facilities. In this case, biweekly sessions could allow for splitting the group of children in two and alternating by week.
3. Seasonal factors or events that involve caregivers, such as the harvest or planting season, might prevent caregivers from participating weekly.
4. Other cases as determined by nutrition or health staff.

BOX 2. SUMMARY STEPS IN OUTPATIENT CARE

1. Screening Children for SAM
2. Admission Criteria
3. Medical Assessment and Decision-Making for Treatment
4. Referral to Inpatient Care
5. Medical Treatment in Outpatient Care
6. Dietary Treatment in Outpatient Care
7. Counselling, Health, Nutrition and Hygiene Education
8. Individual Monitoring During Follow-On Visits at Health Facility
9. Follow-Up Home Visits for Children Requiring Special Attention
10. Discharge Criteria

STEP 1: Screening Children for SAM

Children 0-59 months with SAM are referred from community screening or are identified at any entry point of the health services system.

Screening and referral can occur in a number of ways:

- Referrals by volunteers or CHWs after children are screened for bilateral pitting oedema and low MUAC at the household level
- Referrals by community health nurses/officers or other health facility staff at any health service, e.g., CWC outreach, satellite clinic, nutrition rehabilitation centre, outpatient care department, hospital
- Self referral: Child brought by caregiver to the outpatient care site
- Mother-to-mother referrals within the community

Children in the community and at all points of contact with the health system are checked (see **Section II. Step 5: Case-Finding and Referral of New Cases With SAM**):

- MUAC measurements for children 6-59 months are taken using simple, color-coded plastic tapes designed to measure the arm circumference.
- A clinical check for the presence of bilateral pitting oedema is made by pressing the thumbs for three seconds on the top side of both feet. If the indentation remains after removing the thumbs, the child is diagnosed with bilateral pitting oedema, also known as kwashiorkor, a symptom of SAM (see **Annex 4. Anthropometric Measurements**).
- Infants under six months with visible wasting and/or bilateral pitting oedema are not measured using MUAC but referred to the health facility where they are further evaluated. In the absence of a health card or birth certificate, determination of age of an infant is based on recall of the caregiver. The height cut-off should not be used as a proxy for age.

All children under five years old should be routinely screened for SAM since it is one of the most important contributing causes of childhood mortality. Training for screening should be standardised to ensure uniformity between community volunteers and facility-based health care providers. At the health facility, the child should be reassessed to confirm that the community volunteer referral is accurate. If the referred children are regularly inaccurately assessed, action should be taken leading to the retraining of either the community volunteers or CHWs depending on the source of the inaccuracy. In this way, children who are correctly screened at the community level will also be admitted to the appropriate treatment service, leaving no discrepancy between the two systems.

BOX 3. COMMUNITY SCREENING AND REFERRAL FOR TREATMENT

Children are screened and referred for treatment if screening finds:

- Presence of bilateral pitting oedema
- MUAC < 11.5 cm (for children 6-59 months)

Note: Infants under six months with visible wasting and/or bilateral pitting oedema and infants over six months weighing less than 4.0 kg should be referred to the health facility for investigation.

STEP 2: Admission Criteria

The first point of contact with the primary health care system for a child under 5 years old with SAM will be the health facility providing outpatient care. The trained health care provider will conduct a medical and nutrition assessment to guide the decision of whether to admit the child 6-59 months to outpatient care or to refer the child to inpatient care based on certain admission criteria (see **Table 3**).

Table 3. Admission Criteria for CMAM for Children Under 5

Inpatient Care	Outpatient Care
Children 6-59 months Bilateral pitting oedema +++ Or Any grade of bilateral pitting oedema with severe wasting (marasmic kwashiokor) Or SAM with any of the following medical complications: • Anorexia, no appetite • Intractable vomiting • Convulsions • Lethargy, not alert • Unconsciousness • Hypoglycaemia • High fever • Hypothermia • Severe dehydration • Lower respiratory tract infection • Severe anaemia • Eye signs of vitamin A deficiency • Skin lesion Or • Referred from outpatient care according to action protocol (see **Annex 15. Outpatient Care Action Protocol**) Infants 0-6 months • Bilateral pitting oedema Or • Visible wasting • Infants > 6 months and weigh < 4.0 kg	Children 6-59 months Bilateral pitting oedema + and ++ Or Severe wasting (MUAC < 11.5 cm) And • Appetite test passed • No medical complication • Child clinically well and alert

ADMISSION PROCEDURE

The child and caregiver are welcomed at the health facility, and the caregiver is informed about the admission criteria and procedure. Children who meet the admission criteria for therapeutic feeding receive a medical assessment, including a history and physical examination that includes an appetite test (see **Box 5**). The outcome of the assessment determines if the child will receive treatment in outpatient care or will be referred to inpatient care. Infants under 6 months with bilateral pitting oedema or visible wasting should be referred to inpatient care immediately.

Additional points to consider during the admission procedure:

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

Table 4. Outpatient Care Admission Categories

Category	Definition
New Admission	New cases of children 6-59 months with SAM who meet the admission criteria (see **Table 3**) SAM cases are classified according to the type of SAM: • Marasmus (MUAC < 11.5 cm) • kwashiokor (bilateral pitting oedema)
New Other Admissions	New SAM cases not meeting the pre-set admission criteria for SAM, e.g., MUAC exactly 11.5 cm, children > 59 months with SAM, etc.
Old Cases	Children who are transferred from inpatient care or another outpatient care site, children who are returning defaulters.

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

BOX 4. ADMISSION PROCEDURE

Welcome the child and caregiver and provide initial care:

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

Define nutritional status:

- Check for bilateral pitting oedema and take MUAC. Use admission criteria (see **Annex 3. Admission and Discharge Criteria for the Management of SAM in Children 0-59 Months**) to guide decision-making for admission.
- Indicate the target weight for discharge at 15 percent weight gain (see **Annex 5. Guidance Table to Identify Target Weight for Discharge**).
- Register the child and record measurements on treatment card.

Conduct medical assessment:

- Take the child's medical history, conduct a physical examination, determine if the child has a minor health problem or a medical complication, and record findings on the treatment card.
- Fast-track children with SAM and medical complications in need of inpatient care and start treatment (no need for appetite test; administer first dose of antibiotic).
- Test the appetite (see **Box 5**). The appetite test is a critical criterion for deciding whether a child with SAM and without medical complications is treated in outpatient care or inpatient care.
- Decide whether to treat the child with SAM in outpatient care or refer him/her to inpatient care.

Provide treatment:

- Provide treatment for underlying infections and decide if treatment for additional health conditions is needed.
- Provide a weekly or biweekly amount of RUTF, based on a daily ration of 200 kcal of RUTF per kg

bodyweight. Fill out the RUTF ration on the ration card for the caregiver.
- Counsel the caregiver on key messages for treatment, the intake of antibiotics and RUTF, and care practices, and ask her/him to return to the health facility for monitoring sessions or whenever a problem arises (see **Annex 16. Key Messages Upon Admission**).
- Link the caregiver with the CHW or volunteer.
- Link the caregiver with other services or initiatives as appropriate.

Note: Children who are identified with SAM during community screening are reassessed at the health facility. If they fail to fulfil the admission criteria, they should not be admitted, but the caregiver can be linked with other primary health services or initiatives as appropriate (e.g., nutrition rehabilitation, PD/Hearth, EPI, CWC, community-based growth monitoring etc.).

STEP 3: Medical Assessment and Decision-Making for Treatment

A qualified health care provider, i.e., a nurse, medical assistant or other clinician assesses the child's medical condition, which includes a medical history established through the caregiver and a physical examination to rule out medical complications that might require inpatient care. Results are recorded on the outpatient care treatment card (see **Annex 21. Outpatient Care Treatment Card**).

- Take the medical history and record.
- Conduct a physical examination and record.
- Determine the medical condition (presence or absence of medical complications).
- Perform the appetite test with RUTF (See **Box 5**).
- Determine if the child needs referral to inpatient care or should be treated in outpatient care. Verify admission criteria for inpatient care and outpatient care.
- ***Note:*** *Infants under six months with any grade of oedema and/or visible signs of wasting and children over six months with a weight less than 4.0 kg should always be referred to inpatient care. Other exceptional cases can be referred to inpatient care (e.g., caregiver's choice).*
- Check the child's National Health Insurance Scheme (NHIS) status and facilitate adherence if the child does not have NHIS coverage.

APPETITE TEST WITH RUTF

Appetite, the ability to eat RUTF, is essential for a child to be admitted to and remain in outpatient care. Anorexia, or absence of appetite, is considered to reflect a severe disturbance in the metabolism. If a child has no appetite, he/she will not be able to eat RUTF at home and therefore needs referral for specialised care in inpatient care for the management of SAM with medical complications.

The appetite test determines if the child is able to eat the RUTF. It tests the appetite, the acceptability of the taste and consistency, and the ability of the child to swallow (e.g., child is mature or old enough to swallow solids, child has no lesions that prevent him/her from eating). The appetite test is repeated at every visit to outpatient care. The repetition of the test for children who are used to RUTF can be organised in adaptation to the context, e.g., in a group with supervision during waiting times.

Children with SAM who pass the appetite test and have no medical complications are treated in outpatient care. Those who fail the appetite test are referred to inpatient care. If the appetite test is not conclusive, the child should be referred to inpatient care until the appetite has been restored. Children

who have other medical complications that require referral to inpatient care need not undergo the appetite test.

BOX 5. APPETITE TEST

Points to Consider When Conducting an Appetite Test

- Conduct the appetite test in a quiet, separate area.
- Provide an explanation to the caregiver regarding the purpose of the appetite test and outline the procedures involved.
- Observe the child eating the RUTF and determine if the child passes or fails the appetite test.
- Advise the caregiver to:
  - Wash hands before giving the RUTF
  - Sit with the child in his/her lap and gently offer the RUTF
  - Encourage the child to eat the RUTF without force-feeding
  - Offer plenty of clean water to drink from a cup while child is eating the RUTF

Appetite Test

Pass Appetite Test	Fail Appetite Test
The child eats at least one-third of a packet of RUTF (92 g).	The child does not eat one-third of a packet of RUTF (92 g).

Note: Many children will eat the RUTF enthusiastically straight away, while others might initially refuse it. These children need to sit quietly with their caregivers in a secluded place and be given time to become accustomed to it.

STEP 4: Referral to Inpatient Care

UPON ADMISSION

MUAC measurements, presence or absence of bilateral pitting oedema and medical assessment, including the appetite test, will determine if a child can be admitted to outpatient care or needs to be referred for inpatient care. (See **Annex 3. Admission and Discharge Criteria for the Management of SAM in Children 0-59 months**.)

Medical complications besides severe bilateral pitting oedema (+++), marasmic kwashiorkor and poor appetite include:

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

Other cases needing inpatient care are infants over six months and less than 4.0 kg.

If a medical complication is present, the health worker starts life-saving treatment:

- Provide 10 percent sugar-water.
- Refer the child to the closest inpatient care facility, with the caregiver's consent.
- Record findings and the treatment given in the child's health record and/or on the referral form.
- Advice is provided to the caregiver. Explain the:
    - Severity of the child's situation and the need for referral to inpatient care
    - Need to keep the child warm during transportation
    - Need to give frequent, small amounts of breast milk, 10 percent sugar-water or RUTF during transportation

AT FOLLOW-ON VISITS, REFERRAL BASED ON ACTION PROTOCOL

In case of poor appetite, a developing medical complication or deterioration of the nutritional status and/or medical condition, a child will be referred to inpatient care for treatment for SAM with medical complications following the action protocol. (See **Annex 15. Outpatient Care Action Protocol.**)

The following medical complications and deterioration of nutritional status require referral:

- No appetite (failed appetite test)
- IMCI danger signs
- Increase in or newly developed bilateral pitting oedema
- Weight loss because of diarrhoea (refeeding or other origin)
- Weight loss for three consecutive weeks
- Static weight (no weight gain) for five consecutive weeks
- Other signs of failure to respond to treatment (see **Box 6**)

In addition, inpatient care can be requested by the caregiver at any time or by the surrogate in the event of the caregiver's absence or death.

If a child is referred to inpatient care as a result of deterioration in his/her condition, a referral form is provided or the child health record is used to provide basic health and nutrition information, including treatment and medications already given, reasons for referral, and vaccination status. (See **Box 7.**)

BOX 6. FREQUENT CAUSES OF FAILURE TO RESPOND IN OUTPATIENT CARE

Problems Related to the Quality of the Treatment

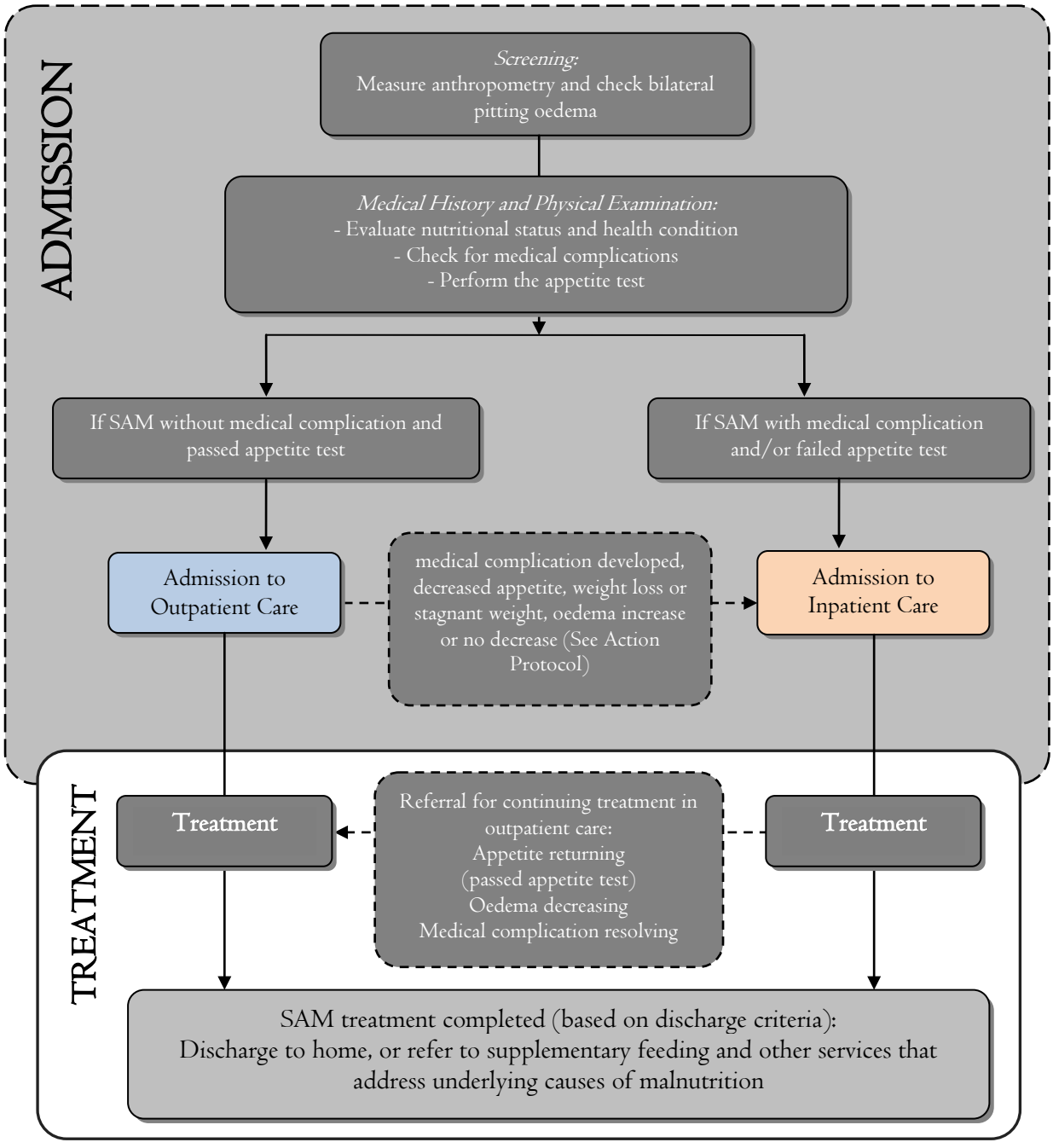
- Inappropriate evaluation of child's health condition or missed medical complication
- Inappropriate evaluation of appetite test
- Non-adherence to RUTF protocol
- Abrupt weaning of RUTF
- Non-adherence to routine medication protocol
- Inadequate guidance for home care provided

It is recommended that children who are referred to the inpatient care facility due to failure to respond to treatment be tested for chronic illness such as HIV/AIDS and TB.

Problems Related to Home Environment

- Inappropriate frequency of visits to the health facility and reception of RUTF
- Inadequate intake or sharing of RUTF and/or medicines
-

Figure 2. Admission and Treatment Flow Chart, Children 6-59 Months With SAM



BOX 7. INFORMATION TO BE RECORDED DURING REFERRAL FROM OUTPATIENT CARE TO INPATIENT CARE

- Name and sex of child
- Age of child in months
- Name mother/caregiver
- Health facility referred from
- Date of referral
- Health facility destination
- Admission date (if referral is based on action protocol)
- Referral information; if referred based on action protocol, provide:
    - MUAC
    - Bilateral pitting oedema
    - Medical complication
- Treatment provided to the child
- Referral reason and any other comment

STEP 5: Medical Treatment in Outpatient Care

NEW ADMISSION

- Give routine medicines to all children upon admission to outpatient care regardless of their health insurance (NHIS) status (see **Annex 7. Routine Medicines Protocol**).
- Check immunisation status. Refer to EPI for completion of immunisations schedule. Facilitate measles vaccination for infants six months and older.
- Complete the outpatient care treatment card, provide a registration number and decide the entry category (see **Section VI. Monitoring and Reporting**).

ROUTINE MEDICAL TREATMENT FOR NEW ADMISSION

Medicines in addition to those listed below may be prescribed to treat other medical problems based on the condition of the child.

Antibiotic Treatment with Amoxicillin

- Give oral antibiotic treatment for a period of seven days to be taken at home.
- The first dose should be taken during the admission process under the supervision of the health care provider. An explanation should be given to the caregiver on how to complete the treatment at home.

Note: Children who are HIV+ or HIV-exposed should be provided with **Cotrimoxazole (Septrin)** and linked for care in line with the National Guidelines for Integrated Management of Neonatal and Childhood Illnesses and the Guidelines on Nutritional Care and Support for people living with HIV and AIDS.

Malaria Treatment

- Systematically screen all children for malaria in endemic areas upon admission regardless of their body temperature.
- A child with SAM cannot auto-regulate his/her body temperature well and tends to adopt the temperature of the environment, thus the child will feel hot on a hot day and cool on a cool day.
- If in clinical doubt, repeat the para-check the following week.
- Treat malaria according to the Ghana national treatment protocol for malaria using artesunate and amodiaquine combined therapy.
- Ghana is malaria-endemic, so all children with SAM should be provided with insecticide-impregnated bed nets to prevent malaria.

Vitamin A

- Provide vitamin A if it has not been administered in the past month and if there is no bilateral pitting oedema (see the child health booklet).
- Give a single dose of vitamin A: For children 6-11 months, give 100,000 international units (IU); for those 12 months and over, give 200,000 IU.
- Cases with bilateral pitting oedema should receive vitamin A when the oedema has gone.
- Refer any child with signs of vitamin A deficiency to inpatient care, as the condition of their eyes can deteriorate very rapidly.

Deworming Treatment (Antihelminth)

Give a single dose of albendazole or mebendazole at the second visit, after seven days in outpatient care. Deworming should be given only to children over two years old. Children under two years who have worms should be treated according to the national protocol.

Measles Vaccination

Give a single vaccine on the fourth week (fourth visit) for children 9-59 months old if they do not have a record of a previous vaccination.[9]

BOX 8. IRON AND FOLIC ACID

- Iron and Folic Acid should not be given routinely to children in the outpatient care. They are available in the RUTF.
- Where anaemia is identified according to the IMCI guidelines, children are referred to inpatient care.
- Iron and folic acid should not be provided with a malaria treatment.

VACCINATION SCHEDULE UPDATE

Good collaboration is required between the immunisation programme and outpatient care for updating the vaccination status of the child. Also, it is important to know the schedule of the Child Health Weeks and if the child participated to avoid double administration of vitamin A. Vaccinators at other

[9] If there is a measles epidemic in the area, provide a measles vaccination upon admission to outpatient care.

health facilities should be made aware that vitamin A should not be provided to children with bilateral pitting oedema and that they should refer children with SAM when identified during campaigns or regular vaccination sessions.

Children who have been referred from inpatient care or another outpatient care site are not given routine medicines that have already been administered to them but will continue the treatment that was started earlier. The child's records and documentation should be checked for details of medications already given and, where applicable, with the remaining schedule of medications and supplements, which should be continued according to this protocol.

STEP 6: Dietary Treatment in Outpatient Care

Children receive 200 kcal per kg bodyweight of RUTF daily, given as a take-home ration. A weekly supply of RUTF is provided depending on the child's bodyweight (see **Table 5**). The dietary treatment is managed in the home, with the children attending outpatient care sessions on a weekly basis to monitor the health and nutritional status and replenish RUTF stocks.

QUANTITIES OF RUTF TO PROVIDE

- Provide 200 kcal per kg bodyweight per day of RUTF. Use the RUTF look-up tables (**Table 5**) for the amounts of RUTF to give in each weekly session based on the child's weight. One 92 gram (g) sachet of RUTF provides 500 kcal.
- Explain to the caregiver the daily amount the child will need to consume.
- Give the required RUTF ration to the caregiver and mark it on the RUTF ration card.

Table 5. Look-Up Table for Amounts of RUTF to Give to a Child per Day or Week Based on 92 g Packets Containing 500 kcal

Weight of Child (kg)	Packets per Week	Packets per Day (200 Kcal/kg bodyweight/day)
3.5 – 3.9	11	1.5
4.0 – 4.9	14	2
5.0 – 6.9	18	2.5
7.0 – 8.4	21	3
8.5 – 9.4	25	3.5
9.5 – 10.4	28	4
10.5 – 11.9	32	4.5
≥ 12	35	5

FEEDING PROCEDURE

- Advise the caregiver to feed the child small amounts of RUTF, to encourage the child to finish the allocated daily ration before giving any other foods (with the exception of breast milk) and to encourage the child to eat as often as possible (every three hours during the day).
- Explain to the caregiver that the breastfed child should be offered breast milk on demand and before being fed RUTF.
- Explain that safe drinking water should be given after feeding the child RUTF to keep the child hydrated. Caregivers should be advised not to mix RUTF with liquids as this might foster bacteria growth.

- Key messages on providing RUTF are repeated upon every visit to the health facility and include breastfeeding first, washing hands before feeding and offering safe water during the feeding (see **Annex 16. Key Messages upon Admission**).
- Caregivers should be asked to return empty RUTF packets at each follow-on visit.

STEP 7: Counselling, Health, Nutrition and Hygiene Education

UPON ADMISSION

- Provide messages on the use of medicines and RUTF at home only, limiting the counselling to the key messages. Explain to the caregiver the principles of the treatment:
  - Always breastfeed first
  - How to feed RUTF to the child
  - When and how to give the medicines to the child
  - When to return to outpatient care
  - That the child should be brought to the health facility immediately if his/her condition deteriorates
- Ask the caregiver to repeat the messages to be sure they were understood.

AT FOLLOW-ON VISITS

- Provide individual counselling to caregivers on the progress of the nutritional and medical condition.
- Provide counselling on breastfeeding, complementary feeding, nutrition care for sick children, basic hygiene, health-seeking behaviour and any other relevant topics as appropriate.
- If there are more than five cases at one given session, provide group health and nutrition education during the waiting time at the outpatient care session (see **Annex 17. Messages for Health and Nutrition Education**).

BOX 9. KEY MESSAGES AT FIRST VISIT

- RUTF is a food and medicine for very thin children only. It should not be shared.
- Sick children often do not like to eat. Give small, regular meals of RUTF and encourage the child to eat often (if possible eight meals per day). Your child should have ___ packets per day.
- RUTF is the only food sick/thin children need to recover during their time in outpatient care (however, breastfeeding should continue).
- For young children, continue to breastfeed regularly.
- Always offer the child plenty of clean water to drink or breast milk while he/she is eating RUTF.
- Wash the child's hands and face with soap before feeding if possible.
- Keep food clean and covered.
- Sick children get cold quickly. Always keep the child covered and warm.
- When a child has diarrhoea, never stop feeding. Continue to feed RUTF and (if applicable) breast milk.

STEP 8: Individual Monitoring During Follow-On Visits at the Health Facility

Individual monitoring of children with SAM should be carried out by the health care provider upon weekly (or biweekly) return visits to the health facility or outreach point. The following parameters are monitored and recorded on the treatment card during the follow-up visit:

ANTHROPOMETRY

- MUAC
- Weight

HISTORY AND PHYSICAL EXAMINATION

- Degree of bilateral pitting oedema (0, +, ++, +++)
- Weight gain
  - The weight is compared with the target weight for discharge (see **Annex 5. Guidance Table to Identify Target Weight for Discharge**)
  - Children who lose weight or have no weight gain or have their weight fluctuating receive special attention during the medical examination (see **Annex 15. Outpatient Care Action Protocol**)
- Body temperature
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration rate
- Appetite test
- Any illness suffered by the child since the last visit
- Any action taken or medication given in response to a health condition

FOLLOW-UP ACTION

- Follow-up action for home visit or referral for medical investigation
- Tracing of absentees and defaulters

At each follow-on visit, the caregiver should be informed of the child's progress, and individual and/or group counselling is provided on health and education messages on hygiene and sanitation, breastfeeding and appropriate complementary foods following the ENA.

STEP 9: Follow-Up Home Visits for Children Requiring Special Attention

Upon admission, every child is linked to a CHW or volunteer who covers his/her community of origin. At least one health worker at each outpatient care site should be responsible for coordinating follow-up visits with the CHW and volunteers. The same person should coordinate screening at the community level.

The CHW or volunteer will visit children who require special attention in their homes between the weekly or biweekly sessions to check the child's health and the caregiver's compliance with the RUTF

protocol, give any needed guidance and provide additional education messages (see **Annex 17. Messages for Health and Nutrition Education**).

As outlined in **Section III, Step 6: Dietary Treatment in Outpatient Care**, follow-up home visits for children with SAM are essential in the following cases (see **Annex 15. Outpatient Care Action Protocol**):

- Losing weight, static weight or deteriorating medical condition
- Not responding to treatment
- Caregivers have refused inpatient care
- Absent or defaulting

The CHW should record all follow-up home visits in the child health record book and report the results to the responsible health care provider at the health facility they are linked to.

If home visits could not identify a cause for non-response to treatment and the child's condition is not improving, the child is referred for a medical investigation. Refer to **Step 4: Referral to Inpatient Care** or the criteria for referral to inpatient care based on the action protocol.

STEP 10: Discharge Criteria

BOX 10. CRITERIA AND RECOMMENDATIONS FOR DISCHARGE

Discharge Criteria for Outpatient Care

- The child has attained 15 percent or more weight gain for two consecutive weeks (see **Annex 5. Guidance Table to Identify Target Weight for Discharge**)
- No bilateral pitting oedema for two consecutive weeks
- Clinically well and alert

Additional Recommendations

- Nutrition and health education scheme completed
- Appropriate weaning from RUTF
- Immunisation schedule updated
- Adequate arrangements made for linking caregiver and child with appropriate community initiatives (e.g., CWCs, community-based growth promotion, NRC) and for follow-up

DISCHARGE PROCEDURES

- Give feedback to the caregiver on the final outcome when the child has reached the discharge criteria (see below).
- Give a final RUTF ration (one week supply).
- Note the discharge outcome (see **Table 6** for exit categories) on the treatment card and ration card/page.
- Advise the caregiver on good nutrition and caring practices.
- Advise the caregiver to immediately go to the nearest health facility if child refuses to eat or has any of the following signs:
    - No appetite
    - Vomiting

  - Lethargic or unconscious
  - Convulsions
  - Bilateral pitting oedema
  - Losing weight
  - High fever
  - Diarrhoea or frequent watery or bloody stools
  - Difficult or fast breathing
- Caregivers should also be referred to complementary nutrition services such as PD/Hearth, CWCs or community-based growth promotion, if available in the area, which will reinforce CMAM behaviour change messages or otherwise continue to improve the child's nutrition status.

The child's outcome status is classified per exit category, which is indicated on the treatment card.

Table 6. Outpatient Care Exit Categories

Category	Definition
Discharged Cured	Child 6-59 months meets discharge criteria (see **Box 10**)
Died	Child dies while in outpatient care
Defaulted	Child is classified as defaulter on the third consecutive absence (i.e., three weeks absent)
Non-Recovered	Child does not reach discharge criteria after four months (16 weeks) in treatment (medical investigation previously done)
Referred to Inpatient Care	Child's health condition is deteriorating (action protocol)

CHAPTER IV: INPATIENT CARE FOR THE MANAGEMENT OF SAM WITH MEDICAL COMPLICATIONS FOR CHILDREN 6-59 MONTHS

Inpatient care for the management of SAM with medical complications can be provided in a specialised SAM ward or section of a paediatric or children's ward in a health facility with 24-hour care. Staff in these facilities should have been specifically trained in the management of SAM and in recognising and treating SAM with medical complications.

Children 6-59 months with SAM without appetite or with medical complications and children with SAM being referred from outpatient care following the action protocol (see **Annex 15. Outpatient Care Action Protocol**) should be admitted into inpatient care. Children with SAM may also be admitted to inpatient care because of the caregiver's choice. In addition, all infants under six months with SAM are admitted or weighing less that 4.0 kgto inpatient care (see **Chapter V. Inpatient Care for the Management of SAM in Infants 0-6 Months**).

Children, upon admission, should be directly assigned to the specific ward, not treated or kept in an emergency ward or casualty department, unless their medical staff has specific training in the management of SAM with medical complications. Critical care for children with SAM differs from the standard protocols and trained medical staff needs to be involved to reduce the risk of death.

Children 6-59 months admitted to inpatient care will be referred to outpatient care as soon as the medical complications are resolving, the appetite has returned and/or the oedema is reducing. In special cases, children complete the full treatment in inpatient care. These special cases include:

- Children who are unable to eat RUTF or who continue to refuse it
  Note: *A child who refuses RUTF should continue to be offered RUTF at each feed as soon as appetite has returned.*
- Severely malnourished infants 0-6 months or weighing less than 4.0 kg
- When the caregiver refuses outpatient care despite being adequately counselled

BOX 11. ADDITIONAL GUIDANCE

This section of the Interim National Guidelines for CMAM should be used alongside:

- WHO. 1999. *Management of Severe Malnutrition: A Manual for Physicians and Other Senior Health Workers*. Geneva: WHO.
- WHO. 2006. *Management of the Child with Serious Infection or Severe Malnutrition: Guidelines for Care at the First-Referral Level in Developing Countries*. WHO Department of Child and Adolescent Health. Geneva: WHO.
- WHO. 2004. *Guiding Principles for Infant and Young Child Feeding in Emergencies*, Geneva: WHO.

4.1 Admission Criteria

BOX 12. ADMISSION CRITERIA FOR INPATIENT CARE FOR CHILDREN 6-59 MONTHS

Bilateral pitting oedema +++
Or
Marasmic kwashiorkor: Any grade of bilateral pitting oedema with severe wasting (MUAC < 11.5 cm)
Or
Bilateral pitting oedema + **or** ++ **or** severe wasting (MUAC < 11.5 cm) with any of the following medical complications:

- Anorexia, no appetite
- Intractable vomiting
- Convulsions
- Lethargy, not alert
- Unconsciousness
- Hypoglycaemia
- High fever (> 39° C axillary and 38.5 for rectal)
- Hypothermia (< 35° C axillary and 35.5 for rectal)
- Severe dehydration
- Lower respiratory tract infection
- Severe anaemia
- Eye signs of vitamin A deficiency
- Skin lesion

Or

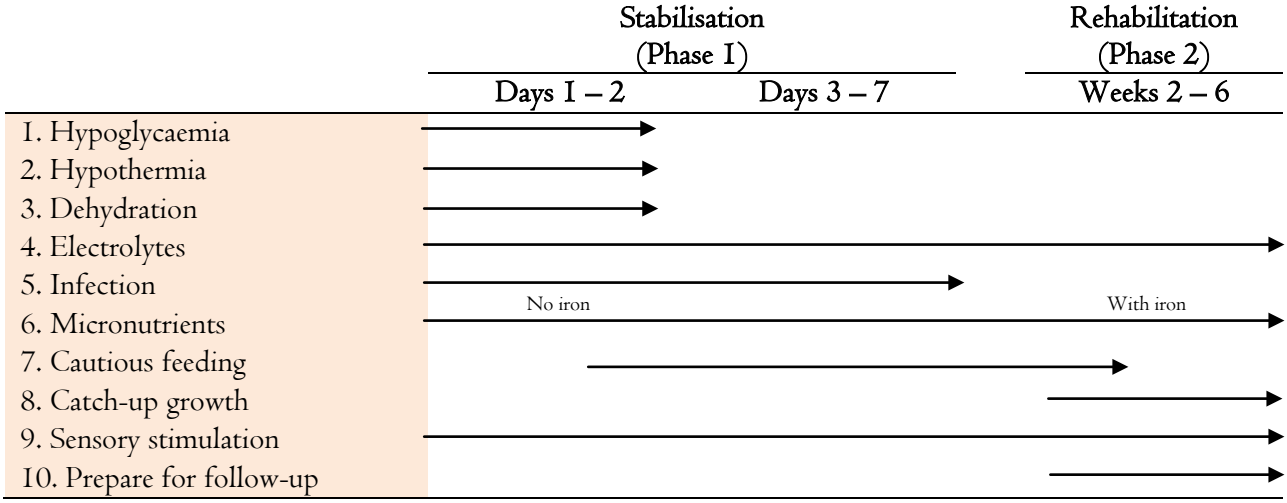
- Referred from outpatient care according to action protocol
- Referred from general paediatrics ward

Infants > 6 months and < 4.0 kg will follow the treatment protocol as infants with SAM < 6 months (see **Chapter V**).

4.2 Admission Procedure

- Admissions to inpatient care are triaged and the most urgent cases treated first. When first seen, the child should undergo a nutrition and medical assessment (see **Annex 6. Checklist for Medical History and Physical Examination**), and a decision should be made on the treatment to be given.
- Ten percent sugar-water or F75 (5 ml/kg) is offered soon after arrival to prevent the risk of or to treat hypoglycaemia.
- Treatment should start immediately after the medical history is taken and the physical examination completed.
- Explain to the caregiver the reasons for admission and the procedures that will be followed.
- Complete the inpatient care treatment card (the Critical Care Pathway [CCP]). Record the child's details in the registration book. Use the standard registration numbering system.
- If the child was admitted through outpatient care but referred directly to inpatient care, a referral note or the child health record should be filled out indicating the anthropometry, medical assessment outcome, criteria for referral and start of treatment.
- The caregiver should receive counselling, including on the treatment of the child, breastfeeding and good hygiene practices.
- Children in the stabilisation phase and their caregivers should be physically separated from children in the transition and rehabilitation phases and from children with other diseases.

Figure 3. Timeframe for the Management of SAM in Children (WHO 2003)



4.3 Stabilisation Phase

4.3.1 STEP 1: TREAT/PREVENT HYPOGLYCAEMIA

Hypoglycaemia and hypothermia usually occur together and are signs of infection. Check for hypoglycaemia whenever hypothermia (axillary temperature < 35.0° C; rectal temperature < 35.5° C) is found. Frequent feeding is important in preventing both conditions.

Treatment

If the child is conscious and Dextrostix shows < 3 mmol/L or 54 mg/dl, give:

- 50 ml of 10 percent glucose or 10 percent sucrose solution (one rounded teaspoon of sugar in 3

tablespoons water) orally or by nasogastric tube (NGT), then feed F75 (see **Step 7: Start Cautious Feeding**) every 30 minutes for two hours, giving one-quarter of the two-hour feed each time
- Antibiotics (see **Step 5: Treat/Prevent Infection**)
- Two-hourly feeds, day and night (see **Step 7: Start Cautious Feeding**)

If the child is unconscious, lethargic or convulsing, give:
- Intravenous (IV) sterile 10 percent glucose solution (5 ml/kg of body weight), followed by 50 ml of 10 percent glucose or sucrose solution by NGT, then give F75 as above
- Antibiotics
- Two-hourly feeds, day and night

Monitor

- Blood glucose:
  - If this is low, repeat Dextrostix, taking blood from finger or heel, after two hours; once treated, most children stabilise within 30 minutes
  - If blood glucose falls to < 3 mmol/L, give a further 50 ml of 10 percent glucose or sucrose solution and continue feeding every 30 minutes until stable
- Rectal temperature: If this falls to < 35.5° C, repeat Dextrostix
- Level of consciousness: If this deteriorates, repeat Dextrostix

Prevention

- Give two-hourly feeds, start straightaway (see **Step 7: Start Cautious Feeding**) or rehydrate first if necessary.
- Always give feeds throughout the day and night.

Note: If you are unable to test the blood glucose level, assume all severely acutely malnourished children are hypoglycaemic and treat accordingly.

4.3.2 STEP 2: TREAT/PREVENT HYPOTHERMIA

Treatment

If the axillary temperature is < 35.0° C, take the rectal temperature using a low-reading thermometer. If the rectal temperature is < 35.5° C:
- Feed straightaway (or start rehydration if needed).
- Re-warm the child: Either clothe the child (including head), cover with a warmed blanket and place a heater or lamp nearby (do not use a hot water bottle), or put the child on the mother's bare chest (skin to skin) and cover both of them.
- Give antibiotics (see **Step 5: Treat/Prevent Infection**).

Monitor

- Body temperature: During re-warming take rectal temperature two-hourly until it rises to > 36.5° C (take half-hourly if heater is used).
- Ensure the child is covered at all times, especially at night.
- Feel for warmth.

- Blood glucose level: Check for hypoglycaemia whenever hypothermia is found.

Prevention

- Give two-hourly feeds, start straightaway (see **Step 7: Start Cautious Feeding**).
- Always give feeds throughout the day and night.
- Keep the child covered and away from draughts.
- The health care provider or caregiver should warm his/her hands before touching the child.
- Keep the child dry; change wet nappies, clothes and bedding.
- Avoid exposure (e.g., bathing, prolonged medical examinations).
- Let child sleep with mother/caregiver at night for warmth.
- Maintain room temperature 25° C to 36.5° C (77° F to 86° F).

Note: If a low-reading thermometer is unavailable and the child's temperature is too low to register on an ordinary thermometer, assume the child has hypothermia.

4.3.3 STEP 3: TREAT/PREVENT DEHYDRATION

Note: Low blood volume can coexist with oedema. Do not use the IV route for rehydration except in cases of shock and then do so with care, infusing slowly to avoid flooding the circulation and overloading the heart.

Treatment

The standard oral rehydration solution (ORS) (90 mmol sodium/L) or low osmolarity ORS (75mmol sodium/L) contains too much sodium and too little potassium for children with SAM. Instead, give special Rehydration Solution for Malnutrition (ReSoMal) (see **Annex 12. Alternate Recipes for F75, F100 and ReSoMal Using CMV** for the recipe). It is difficult to estimate dehydration status in a child with SAM using clinical signs alone. Therefore, assume that all children with watery diarrhoea may have dehydration and give ReSoMal 5 ml/kg every 30 minutes for two hours, orally or by NGT, then ReSoMal 5-10 ml/kg/hour for the next four to 10 hours. The exact amount to be given should be determined by how much the child wants, stool loss and vomiting.

In Case of Bilateral Pitting Oedema

Replace the ReSoMal doses at four, six, eight and 10 hours with F75 if rehydration is continuing at these times, then continue feeding F75 (see **Step 7: Start Cautious Feeding**).

During treatment, rapid respiration and pulse rates should slow down and the child should begin to pass urine.

Monitor the Progress of Rehydration

Observe the child every 30 minutes for two hours, then hourly for the next six to 12 hours, recording:

- Pulse rate
- Respiratory rate
- Urine frequency
- Stool/vomit frequency

Return of tears, moist mouth, eyes and fontanel appearing less sunken, and improved skin turgor[10] are also signs that rehydration is proceeding. It should be noted that many children with SAM will not show these changes even when fully rehydrated. Continued rapid breathing and pulse during rehydration suggest coexisting infection or overhydration. Signs of excess fluid (overhydration) are increasing respiratory and pulse rates, increasing oedema and puffy eyelids. If these signs occur, stop fluids immediately and reassess after one hour.

Prevention

To prevent dehydration when a child has continuing watery diarrhoea:

- Keep feeding with F75 (see **Step 7: Start Cautious Feeding**).
- Replace the approximate volume of stool losses with ReSoMal. As a guide, give 50-100 ml after each watery stool.
  (**Note**: It is common for severely acutely malnourished children to pass many small unformed stools. These should not be confused with profuse watery stools and do not require fluid replacement.)
- If the child is breastfed, encourage the caregiver to continue.

4.3.4 STEP 4: CORRECT ELECTROLYTE IMBALANCE

All severely acutely malnourished children have excess body sodium even though plasma sodium might be low (giving high sodium loads will kill). Potassium and magnesium deficiencies are also present and might take at least two weeks to correct. Oedema is partly due to these imbalances. Do NOT treat oedema with a diuretic.

Give:

- Extra potassium (3-4 mmol/kg/day)
- Extra magnesium (0.4-0.6 mmol/kg/day)
- Low sodium rehydration fluid (e.g., ReSoMal) when rehydrating
- Food prepared without salt

The extra potassium and magnesium can be prepared in a liquid form and added directly to feeds during preparation. When the combined mineral and vitamin mix (CMV) for SAM is available commercially, the CMV replaces the electrolyte/mineral solution and multivitamin and folic acid supplements mentioned above (see **Annex 12. Alternative Recipes for F75, F100 and ReSoMal Using CMV**). However, a large single dose of vitamin A and folic acid on Day 1 and iron daily after weight gain has started should still be given.

4.3.5 STEP 5: TREAT/PREVENT INFECTION

In SAM, the usual signs of infection, such as fever, are often absent and infections are often hidden. Therefore give routinely on admission:

- Broad-spectrum antibiotic(s) and
- Measles vaccine if the child is over six months and not immunised (delay if the child is in shock and there is bilateral pitting oedema)

Note: Some experts routinely give, in addition to broad-spectrum antibiotics, metronidazole (7.5

[10] Skin turgor is a sign commonly used by health workers to assess the degree of fluid loss or dehydration.

mg/kg eight-hourly for seven days) to hasten repair of the intestinal mucosa and reduce the risk of oxidative damage and systemic infection arising from the overgrowth of anaerobic bacteria in the small intestine.

Choice of broad-spectrum antibiotics (see **Annex 9. Drug Doses**):

- If the child appears to have no complications, give oral amoxicillin for five to seven days according to the national protocol.
- If the child is severely ill (apathetic, lethargic) or has medical complications (hypoglycaemia, hypothermia, skin lesions, respiratory tract or urinary tract infection) give:
    - Ampicillin 50 mg/kg intramuscular (IM)/IV six-hourly for two days, then oral amoxicillin 15 mg/kg eight-hourly for five days or, if amoxicillin is not available, continue with ampicillin but give orally 50 mg/kg six-hourly

  And
    - Gentamicin 7.5 mg/kg IM/IV once daily for seven days
- If the child fails to improve clinically within 48 hours, add chloramphenicol 25 mg/kg IM/IV eight-hourly for five days.

Where specific infections are identified, add:

- Specific antibiotics if appropriate
- Antimalarial treatment if the child has a positive blood film for malaria parasites

If anorexia persists after five days of antibiotic treatment, complete a full 10-day course. If anorexia still persists, reassess the child fully, checking for infection and potentially resistant organisms, and ensure that vitamin and mineral supplements have been correctly given.

4.3.6 STEP 6: CORRECT MICRONUTRIENT DEFICIENCIES

All children with SAM have vitamin and mineral deficiencies. Although anaemia is common, iron should not be given until the child has a good appetite and starts gaining weight (usually by the second week in outpatient care), as giving iron can make infections worse. Make sure the child is tested and treated for malaria before providing iron.

For children who show signs of deficiency, provide vitamin A orally on Day 1 (for age > 12 months, give 200,000 IU; for age 6-12 months, give 100,000 IU; for age 0-5 months, give 50,000 IU) unless there is definite evidence that a dose has been given in the past month. If bilateral pitting oedema is present, provision of vitamin A is delayed until the oedema is resolved.

Give the following daily:

- Multivitamin supplement
- Folic acid 1 mg/day (give 5 mg on Day 1)
- Zinc 2 mg/kg/day
- Copper 0.3 mg/kg/day
- Iron 3 mg/kg/day but only when the child starts gaining weight and is tested and treated for malaria; iron supplementation is not needed if the child consumes RUTF

Adding a half levelled scoop of CMV to 1 L of feed will supply the zinc and copper needed, as well as potassium and magnesium. **Annex 12. Alternative Recipes for F75, F100 and ReSoMal Using CMV**.

Note: When CMV for SAM is available commercially, it replaces the electrolyte/mineral solution and multivitamin and folic acid supplements mentioned in **Step 4 correct electrolyte imbalance**

and step 6, correct micronutrient deficiencies, but the large single dose of vitamin A and folic acid on Day 1 and iron daily after weight gain has started should still be given.

4.3.7 STEP 7: START CAUTIOUS FEEDING

A cautious approach is required in the inpatient phase because of the child's fragile physiological state and reduced homeostatic capacity. Feeding should be started as soon as possible after admission and should be designed to provide just sufficient energy and protein to maintain basic physiological processes.

The essential features of feeding in the inpatient phase are:

- Small, frequent feeds of low osmolarity and low lactose
- Oral or nasogastric feeds (never parenteral preparations)
- 100 kcal/kg/day, 1-1.5 g protein/kg/day
- 130 ml/kg/day of fluid (100 ml/kg/day if the child has severe oedema) (**Tables 7** and **8** provide look-up tables for volumes of F75.) If the child is breastfed, encourage continued breastfeeding but give the prescribed amounts of F75 following breastfeeding to make sure the child's needs are met.

The suggested therapeutic diet and feeding schedules (see sub-sections below) are designed to meet the daily requirements for the child. Milk-based diets, such as F75, containing 75 kcal/100 ml and 0.9 g protein/100 ml, are satisfactory for most children. Give milk from a cup. Very weak children may be fed by spoon, dropper or syringe.

For children with a good appetite and no oedema, the stabilisation phase can be completed in two to three days. **Tables 7** and **8** show the volume/feed already calculated according to body weight. Use the Day 1 weight to calculate how much to give, even if the child loses or gains weight in this phase.

During the stabilisation phase, feeds should be provided at least every three hours (eight feeds per day) to prevent hypoglycaemia. It is important that feeds be provided to the child during the day and night. Breastfed children should be offered breast milk on demand before being fed F75.

Table 7. Stabilisation Phase Look-Up Tables for Volume of F75 for Persons With Severe Wasting ("Marasmus") of Different Weights

Weight of child (kg)	Volume of F75 per feed (ml)[a]			Daily total (130 ml/kg)	80% of daily total[a] (minimum)
	Every 2 hours [b] (12 feeds)	Every 3 hours [c] (8 feeds)	Every 4 hours (6 feeds)		
2.0	20	30	45	260	210
2.2	25	35	50	286	230
2.4	25	40	55	312	250
2.6	30	45	55	338	265
2.8	30	45	60	364	290
3.0	35	50	65	390	310
3.2	35	55	70	416	335
3.4	35	55	75	442	355
3.6	40	60	80	468	375
3.8	40	60	85	494	395
4.0	45	65	90	520	415
4.2	45	70	90	546	435
4.4	50	70	95	572	460
4.6	50	75	100	598	480
4.8	55	80	105	624	500
5.0	55	80	110	650	520
5.2	55	85	115	676	540
5.4	60	90	120	702	560
5.6	60	90	125	728	580
5.8	65	95	130	754	605
6.0	65	100	130	780	625
6.2	70	100	135	806	645
6.4	70	105	140	832	665
6.6	75	110	145	858	685
6.8	75	110	150	884	705
7.0	75	115	155	910	730
7.2	80	120	160	936	750
7.4	80	120	160	962	770
7.6	85	125	165	988	790
7.8	85	130	170	1,014	810
8.0	90	130	175	1,040	830
8.2	90	135	180	1,066	855
8.4	90	140	185	1,092	875
8.6	95	140	190	1,118	895
8.8	95	145	195	1,144	915
9.0	100	145	200	1,170	935
9.2	100	150	200	1,196	960
9.4	105	155	205	1,222	980
9.6	105	155	210	1,248	1,000
9.8	110	160	215	1,274	1,020
10.0	110	160	220	1,300	1,040

[a] Volumes in these columns are rounded to the nearest 5 ml.

[b] Give two-hourly feeds for at least the first day. When there is little or no vomiting, diarrhoea is modest (< 5 watery stools per day) and the child is finishing most feeds, change to three-hourly feeds.

[c] After a day on three-hourly feeds, if there is no vomiting, less diarrhoea and the child is finishing most feeds, change to four-hourly feeds.

Table 8. Stabilisation Phase Look-Up Tables for Volume of F75 for Persons With Severe Bilateral Pitting Oedema ("Kwashiorkor") (+++)

Weight with +++ oedema (kg)	Volume of F75 per feed (ml) [a]			Daily total (100 ml/kg)	80% of daily total (minimum)
	Every 2 hours [b] (12 feeds)	Every 3 hours [c] (8 feeds)	Every 4 hours (6 feeds)		
3.0	25	40	50	300	240
3.2	25	40	55	320	255
3.4	30	45	60	340	270
3.6	30	45	60	360	290
3.8	30	50	65	380	305
4.0	35	50	65	400	320
4.2	35	55	70	420	335
4.4	35	55	75	440	350
4.6	40	60	75	460	370
4.8	40	60	80	480	385
5.0	40	65	85	500	400
5.2	45	65	85	520	415
5.4	45	70	90	540	430
5.6	45	70	95	560	450
5.8	50	75	95	580	465
6.0	50	75	100	600	480
6.2	50	80	105	620	495
6.4	55	80	105	640	510
6.6	55	85	110	660	530
6.8	55	85	115	680	545
7.0	60	90	115	700	560
7.2	60	90	120	720	575
7.4	60	95	125	740	590
7.6	65	95	125	760	610
7.8	65	100	130	780	625
8.0	65	100	135	800	640
8.2	70	105	135	820	655
8.4	70	105	140	840	670
8.6	70	110	145	860	690
8.8	75	110	145	880	705
9.0	75	115	150	900	720
9.2	75	115	155	920	735
9.4	80	120	155	940	750
9.6	80	120	160	960	770
9.8	80	125	165	980	785
10.0	85	125	165	1,000	800
10.2	85	130	170	1,020	815
10.4	85	130	175	1,040	830
10.6	90	135	175	1,060	850
10.8	90	135	180	1,080	865
11.0	90	140	185	1,100	880
11.2	95	140	185	1,120	895
11.4	95	145	190	1,140	910
11.6	95	145	195	1,160	930
11.8	100	150	195	1,180	945
12.0	100	150	200	1,200	960

[a] Volumes in these columns are rounded to the nearest 5 ml.

[b] Give two-hourly for at least the first day. When there is little or no vomiting, diarrhoea is modest (< 5 watery stools per day) and the child is finishing most feeds, change to three-hourly feeds.

[c] After a day on three-hourly feeds, if there is no vomiting, less diarrhoea and the child is finishing most feeds, change to four-hourly feeds.

Feed Preparation

- For a large number of children:
  Add one packet of F75 to 2 L of water. The water needs to be boiled and cooled prior to mixing.
- For few children:
  Smaller volumes can be prepared by measuring small amounts of F75 using the red scoop. Add 20 ml boiled and cooled water per one red scoop of F75 powder.

If pre-packaged F75 is not available, use one of the recipes to prepare F75 using locally available ingredients and (imported) CMV (see **Annex 12. Alternative Recipes for F75, F100 and ReSoMal Using CMV**).

Feeding Procedure

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

BOX 13. REASONS FOR USING AN NG TUBE TO FEED THE CHILD DURING STABILISATION

An NG tube should be used if the child:

- Takes less than 80 percent of the prescribed diet per 24 hours during stabilisation
- Has pneumonia (rapid respiration rate) and difficulty swallowing
- Has painful lesions/ulcers of the mouth
- Has a cleft palate or other physical deformity
- Is very weak and shows difficulty remaining conscious

Feeding Technique

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

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

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

The meals for the caregivers should be organised by the health facility. The caregivers' meals should never be taken beside the child. Sharing of the meal with the child can be dangerous given their delicate pathophysiology. If the caregiver's meal has added salt or condiments, it can be sufficient to provoke heart failure in children with SAM.

4.3.8 MONITORING DURING THE STABILISATION PHASE

Individual monitoring of children with SAM in the stabilisation phase should be done continuously. Based on improvement in the child's condition, a decision can be made on progression to the next phase of treatment. The following parameters should be monitored daily:

- Weight is measured at the same time (before or after feeds), and entered and plotted on the inpatient treatment card (the CCP).
- The degree of oedema (0, +, ++, +++) is assessed.
- Body temperature, pulse and respiration is measured every four hours.
- Standard clinical signs (stool, vomiting, dehydration, cough) are monitored, and skin condition and peri-anal lesions are assessed and noted on the CCP.
- MUAC is taken upon admission and thereafter on each seventh day.
- A record is taken (on the24 hour food intake form) if the patient is absent, vomits or refuses a feed, and whether the patient is fed by NG tube or is given an IV infusion or transfusion. There are appropriate places for these to be recorded each day.

During the inpatient phase, diarrhoea should gradually diminish, and children with bilateral pitting oedema should start losing weight. If diarrhoea continues despite cautious re-feeding or worsens substantially, re-evaluate the child.

4.3.9 CRITERIA TO PROGRESS FROM THE STABILISATION PHASE TO THE TRANSITION PHASE

- The appetite has returned (the child easily finishes all F75 milk during three-hourly feeds).
- Bilateral pitting oedema is resolving (accompanied by weight loss).
- No serious medical problems, such as vomiting, watery diarrhoea, dehydration, naso gastric feeding, respiratory distress or any complication that requires IV infusion, are present.

4.4 Transition Phase

4.4.1 TRANSITION USING RUTF

The transition phase prepares the child for outpatient care and can last up to three days. RUTF is gradually introduced in this phase. The acceptability of RUTF is tested by offering it to the child at every feeding. When the child eats at least 75 percent of the required amount of RUTF, then the child is ready for discharge to outpatient care to continue treatment.

Once the child can meet his/her nutritional needs on RUTF alone, has regained appetite and the medical complications are resolving, he/she will be ready for referral to outpatient care and continue treatment at home. Before referring the child to outpatient care, he/she should be observed for at least 24 hours eating RUTF to ensure he/she does not develop complications. The child should start gaining weight. If a child's medical condition requires referral to another medical facility, he/she should continue his/her nutritional treatment there. A supply of RUTF is provided.

Medical Treatment During Transition

If routine medicines and supplements are provided, follow the schedule as described in outpatient care. Routine antibiotic therapy should be continued for four more days after stabilisation. If a child has to complete his/her antibiotic schedule while in outpatient care, then this should be noted on the child's referral from inpatient to outpatient care card, which will be used to continue treatment in outpatient care.

Dietary Treatment During Transition

Mixed feeds are introduced during the transition phase. Gradual introduction of RUTF is promoted as soon as appetite has returned. Some children might initially refuse the RUTF; continue to offer RUTF at every feed until they eat the full diet.

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

Table 9. Look-Up Table for Amounts of RUTF to Give to a Child per Day Based on 92 g Packets Containing 500 kcal

Weight of the Child (kg)	Packets per day (200 kcal/kg bodyweight/day)	75% of daily prescribed amount (150 kcal/kg bodyweight/day)
3.5 – 3.9	1 ½	1 ¼
4.0 – 4.9	2	1 ½
5.0 – 6.9	2 ½	2 ¼
7.0 – 8.4	3	2 ½
8.5 – 9.4	3 ½	2 ¾
9.5 – 10.4	4	3 ¼
10.5 – 11.9	4 ½	3 ½
≥12	5	4

RUTF Quantities

- RUTF look-up tables provide RUTF quantities of the individual child per day according to the child's weight.
- A full day's amount of RUTF is given to the caregiver and the amount taken should be checked five times during the day.
- When the child is taking more than 75 percent of the daily prescribed amount of RUTF, he/she should be referred to outpatient care and continue treatment at home (see **Section 4.4.3**).

Feeding Procedure

- Provide the RUTF to the caregiver to feed the child.
- The caregiver should be encouraged to provide small, frequent RUTF feeds every four hours (five to six times per day).
- Breastfed children should be offered breast milk on demand before being fed RUTF.
- Children should be offered as much water to drink as they will take during feed and after they have taken some of the RUTF.

4.4.2 TRANSITION FOR SPECIAL CASES (CHILDREN WHO CANNOT CONSUME RUTF)

In rare cases, some children will not consume RUTF. In these circumstances, children should be put on F100 according to the 1999 WHO treatment protocol.

Quantities of F100 for Children Who Do Not Take RUTF

- The volume of feeds remains the same as in the stabilisation phase.
- Give 130 ml of F100 (150 kcal) per kg bodyweight per day.
- Use the F100 look-up table (**Table 10**) for the volume of F100 to give per feeding according to the child's bodyweight.

Feed Preparation of F100

- For a large number of children:
  Add one packet of F100 to 2 L of water (the water needs to be boiled and cooled prior to mixing).
- For few children:
  Smaller volumes can be prepared by measuring small amounts of F100 using the red scoop (add 18 ml water per red scoop of F100 powder).

If pre-packaged F100 is not available, use one of the recipes given (see **Annex 12. Alternative Recipes for F75, F100 and ReSoMal Using CMV**) to prepare F100 using locally available ingredients and CMV.

Feeding Procedure

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

4.4.3 MONITORING DURING THE TRANSITION PHASE

In the transition phase, individual monitoring of severely malnourished children is done daily. Based on improvements in the child's condition, a decision should be made on progression to the next phase: referral to outpatient care to continue rehabilitation or maintenance in inpatient care until full recovery. Patients with bilateral pitting oedema (kwashiorkor) should remain in the transition phase until there is a definite and steady reduction in oedema.

The following parameters should be monitored daily and entered on the inpatient treatment card [Critical Care Pathway (CCP)]:

- Weight
- Degree of oedema (0 to +++)
- Body temperature, pulse and respiration
- Standard clinical signs; stool, vomiting, dehydration, cough, respiration and liver size
- MUAC is taken each week
- Other record: e.g., absent, vomits, refuses a feed

- Mood or smile

4.4.4 PROGRESSION FROM THE TRANSITION PHASE

Recovering children 6-59 months can progress to outpatient care. Very few remain in inpatient care, only those who cannot eat RUTF. Infants under six months will remain in inpatient care until full recovery. Children with problems are returned to the stabilisation phase.

Criteria to Progress from the Transition Phase to the Rehabilitation Phase

From the Transition Phase to Outpatient Care

- A good appetite: The child passes the appetite test and takes more than 75 percent of the daily RUTF ration
- Oedema reducing to moderate (+ +) or mild (+)
- Resolving medical complication
- Clinically well and alert

From the Transition Phase to the Rehabilitation Phase in Inpatient Care (for the Very Few Exceptions Who Cannot Transition to RUTF)

- A good appetite: The child takes at least all of the F100 prescribed for the transition phase (150 kcal/kg/day)
- Oedema reducing to moderate (+ +) or mild (+)
- Resolving medical complication
- Clinically well and alert

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

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

- Weight gain of more than 10 g/kg/day in association with an increase in respiratory rate: this is indicative of excess fluid retention
- Increasing or developing oedema
- Rapid increase in the size of the liver
- Any signs of fluid overload
- Tense abdominal distension
- Significant refeeding diarrhoea leading to weight loss
  Note: It is common for children to have some change in stool frequency when they change diet. This does not need to be treated unless the children lose weight. Having several loose stools without weight loss is **not** a criterion to move back to the stabilisation phase.
- A complication that necessitates an intravenous infusion
- A need for feeding by NG tube

4.5. Rehabilitation Phase (Catch-Up Growth)

4.5.1 PREPARE FOR FOLLOW-UP OF CHILDREN IN OUTPATIENT CARE

Some children progressing from the transition phase will still require inpatient care and should be moved to the inpatient rehabilitation phase. This phase is associated with full recovery and rapid catch-up of lost weight.
Children progressing to the rehabilitation phase who are on an RUTF diet can be discharged from inpatient care to outpatient care and monitored weekly in the outpatient department of the same health facility if there is no possibility to refer the child to a health facility with outpatient care in or close to his/her community. (**Chapter III. Outpatient Care for the Management of SAM Without Medical Complications** provides details on weekly and biweekly monitoring.)

4.5.2 MEDICAL TREATMENT

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

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

Routine medicines (See **Section III, Step 5: Routine Medications in Outpatient Care** and **Annex 7. Routine Medicines Protocols**):

- De-worming medicine (anti-helminth) if the child is more than 24 months (two years)
- Measles vaccination at week four
- If the child is rehabilitating on F100: Iron sulphate is added to F100 (one crushed tablet – 200 mg of iron sulphate – is added to 2-2.4 L of F100) or provide daily doses of Iron syrup orally
- If the child is on RUTF: Do not give additional iron as it already contains the necessary iron.

Table 10. Doses of iron syrup if F100 is used during rehabilitation (catch up growth)

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

Note that the amounts in the above dosages are very small (less than ¼ teaspoon) and will need to be measured with a syringe

4.5.3 DIETARY TREATMENT

- Children who are not taking RUTF as inpatients are fed F100.
- Provide F100 according to child's bodyweight.
- Give four-hourly feeds of F100 per day.
- Breastfed children over 6 months old should be offered breast milk on demand before being fed F100.

- **Note**: Children weighing less than 4 kg must be given F100-Diluted. They should never be given full-strength F100. (See regimen in **Chapter V. Inpatient Care for the Management of SAM in Infants 0-6 Months Old**.)

Quantities of F100

- Give 200 ml of F100 (200 kcal) per kg bodyweight per day.
- Use the look-up tables (**Table 11**) for the volume of F100 to give per feed in the inpatient rehabilitation phase according to child's bodyweight.

Table 11. Inpatient Rehabilitation Phase Look-Up Table for Quantity of F100 to Give to an Individual Child per Feed

Weight of child (kg)	Range of volumes per three-hourly feed of F-100 (8 feeds daily) *		Range of volumes per four-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	1,012
4.8	90	130	120	175	720	1,056
5.0	95	140	125	185	750	1,100
5.2	100	145	130	190	780	1,144
5.4	100	150	135	200	810	1,188
5.6	105	155	140	205	840	1,232
5.8	110	160	145	215	870	1,276
6.0	115	165	150	220	900	1,320
6.2	115	170	155	230	930	1,364
6.4	120	175	160	235	960	1,408
6.6	125	180	165	240	990	1,452
6.8	130	180	170	250	1,020	1,496
7.0	130	195	175	255	1,050	1,540
7.2	135	200	180	265	1,080	1,588
7.4	140	205	185	270	1,110	1,628
7.6	145	210	190	280	1,140	1,672
7.8	145	215	195	285	1,170	1,716
8.0	150	220	200	295	1,200	1,760
8.2	155	225	205	300	1,230	1,804
8.4	158	230	210	310	1,260	1,848
8.6	160	235	215	315	1,290	1,892
8.8	165	240	220	325	1,320	1,936
9.0	170	250	225	330	1,350	1,980
9.2	175	255	230	335	1,380	2,024
9.4	175	260	235	345	1,410	2,068
9.6	145	265	240	350	1,140	2,112
9.8	185	270	245	360	1,470	2,156
10.0	190	275	250	365	1,500	2,200

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

Preparation of F100

- For a large number of children:
  Add one packet of F100 to 2 L of water (the water needs to be boiled and cooled prior to mixing).
- For a small number of children:
  Smaller volumes can be prepared by measuring small amounts of F100 using the red scoop (add 18 ml water per one red scoop of F100 powder).

If pre-packaged F100 is not available, use one of the recipes given (see **Annex 12. Alternative Recipes for F75, F100 and ReSoMal Using CMV**) to prepare F100 using locally available ingredients and CMV.

Feeding Procedure

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

4.5.4 INDIVIDUAL MONITORING

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

- Weight
- Degree of oedema (0 to +++)
- Body temperature, respiration and pulse
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration
- MUAC each week
- Other records, e.g., absent, vomits, refuses a feed
- A full medical examination is done every two days

4.5.5 CRITERIA TO MOVE BACK FROM THE REHABILITATION PHASE TO THE STABILISATION PHASE IN INPATIENT CARE

If a child develops any signs of a medical complication while receiving treatment in outpatient care, he/she should be referred back to the stabilisation phase in the inpatient care facility. Routine drugs are individually prescribed depending on what has already been given and the cause of the referral (see **Annex 15. Outpatient Care Action Protocol**).

4.5.6 PROGRESSION FROM THE REHABILITATION PHASE TO DISCHARGE

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

4.6 Provide Sensory Stimulation and Emotional Support

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

Provide:

- Tender loving care
- A cheerful, stimulating environment
- Structured play therapy for 15-30 minutes per day (See **Annex 18. Play and Stimulation**)
- Maternal involvement when possible for, e.g., comforting, feeding, bathing, play

4.7 Failure to Respond to Treatment in Inpatient Care

Some children undergoing inpatient care might show failure to respond to treatment or exhibit deterioration in their condition at different stages of the treatment. The most frequent causes of failure to respond to inpatient treatment are listed in **Box 14**. Failure to achieve initial improvement at the expected rate is termed **primary failure to respond to treatment**. Primary failure to respond can be attributed to unrecognised infection or drug-resistant infections such as bacterial (TB), viral (measles, hepatitis B, HIV) or parasitic (malaria) infections. On the other hand, deterioration in a child's condition when a satisfactory response has been established is termed **secondary failure to respond to treatment**. Secondary failure might be due to acute infection contracted during inpatient care, reactivation of infection as immune and inflammatory responses recover, as well as insufficiency in essential nutrients in the diet provided to the child.

Table 12. Criteria for Failure to Respond to Treatment

Criteria	Time after admission
Primary failure to respond	
Failure to regain appetite	Day 4 – 7
Failure to start to lose oedema	Day 4 – 7
Oedema still present	Day 10
Failure to gain at least 5 g/kg bodyweight	Day 10
Secondary failure to respond	
Failure to gain at least 5 g/kg bodyweight/day for 3 successive days	During inpatient care - rehabilitation phase

A child undergoing treatment for SAM and who meets any of the above criteria should be diagnosed as failing to respond to treatment. When such a diagnosis is made, it is essential that an extensive medical evaluation of the child be carried out (i.e., medical history, physical examination, laboratory investigations of urine and stool samples). Overall case-management practices of these children should be reviewed (e.g., evaluation of adherence to treatment protocol, availability of trained staff).

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

Frequent Causes of Failure to Respond

The most frequent causes of failure to respond to inpatient treatment are listed in **Box 14**.

BOX 14. FREQUENT CAUSES OF FAILURE TO RESPOND TO INPATIENT TREATMENT

Problems related to the health facility:

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

Problems related to the individual child:

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

Care for Children Failing to Respond to SAM Treatment

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

Primary Failure to Respond

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

- Examine the child carefully. Measure the temperature, pulse rate and respiration rate.
- Where appropriate, examine urine for pus cells and culture blood. Examine and culture sputum or tracheal aspirate for TB, examine the fundi for retinal TB and do a chest x-ray.[11] Examine stool for blood and look for trophozoites or cysts of Giardia. Culture stool for bacterial pathogens. Test for HIV, hepatitis and malaria. Culture and examine the cerebrospinal fluid.

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

Secondary Failure to Respond

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

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

Action Required When a Child Fails to Respond to Treatment

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

4.8 Criteria for Discharge from Inpatient Care After Full Recovery

Children who meet the discharge criteria (see **Box 15**) are discharged as cured.

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

- Died while in treatment.
- Defaulted (absent on the third consecutive follow-up visit in outpatient care).
- Did not recover or did not meet the discharge criteria after four months (16 weeks) in treatment

It is recommended that the following steps be considered at discharge:

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

BOX 15. DISCHARGE CRITERIA FROM INPATIENT CARE

1. Discharged and Referred to Outpatient Care

Appetite returned (passed appetite test for RUTF – the child is eating more than 75 percent of daily prescription of RUTF) and start of weight gain
And
Medical complication resolving
And
Bilateral pitting oedema decreasing
(If marasmic kwashiorkor admission: bilateral pitting oedema resolved)
And
Clinically well and alert

2. Discharged from Inpatient Care After Rehabilitation Phase (full recovery in inpatient care)

- 15 percent weight gain for two consecutive weeks
- No bilateral pitting oedema for two consecutive weeks
- Clinically well and alert

4.9 Discharge Procedures

The following should be addressed before the child is discharged:

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

The child's outcome status is classified per exit category and is indicated on the treatment card.

Table 13. Inpatient Care Exit Categories

Category	Definition
Discharged Cured	Child 6-59 months who is discharged after rehabilitating in inpatient care Infant 0-6 months who meets inpatient care discharge criteria
Referred to Outpatient Care	Child's health condition is improving/stabilised and is referred to outpatient care to continue treatment
Died	Child dies while in inpatient care
Defaulted	Absence from inpatient care for three consecutive follow-up visits in outpatient care
Non-Recovered	Child does not reach discharge criteria after four months (16 weeks) in treatment (medical investigation previously done)

CHAPTER V: INPATIENT CARE FOR THE MANAGEMENT OF SAM IN INFANTS 0-6 MONTHS OLD

Treatment for infants 0-6 months with SAM or infants over six months with a weight less than 4.0 kg should be done within the context of infant and young child feeding (IYCF) recommendations.[12] Breastfeeding support is an integral component of therapeutic care for severely malnourished infants. This support includes protection and support for early, exclusive and continued breastfeeding, as well as reducing the risks of **artificial feeding** for non-breastfed infants. Infants who are not breastfed and who are particularly at risk also need to be ensured of protection and support.

Problems related to feeding that lead to SAM in infants include, among other factors:

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

Severely malnourished infants need special care. The main objective of treatment of these infants is to improve or re-establish breastfeeding and provide temporary or longer-term, appropriate therapeutic feeding, as well as provision of nutrition, psychological and medical care for their caregivers. Ideally these infants should be admitted to a separate section, away from where older, severely malnourished, sick children are admitted. Infants 0-6 months with malnutrition should always be treated in inpatient care. RUTF is not suitable for infants 0-6 months as the reflex of swallowing is not yet present.

In this section, guidance is provided on treatment of two categories of children 0-6 months as outlined below:

1. Breastfed infants: Infants 0-6 months with a lactating caregiver
2. Non-breastfed infants: Infants 0- 6 months without the prospect of being breastfed

Infants over six months with a bodyweight less than 4.0 kg will fall in these categories, as well.

[12] As outlined in WHO and UNICEF 2003 and IFE Core Group 2007.

5.1 Breastfed Infants 0-6 Months Who Have a Lactating Mother or Caregiver for Wet Nursing

BOX 16. ADMISSION CRITERIA FOR BREASTFED INFANTS

Breastfed infants 0- 6 months or less than 4.0 kg, if the infant has:
- Bilateral pitting oedema
- Visible wasting

And the infant is:
- Too weak to suckle effectively (independently of weight-for-length), or
- Not gaining weight satisfactorily at home

5.1.1 ROUTINE MEDICINES AND SUPPLEMENTS

Antibiotics

Amoxicillin is provided to infants weighing a minimum 2 kg at a rate of 15 mg/kg three times per day for five days in association with Gentamicin. Do not use chloramphenicol on infants less than two months of age.

Vitamin A

Give 50,000 IU in a single dose upon admission only.

Folic Acid

Give 2.5 mg (½ tablet) in a single dose.

Ferrous Sulphate

Ferrous sulphate is added to F100 (one crushed tablet – 200 mg of ferrous sulphate – is added to 2-2.4 L of F100) before diluting the F100 to make F100- Diluted. Alternatively, provide daily doses of Iron syrup orally; **refer to Table 10 for drug dosages**.

5.1.2 DIETARY TREATMENT

The objective is to supplement the child's breastfeeding with therapeutic milk while stimulating breast milk production.
- The infant should be breastfed as frequently as possible. Breastfeed every three hours for at least 20 minutes (more if the child cries or demands more).
- Between 30 minutes to one hour after a normal breastfeeding session, give maintenance amounts of therapeutic milk.
- Provide F100-Diluted for children without oedema (see **Feed Preparation** below).
- Provide F75 for infants with oedema and change to F100-Diluted when the oedema is resolved.

Quantities of F100-Diluted

- F100-Diluted is given at 130 ml/kg/day, distributed across eight feeds per day (3 hourly feeds).
- Use the look-up tables (**Table 14**) for F100-Diluted maintenance amounts to give to infants during feeding using the supplementary suckling technique (see **Feeding Technique** below). The quantity of F100-Diluted is not increased as the child starts to gain weight.

Table 14. Look-Up Table for Maintenance Amounts of F100-Diluted to Give to an Individual Infant per Feed

Bodyweight (kg)	F100-Diluted per feed if 8 feeds per day (3 hourly feeds)
≥ 1.2	25 ml per feed
1.3 – 1.5	30
1.6 – 1.7	35
1.8 – 2.1	40
2.2 – 2.4	45
2.5 – 2.7	50
2.8 – 2.9	55
3.0 – 3.4	60
3.5 – 3.9	65
4.0 – 4.4	70

Regulation of Amount of F100-Diluted Given

The progress of the infant is monitored by daily weighings.

- If the infant loses weight over three consecutive days but continues to be hungry and is taking all his/her F100-Diluted, add 5 ml extra to each feed.[13]
- In general, supplementation is not increased during the stay in the health facility. If the infant grows regularly with the same quantity of milk, it means the quantity of breast milk is increasing.
- If, after some days, the child does not finish all the supplemental feed but continues to gain weight, it means the intake from breast milk is increasing and the infant is taking adequate quantities to meet his/her requirements.
- The infant should be weighed daily with a scale graduated to within 10 g (or 20 g).

When an infant is gaining weight at a rate of 20 g per day (absolute weight gain):

- Decrease the quantity of F100-Diluted by one-quarter and gradually to one-half of the maintenance intake so that the infant gets more breast milk.
- If the weight gain is maintained, stop supplementary suckling completely.
- If the weight gain is not maintained, increase the amount given to 75 percent of the maintenance amount for two to three days and then reduce it again if weight gain is maintained.
- If the caregiver is agreeable, it is advisable to keep the infant in the centre for a few more days on breast milk alone to make sure that he/she continues to gain weight. If the caregiver wishes to go home as soon as the infant is taking the breast milk with increased demand, they should be discharged and followed at the nearest CWC in the community.

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

Feed Preparation

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

- For a small number of children:
  - Add 35 ml of water to 100 ml of F100 already prepared, which will yield 135 ml of F100-Diluted. Discard any excess milk after use. Do not make smaller quantities.
  - If you need more than 135 ml, add 70 ml of water to 200 ml of F100 to make 270 ml of F100-Diluted and discard any excess milk after use.
  - If pre-packaged F100 is not available, use one of the recipes given (see **Annex 12. Alternative Recipes for F75, F100 and ReSoMal Using CMV**) to prepare F100 using locally available ingredients and CMV. Add 700 ml of water to 2 L of already prepared F100 to make F100-Diluted.

Feeding Procedure

- Ensure good breastfeeding through good attachment and effective suckling. Avoid distractions and let the infant suckle the breast at his/her own speed.
- Build the mother's confidence to help milk flow.
- Encourage more frequent and longer breastfeeding sessions to increase milk production and remove any interference that might disrupt breastfeeding.
- Use the supplementary suckling technique to provide F100-Diluted maintenance amounts.

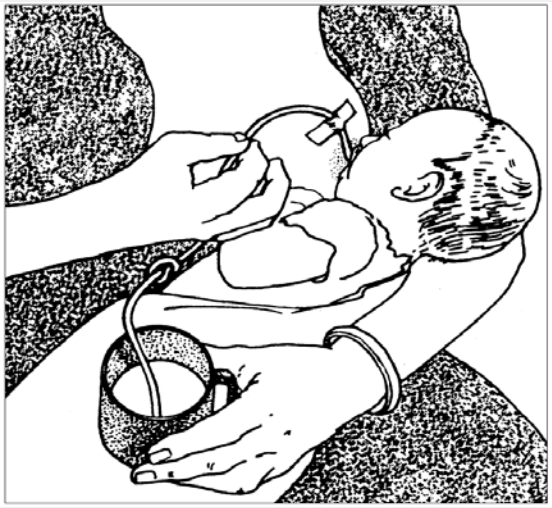
Feed with an NG tube only when the infant is not taking sufficient milk by mouth. The use of an NG tube should not exceed three days and should be used in the stabilisation phase only.

Feeding Technique

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

The steps required in using the supplementary suckling technique are simple. The caregiver holds a cup with the F100-Diluted. The end of an NG tube (size n°8) is put in the cup and the tip of the tube is placed on the breast, at the nipple. The infant is offered the breast with the right attachment. The cup is placed 5-10 cm below the level of the nipple for easy suckling. When the child suckles more strongly, the cup can be lowered to up to 30 cm.

Figure 4. Supplementary Suckling Technique



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

5.1.3 INDIVIDUAL MONITORING

The following parameters are key and should be monitored daily and entered on the inpatient treatment card (CCP):

- Weight
- Degree of oedema (0, +, ++, +++)
- Body temperature, pulse and respiration
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration, liver size
- Any other record, e.g., absent, vomits or refuses a feed, whether the patient is fed by NG tube or is given an IV infusion or transfusion

5.1.4 SUPPORTIVE CARE FOR MOTHERS

Supportive care for breastfeeding should be provided to mothers, especially in very stressful situations. Focus needs to be directed at creating conditions that will facilitate and increase breastfeeding, such as establishing safe "breastfeeding corners" for mothers and infants, one-on-one counselling and mother-to-mother support. Traumatised and depressed women might have difficulty responding to their infants and require mental and emotional support, which should also support an increase in breastfeeding. It is also important to assess the mother's nutritional status (MUAC and oedema). Explanation should be provided to the mother on the different treatment steps her child will go through, and efforts should be made to strengthen the mother's confidence and discourage self-criticism for perceived inability to provide adequate breast milk. Alert the mother of the risk of a new pregnancy during this period.

Adequate Nutrition and Supplementation for Breastfeeding Mothers

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

Dehydration might interfere with breast milk production; therefore it is therefore important to ensure that the mother drinks at least 2 L of water per day.

5.1.5 DISCHARGE CRITERIA

BOX 17. DISCHARGE CRITERIA FOR BREASTFED INFANTS

For a breastfed infant under six months or weighing less than 4.0 kg on admission:

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

Additional recommendations: Mother has been adequately counselled and has received the required amounts of micronutrient supplements during the stay at the health facility and for use at home

5.1.6 FOLLOW-UP AFTER DISCHARGE

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

5.2 Infants 0-6 Months Without the Prospect of Breastfeeding

BOX 18. ADMISSION CRITERIA FOR NON-BREASTFED INFANTS

Non-breastfed infants 0-6 months or non-breastfed infants over six months and weighing less than 4.0 kg:

- Presence of bilateral pitting oedema
- Visible wasting

5.2.1 STABILISATION PHASE

Routine Medicines and Supplements

Antibiotics

Give amoxicillin (for infants weighing a minimum 2 kg) at 15mg/kg three times per day for five days in association with Gentamicin. Do not use chloramphenicol on infants 0-2 months of age.

Vitamin A

Give 50,000 IU in a single dose upon admission only.

Folic Acid

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

Ferrous Sulphate

Ferrous sulphate is added to F100 (one crushed tablet – 200 mg of ferrous sulphate – is added to 2-2.4 L of F100) before diluting the F100 to make F100-Diluted. Alternatively, provide daily doses of Iron syrup orally. **Refer to Table 10 for the dosages of iron syrup**.

Dietary Treatment

- Infants 0-6 months with wasting (marasmus) should be given F100-Diluted in the stabilisation phase. Never provide F100 full-strength.
- Infants 0-6 months with oedema (kwashiorkor) should always be given F75 in the stabilisation phase.

Use the look-up table (**Table 15**) for amounts of F100-Diluted or F75 to give non-breastfed infants in the stabilisation phase.

Table 15. Look-Up Table for Amounts of F100-Diluted (Marasmus) or F75 (Kwashiorkor) to Give to Non-Breastfed Infants in the Stabilisation Phase

Bodyweight (kg)	F100-Diluted or F75 (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

Feed Preparation

- For a large number of children:
  Add a packet of F100 to 2.7 L of water instead of 2 L to make F100-Diluted.
- For a small number of children:
  - Add 35 ml of water to 100 ml of F100 already prepared to make 135 ml of F100-Diluted. Discard any excess milk after use. Do not make smaller quantities.
  - If you need more than 135 ml, use 200 ml of F100 and add 70 ml of water to make 270 ml of F100-Diluted. Discard any excess milk after use.
  - If pre-packaged F100 is not available, use one of the recipes given (see **Annex 12. Alternative Recipes for F75, F100 and ReSoMal Using CMV**) to prepare F100 using locally available ingredients and CMV. Add 700 ml of water to 2 L of prepared F100 to make F100-Diluted.

Feeding Procedure

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

Feeding Technique

Apply the correct feeding technique (see **Feeding Technique** in **Section 4.3.7**). It is important to ensure the infant has adequate intake.

Individual Monitoring

The following parameters should be monitored daily and entered on the inpatient treatment card (CCP):

- Weight
- Degree of oedema (0, +, ++, +++)
- Body temperature, pulse and respiration
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration, liver size
- Any other record, e.g., absent, vomits or refuses a feed, whether the patient is fed by an NG tube or is given IV infusion or transfusion

Criteria to Progress from the Stabilisation Phase to the Transition Phase

The criteria to progress from the stabilisation phase to the transition phase are <u>both</u>:

- Return of appetite
- Beginning of loss of oedema, which is normally judged by an appropriate and proportionate weight loss as the oedema starts to subside (children with severe oedema [+++] should remain in the stabilisation phase until their oedema has reduced to moderate [++], as they are particularly vulnerable)

5.2.2 TRANSITION PHASE

Routine Medicines and Supplements

Routine antibiotic therapy should be continued during transition or until the child is transferred to the rehabilitation phase.

Dietary Treatment

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

- Only F100-Diluted should be used.
- The volume of the F100-Diluted feeds is increased by one-third in comparison with the stabilisation phase.
- Refer to **Table 16** for the amounts of F100-Diluted to give to non-breastfed infants in the transition phase.

Table 16. Look-Up Table for Amounts of F100-Diluted to Give to Non-Breastfed Infants 0-6 Months or Infants Over 6 Months Weighing Less Than 4.0 kg in the Transition Phase

Bodyweight (kg)	F100-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

Individual Monitoring

Continue surveillance as outlined in the stabilisation phase.

Criteria to Progress from the Transition Phase to the Rehabilitation Phase

The criteria to progress from the transition phase to the rehabilitation phase are all of the following:

- A good appetite: Taking at least 90 percent (almost all) of the F100-Diluted prescribed for the transition phase
- Complete loss of oedema (kwashiorkor)
- Minimum stay of two days in the transition phase for wasted patients
- No other medical problem

5.2.3 REHABILITATION PHASE

Dietary Treatment

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

- Only F100-Diluted should be used.
- Infants receive twice the volume per feed of F100-Diluted than was given during the stabilisation phase.
- Refer to **Table 17** for the amounts of F100-Diluted to give to non-breastfed infants in the rehabilitation phase.

Table 17. Look-Up Table for Amounts of F100-Diluted to Give to Non-Breastfed Infants 0-6 Months or Infants Over 6 Months Weighing Less Than 4.0 kg in the Rehabilitation Phase

Bodyweight (kg)	F100-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

Individual Monitoring

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

Criteria for Discharge from the Rehabilitation Phase

BOX 19. DISCHARGE CRITERIA FROM INPATIENT CARE REHABILITATION PHASE FOR NON-BREASTFED INFANTS

Discharge criteria for infants under six months or weighing less than 4.0 kg with no prospect of being breastfed:

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

Other recommendations:

- At discharge, the infant can be switched to infant formula or other breast milk substitutes per the Ghana IYCF recommendations.
- Caregiver should have been provided adequate counselling on care and feeding practices, danger signs and when to return to the health centre, and follow-up

Follow-Up

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

CHAPTER VI: MONITORING AND REPORTING

A well-designed monitoring and reporting (M&R) system is an essential component in the management of SAM. The objective of monitoring is to compare service performance against a set of objectives and to make adjustments to the service or programme based on an analysis of routine data. With well-informed monitoring, data aspects of the management of SAM that need improvement can be identified in a timely manner. Appropriate action can then be taken to improve individual care, organisation of care and quality of care. The M&R system for the management of SAM in Ghana follows the Ghana Health Information Management system at the district, regional and national levels.

Implementation of an M&R system for inpatient and outpatient care involves timely collection of relevant information; aggregation and disaggregation at the facility, district, regional and national levels of the system; and subsequent analysis and reporting. Monitoring is used to measure monthly performance and to report on effectiveness. Performance indicators of interest are the recovery, death, , default and non-recovered rates. Barriers to access to care and the degree of service uptake are expressed in the coverage rate, which measures how well the service or programme is reaching the target population and meeting needs.

Standardised M&R forms and tools are used for collection and aggregation of community outreach, outpatient care and inpatient care monitoring data. This will facilitate comparability of data across different facilities and is for ease of data aggregation at the district, regional and national levels. The definition of indicators and entry and exit categories should be the same.

As part of the M&R system, it is important to focus attention on the training of health managers and health care providers in data collection, analysis and reporting to ensure accurate information at prescribed periods of time and to ascertain both the quality of information and its usage for strengthening the quality of community outreach, inpatient care and outpatient care. (See training responsibilities in Section 6.3.2.)

6.1 Monitoring Tools

6.1.1 INDIVIDUAL MONITORING

Registration

Every child who comes to any health facility should be registered in the outpatient department, after which the clinician or other senior health care provider determines whether the child should be treated in outpatient care or inpatient care.

Basic patient information is maintained in a register book at the outpatient or inpatient care site.

Unique Registration Numbering System

Every new admission is assigned a **unique SAM registration number**. This unique registration number should be maintained even if a child is transferred to another health facility. It helps in tracking a child across different services (inpatient care and outpatient care) and for information sharing. The unique SAM registration number should be used on all monitoring and referral documents pertaining to the child.

The standard numbering system uses the following format, which is compatible with the health information management system as follows:

66/77/8888/999/XXX

66 = Two-digit code for the region
77 = Two-digit code for the district
8888 = Four digit code for the health facility. In the case where the facility does not know the four digit code, a three letter abbreviation representing the facility is used.
999 = Child's individual number
XXX = Three-letter code indicating in which service the child started treatment: Outpatient Care (OPC) or Inpatient Care (IPC)

When the health facility does not know its four-digit facility code, an abbreviation of three letters is used to represent the facility. For example, SWD/001/OPC represents the first child admitted to outpatient care in Swedru health facility. It is important to note that at the health facility, only the facility code/three letter abbreviation, the child's individual number and service in which the child started treatment will appear on the treatment card.

Individual Cards

Individual monitoring of children with SAM who are receiving treatment is important to determine the progress of treatment and, in case of a sudden deterioration, to respond with a life-saving intervention. Intensive monitoring is needed for the child with SAM in inpatient care. A detailed **inpatient care treatment card**, or multi-chart, is updated daily. In outpatient care, the child with SAM is in better condition and does not need the same level of health monitoring. Here, key information on the health and nutritional condition of the child is recorded on the **outpatient care treatment card**, which is updated during the weekly or biweekly monitoring sessions. Analysis of the individual treatment cards helps to identify and highlight problems which might contribute to failure to respond to treatment.

Inpatient Care Treatment Card (CCP)
(See **Annex 20**)

- The child's information should be entered on the inpatient care treatment card along with the unique SAM registration number. All daily surveillance should be recorded on the treatment card. This helps monitor the child's progress and inform decision-making during treatment.
- When a child is discharged from treatment, referred or moved, the health care provider (or person responsible) should tally the number of exits on the tally sheets and in the ationregistration book, if one is being used.
- It is important to systematically review the individual treatment cards during supervision visits to ensure that proper treatment is given and protocols are being adhered to.

Outpatient Care Treatment Card
(See **Annex 21**)

- The child's information should be entered on the outpatient care treatment card upon admission and upon each visit to the health facility along with the unique SAM registration number. This helps monitor the child's progress and inform decision-making during treatment.
- When a child is discharged from treatment, referred or moved, the health care provider (or person responsible) should tally the exit on the tally sheets and in the registration book, if one is being used.
- It is important to systematically review the individual treatment cards during supervision visits to ensure that proper treatment is given and that protocols are being adhered to.

Referral Document

- If the child is referred from inpatient care to outpatient care, the caregiver is given an outpatient care treatment card that is a different colour than that used in outpatient care (usually yellow). The card is clearly marked "referred from inpatient" together with instructions on how and when to go for treatment at the outpatient care facility. When the caregiver arrives at the outpatient care site, he/she presents the card to the health care provider. This card is used to continue treatment in the outpatient care site.
- If the child is referred from outpatient care to inpatient care, a referral form is given to the caregiver along with instructions on how and when to go for treatment at the inpatient care facility. The referral form used is the same form that is used for referral of patients from one facility to another; however, key information for the management of SAM is noted on the form (see **Box 20**).

BOX 20. INFORMATION TO BE RECORDED DURING REFERRAL FROM OUTPATIENT CARE TO INPATIENT CARE

- Name and sex of child
- Age of child (in months)
- Name mother/caregiver
- Health facility referred from
- Date of referral
- Health facility destination
- Admission date (if referral is based on action protocol)
- Referral information –If referred based on action protocol, the following information should be recorded on the referral document:
    - MUAC
    - Bilateral pitting oedema
    - Medical complication
- Treatment provided to the child
- Referral reason and any other comment

RUTF Ration Card

(See **Annex 22**)

The RUTF ration card includes basic information on the child, including the admission and weekly anthropometry, weekly RUTF supplies and target weight. The caregiver keeps it. The RUTF ration card is in the form of a sticker that should be attached on the child's health record. If the child does not have a child health book, the card should be given to the caregiver.

Filing System

A filing system for treatment cards containing three files is kept at the health facility. The first file contains the treatment cards of those currently in treatment, including those who are absent or were transferred to inpatient care. Two other files contain treatment cards of those who have been discharged: one for those discharged cured and the other for those who died, defaulted or did not recover.

Table 18. Filing System for Outpatient Care Treatment Cards, With a Separation per Discharge Category

File 1: Currently in Outpatient Care	File 2: Discharged - 1	File 3: Discharged – 2
• Currently in Outpatient Care • Absentees • Referrals to Inpatient Care (awaiting return)	• Cured*	• Deaths • Defaulters* • Non-Recovered

* If defaulters return for treatment, monitoring continues with the same card/registration number.

6.1.2 MONITORING OF SERVICES

Health Facility Tally Sheet
(See **Annex 23**)

Health facility tally sheets are completed by a health care provider at the end of each outpatient care session or weekly at the inpatient care facility. Monthly summaries are provided per health facility in the health facility monthly report, which is a compilation of the routine quantitative data (see next section). A supervisor checks the tally and reporting sheets for accuracy and as an indication of service performance. Each health facility should send the health facility tally and site reporting sheets to the District Health Office monthly.

Tally sheets provide information on **total admissions**, **total discharges** and **total under treatment**, which helps service planners see whether services are reaching the target population, there is a need to change implementation strategies, or supply and human resources need to be adaptated.

Admissions

- New admissions 6-59 months
- Other new admissions: Infants under six months, children over five years, adolescents and adults
- Referrals from inpatient care, outpatient care or other facilities and/or returned defaulters

Details on the entry category can be added, such as bilateral pitting oedema, MUAC and gender can help identify differences in affected age groups and types of SAM.

Discharges

- Cured
- Died
- Defaulted
- Non-recovered

Discharges are monitored to assess performance; identify changes in the number of cured, died, defaulted or non-recovered cases; and identify areas that require investigation.

Referrals to Another Site (Inpatient Care or Outpatient Care)

Referrals are children leaving the specific treatment site and are counted in a separate exit category. Children who are referred are not counted as discharged, as they have not ended or abandoned treatment.

Health Facility Monthly Report
(See **Annex 24**)

The **health facility monthly report** is completed with inputs from the health facility tally sheet and provides performance indicators for each site, including the proportion of children who are discharged cured, died, defaulted or non-recovered; total admissions; new admissions; old cases; total exits; and total under treatment. This report is generated monthly (or for longer periods, if of interest).

Note: It is important to report by calendar month to ensure accuracy in data aggregation and disaggregation.

Additional information that might be collected and marked on the health facility reporting form includes averages calculated on a sample of treatment cards of cured beneficiaries who are discharged from the service that month on indicators such as average weight gain (AWG) and average length of stay (LOS).

The health facility tally sheets and health facility monthly report are sent to the District Health Office on a monthly basis. The reports from individual facilities are compiled monthly into a **district monthly report** (see **Annex 25**) combining inpatient care and outpatient care, which reports overall performance on the management of SAM. Analysis of site and district reports provides information about the performance the management of SAM services for individual health facilities and the district as a whole. The results are compared to international standards (see **Table 20** with adapted Sphere Standards). Reports from the districts are compiled into district, regional and national SAM data repositories at each level.

Other Information Collected

Additional information can be gathered from community outreach workers and through discussions with caregivers and other community members.

Readmissions After Discharge (or Relapse)

This can help service planners understand the situation outside of the service. Interventions might be needed at the household level to avoid high readmission rates. High readmission rates also might mean children are discharged too soon. Relapse is recorded on the child's treatment card and can be tallied monthly or yearly.

Cause of Death

This should be recorded on the child's treatment card. Assessing and compiling this information can help identify problems with treatment and use of action protocols, and determine where training and supervision might be needed.

Reasons for Absentees, Default, Non-Response to Treatment and Non-Recovery

Compilation of this information can help identify common reasons for default or non-response to treatment. Reasons for non-response might include a high TB and/or HIV prevalence sharing food in the household; or poor water, sanitation and hygiene. This might indicate a need for stronger service linkages with other sectors.

Table 19. Summary of Entry and Exit Categories

Inpatient Care for the Management of SAM With Medical Complications	Outpatient Care for the Management of SAM Without Medical Complications for Children 6-59 months
Entry Categories	
1. New admission: New cases of children 6-59 months who meet admission criteria - Including relapse after cure **2. Other new admissions:** New cases of infants, children, adolescents or adults (< 6 months or ≥ 5 years) who need treatment for SAM in inpatient care **3. Referral from outpatient care:** Child's condition deteriorated in outpatient care (according to action protocol) and child needs inpatient care	**1. New admission:** New cases of children 6-59 months who meet admission criteria - Including relapse after cure **2. Other new admissions:** New cases not meeting pre-set admission criteria who need treatment for SAM in outpatient care (children ≥ 5 years, children with a MUAC exactly at 11.5 cm, etc.) **3. Referral from inpatient care:** Cases discharged from inpatient care to continue treatment in outpatient care Or Returned after defaulting or Moved in from other outpatient care site
Exit Categories	
1. Discharged cured: (Child 6-59 months meets discharge criteria, i.e., special cases that were not referred to outpatient care earlier) Infant < 6 months meets discharge criteria Child ≥ 5 years meets discharge criteria **2. Died:** Child dies while in inpatient care **3. Defaulted:** Child is absent on the third consecutive day (three days absent) **4. Non-recovered:** Child who remained in inpatient care does not reach discharge criteria after four months (16 weeks) in treatment – medical investigation should have previously been done **5. Referred to outpatient care:** Child's condition stabilised and child is referred to outpatient care to continue treatment **Note:** Performance indicators for inpatient care facilities are only calculated for those who remain in inpatient care until full recovery	**1. Discharged cured:** Child 6-59 months meets discharge criteria **2. Died:** Child dies while in outpatient care **3. Defaulted:** Child is absent on the third consecutive week (three weeks absent) **4. Non-recovered:** Child does not reach discharge criteria after four months (16 weeks) in treatment – medical investigation should have previously been done. **5. Referred to inpatient care:** Child's condition deteriorated and child is referred to the inpatient care according to the action protocol

6.2 Service Indicators

6.2.1 INDICATORS MEASURING OUTPUT

- # Functioning inpatient care and outpatient care facilities
- # Health care providers trained in inpatient care and treatment of SAM with medical complications (plus gender distribution)
- # Health care providers trained in outpatient care and referral based on action protocol (plus gender distribution)
- # CHWs trained in community outreach (plus gender distribution)
- # Volunteers trained in community outreach (plus gender distribution)
- # Communities mobilised (number of meetings)

6.2.2 PERFORMANCE INDICATORS MEASURING OUTCOME (EFFECTIVENESS)

Monthly

- Total numbers of new admissions
- Total numbers of discharges*
- Total number of children under treatment
- Information on new admissions: Proportion of children admitted for bilateral pitting oedema, low MUAC, low WFH
- Gender distribution admission
- % Cured
  = proportion of children discharged cured out of total discharged
- % Died
  = proportion of children who died when under treatment out of total discharged
- % Defaulted
  = proportion of children recorded as absent for three consecutive visits out of total discharged
- % Non-recovered
  = proportion of children who do not meet the discharge criteria after four months under treatment out of total discharged

* Total number of discharges = cured + died + defaulted + non-recovered; total number of exits = cured + died + defaulted + non-recovered + referred

Periodic Indicators to be Collected Biannually

- Average daily weight gain
  —calculated on sample of cured discharges for kwashiorkor and marasmus (see **Section 6.2.3**)
  = sum of weight gains/number of cards in sample
- Average LOS
  —calculated on sample of cured discharges for kwashiorkor and marasmus (see **Section 6.2.3**)
  = sum of LOS/number of cards in sample
- % Coverage
  = proportion of children with SAM under treatment out of total number of children with SAM identified in the community

6.2.3 ADDITIONAL INDICATORS MEASURING EFFECTIVENESS OF THE TREATMENT

Additional indicators can be calculated on a random sample of children (new admissions only) enrolled in outpatient care who are discharged cured. Kwashiorkor and marasmus cases are calculated separately.

Average Daily Weight Gain of Discharged Cured

AWG in outpatient care is expected to be greater than 4.0 g/kg/day. A low AWG might indicate high absence rates, default, ineffective treatment, sharing of RUTF or non-compliance to the treatment protocol.

(**Note**: The Sphere minimum standards of AWG based on traditional centre-based inpatient care is greater than 8 g/kg/day).

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

AWG = sum of weight gains (g/kg/day) divided by number of cards in sample

Average LOS of Discharged Cured

The average LOS in outpatient care is expected to be 60 days and four to seven days in inpatient care. A long average LOS might be the result of a high proportion of children who do not respond to treatment (non-responders or non-recovered), frequent absences, default, sharing the RUTF and/or unresolved illness. A short average LOS might indicate that children are discharged too soon. If there is a high relapse rate, this might be a possible cause.

Calculation:
Average LOS = sum of LOS divided by number of cards in sample

Coverage

Coverage is an indicator expressing SAM service availability and uptake. Coverage indicates how well a service is meeting needs. The coverage ratio is a population-based indicator, expressed as a percentage.

Table 20. Outcome Indicators Based on CMAM Guidance and on International Cutoffs as per Sphere Standards[14]

Indicator	Outpatient care	Inpatient care until full recovery
Cured	> 75 %	Not applicable
Defaulted	< 15 %	< 15 %
Died	< 10 %	< 10 %
Average LOS	60 days	4-7 days
Average daily weight gain	> 4 g/kg/day	Not applicable
Coverage	> 70 %	Camp: > 90%; Urban: > 70%; Rural: > 50%

[14] Sphere Standards version 2004 in revision, expected in 2010.

6.3 Support and Supervision

Supervisors should perform regular support and supervision visits, and use a checklist to cover aspects to assess and address systematically. At the same time, the supervisor is a mentor and he/she should support health workers and community outreach workers with technical support based on identified needs.

Supervision of the quality of protocol implementation entails monitoring admission and discharge trends and adherence to protocols. Accurate recording and compilation of information regarding admissions, readmissions, referrals, and discharges from outpatient care or inpatient care facilities are important. Analysis of the data from the outpatient care and inpatient care facilities is essential for the supervisor to know and check, as it provides important information about the performance of individual facilities and for ensuring actions are taken to strengthen quality.

6.3.1 QUALITY OF INDIVIDUAL TREATMENT

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

Supervisors should check that admissions and discharges are carried out according to the national guidelines and that routine medicine and therapeutic diets are administered correctly. They must also check that oedema is properly assessed, deterioration in the condition of the child is identified and acted upon according to protocols, and transfers and absentees are noted and followed up.

The supervisors should also review with health workers the care provided to children with static weight or weight loss or those who have not recovered after three months. Any deaths should also be reviewed. Discussion on the review findings should be done with implementing health care providers so that necessary improvements can be made.

Supervisors should review:

- Completion of the treatment cards, ration cards and other health documents
- Adherence to medical treatment and nutritional rehabilitation protocols
- Progress of individual children, checking for consistent weight gain
- Community follow-up of problem cases or referral
- Quality of health and nutrition counselling

(See **Annex 27. Supervision Checklists.**)

6.3.2 ORGANISATION AND MANAGEMENT OF SERVICES

To best monitor the organisation and management of services, supervisors should review:

- Organisational structure of service delivery
- Crowd management
- Supply flow and stock management for medicines and therapeutic foods
- Organisation of human resources
- Quality of health and nutrition group sessions
- Links with community outreach

- Links with other community services

(See **Annex 27. Supervision Checklists**.)

6.3.3 PERFORMANCE OF SERVICES

Supervisors should assess the performance of the services by reviewing:

- Completion of tally sheets and reporting forms
- Results of site reports

(See **Annex 27. Supervision Checklists.**)

6.3.4 FEEDBACK SYSTEM

Health care providers and supervisors at outpatient care and inpatient care facilities should hold regular meetings to discuss performance using the monitoring data. Aggregated monitoring data should also be analysed and discussed at the district, state and national levels. Experiences should be shared, feedback given and action plans for improving performance developed and discussed. In outpatient care settings, feedback can be provided to the community through focus group discussions andcommunity mobilisation activities.

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

6.3.5 QUALITY CONTROL OF MONITORING DATA

Indicators collected from inpatient care and outpatient care need to be continuously and systematically reviewed to ensure quality information is collected. Quality checks should be conducted to identify whether indicator levels have fallen below the established standards. A level of action should be determined based on the context, the specific indicator that is faltering and whether or not aggravating factors were present. Minimum standards should not be taken as absolute, but as flexible levels for warning that vary depending on the aforementioned factors.

6.4 Reporting

Quantitative and qualitative data are reviewed to triangulate information, better interpret findings and provide a more detailed assessment of service performance.

The analysis and triangulation of the information from community discussions, supervisory checklists and monitoring of services enables health managers, health care providers and CHWs, in collaboration with supervisors and the community, to strengthen the quality of services for the management of SAM.

6.4.1 MINIMUM REPORTING STANDARDS

A minimum reporting checklist is proposed (see **Annex 26. Minimal Reporting Guidance for the Management of SAM**).

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Note: An interactive tutorial (CD-ROM or internet) on physiopathology and management of severe malnutrition; suitable for health workers

Valid International, 2006. *Community-based Therapeutic Care: A Field Manual*. Oxford, United Kingdom: Valid International. www.validinternational.org or http://www.fantaproject.org/ctc/manual2006.shtml

Note: Field manual with extensive information in outpatient care and many aspects of programme setup and management; suitable for managers and health workers

Wellcome Trust. 2000. *Topics in International Health: Nutrition*. London: Wellcome Trust. www.talcuk.org/cd-roms/topics-in-international-health-nutrition.htm

Note: Cost £10; interactive CD-ROM with tutorials and exercises on the physiopathology and medical and nutrition management of SAM; suitable for health workers

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Note: Pending publication; focuses on integrating therapeutic care in primary health programmes

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Note: Seven modules for participants with one clinical instructors guide, one facilitator guide and one course director guide; handouts and visuals (slides, video/DVD) on medical and nutrition management of SAM; answer sheets; suitable for health workers

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LIST OF ANNEXES

Community Outreach
1. Planning for Community Outreach
2. Community Outreach Messages

Outpatient and Inpatient Care
3. Admission and Discharge Criteria for the Management of SAM for Children 0-59 Months
4. Anthropometric Measurements
5. Guidance Table to Identify Target Weight for Discharge
6. Checklist for Medical History and Physical Examination
7. Routine Medicines Protocols
8. Supplemental Medicines Protocols
9. Drug Doses
10. Sugar-Water Protocol
11. Dietary Treatment
12. Alternative Recipes for F75, F100 and ReSoMal Using CMV
13. Preparing F75 Milk Using Pre-Packaged F75
14. RUTF Specification
15. Outpatient Care Action Protocol
16. Key Messages Upon Admission
17. Messages for Health and Nutrition Education
18. Play and Stimulation

Monitoring and Reporting Tools
19. Checklist for Home Visits
20. Inpatient Care Treatment Card (Critical Care Pathway-CCP)
21. Outpatient Care Treatment Card
22. Outpatient Care RUTF Ration Card
23. Health Facility Tally Sheet for the Management of SAM
24. Health Facility Monthly Report for the Management of SAM
25. District Monthly Report for the Management of SAM
26. Minimal Reporting Guidance for the Management of SAM
27. Supervision Checklists
28. Requisition Form for Therapeutic Food

Management Tools
29. Setup of Inpatient Care and Outpatient Care
30. Checklist of Materials Needed for Outpatient Care
31. Outpatient Care Staffing
32. Inpatient Care Staffing
33. Checklist of Materials Needed for Inpatient Care
34. Forecasting Nutrition Product Needs
35. List of Job Aids

Appendix
Clinical Management of SAM With Medical Complications in Inpatient Care

Annex 1. Planning for Community Outreach

1. Planning and Orientation Workshop

Objectives:

- To highlight the importance of community outreach in community-based management of severe acute malnutrition (CMAM)
- To help Ghana Health Service (GHS) staff at the outpatient care site understand the barriers to service utilization and acceptance in the community
- To develop a plan for information gathering on the key barriers to community outreach from the client base (mothers, community leaders and community-based volunteers), including skills training on conducting community meetings or group discussion

Participants: Health workers including community outreach coordinators, community health nurses (CHNs), community health officers (CHOs), field technicians, health extension workers (HEWs)

Agenda: 5 to 6.50 hours

Topics for discussion	Time	Facilitators
Introduction to planning and orientation	15 min	District Director-DHMT*, Agona
Overview of community outreach for CMAM (Visualization of community outreach activities to health workers through discussion and visual aids)	1 hr	
Overall current practices in community outreach activities	30 min	
Resources to explore to better engage in community outreach activities	30 min	
Break		
Linking community outreach with the CMAM services	30 min	
Community outreach tools	1.5 hrs	
Roles and responsibilities for community outreach	1 hr	
Role play (to better understand community assessment activities)	1 hr	
Close of planning and orientation	10 min	

* District Health Management Team

2. Guidance for Community Meetings

Five meetings will be held in each community, with different groups of participants in each meeting.

Objectives of the meetings:

- To help participants understand their children's health status
- To understand current health care practices in the community
- To inform the community about the services and involve it in planning

Time for each meeting: One to 1.5 hours

Number of days required: Two days

Type of meeting participants:

- Women (two groups)
    - Young mothers
    - Older mothers and grandmothers caring for young children in their homes
- Men
- Community leaders and elders
- HEWs: CHWs/volunteers

Expected number of participants in each meeting: Seven to 10 participants

Venue: A comfortable and quiet place in the village to facilitate discussion without any interruption

Sitting arrangement: All participants including moderator/interviewers should sit in a "U" pattern so that everyone can communicate easily.

Ensure equal participation in discussion: Facilitate the discussion to ensure participation from each participant as much possible; try to restrain individuals from dominating the discussion.

Number of people involved in facilitating each meeting: One interviewer and one note-taker for each meeting

Language for facilitation: Local dialect

Tips for facilitators:

- Greet the participants and briefly explain the meeting objectives
- Ask questions gently and prompt discussion
- Identify a note-taker for the discussion

The following questionnaires are examples and can be adapted as needed:

Questionnaire: HEWs Group (CHWs and volunteers)

Local disease classification for severe forms of malnutrition:

1. Did you see any children under 5 years old present as very thin/wasted or swollen (legs, hands, face) in this community?
2. Does this condition have a name? If so, what you do call/name them?
3. What do you believe are the causes of this disease/condition?
4. Are all children likely to get it?
5. What can be done to treat it?

Attitude toward existing Ministry of Health (MOH) health services:

1. Where do most families in your village go to seek health care for themselves? For their children?
2. Does the MOH health centre/outreach site function regularly? When is it open/closed?
3. Do you think community members like to seek services at the health centre? Is the treatment provided at the MOH health centre of good quality? At the outreach site?
4. Is treatment for children under 5 years free of cost at MOH health centre and outreach site?
5. What are the major problems to access care at the MOH health centre?

Health-seeking behaviour of the villagers:
1. What do the villagers do when their children are sick?
2. Where do they seek health care?
3. Where do they go for emergency treatment (children are ill in the late afternoon or at night)?

Other barriers to accessing health service:
1. How far is the health facility from your village/community?
2. Is distance a problem? For whom?

Other means/paths of treatment available in the community:
1. Are there any treatment facilities available (other than MOH) in your village/community?
2. Are there good healers to your community? Do the families in your community like to seek care there?
3. What do you call/name them?
4. How about the cost of treatment from these points? Are they cheaper or more convenient than the MOH health centre/outreach site?

Participation in health-related activities or programmes in the community:
1. How do you support health-related activities in your community?
2. How do you link villagers with health service centres/outreach?
3. How much time do you spend doing these voluntary activities in a week?
4. What do you do to engage and motivate mothers to participate?
5. Who are the other volunteers involved directly/indirectly with health related activities?
6. What about others in the village? Who listens to your advice? Who doesn't?
7. How do you think information on health services could be spread effectively in your community?
8. How is your work being supervised in the village/community? Who from the MOH is involved with your work?

Homogeneity/heterogeneity of the community:
1. How many ethnic groups reside in this community?
2. Is there a common language used in this village/community? What is it?
3. Does this have an effect on how volunteers are selected and managed in your village?

Questionnaire: Women and Men Groups

Local disease classification for severe forms of malnutrition (show pictures):
1. Did you see any children under 5 years old present as very thin/wasted or swollen (legs, hands, face) in this community/village (like this picture)?
2. Is this a disease/condition? If so, how you do call/name it?
3. What do you believe causes this disease/condition?
4. Is there a specific time when this disease is more common, such as the time of the year, rainy season or summer, or according to the age of the child?
5. Are all children likely to get this condition, or only some? Why are some children more likely to get this condition?
6. How do you manage or treat this disease in your community?

Health-seeking behaviour of mothers/caregivers:
1. What do you do at the time of any sickness of your children?
2. Where do you seek health care? How far is it?
3. Are there any other treatment facilities (traditional treatments) available in your village/community?

4. Where did you receive treatment last time your child was sick? Why did you choose to go there?
5. Where do you go for emergency treatment (illness of children in late afternoon or at night)?
6. Who usually accompanies your child he/she goes for treatment?

Attitude toward existing MOH health services:
1. How do you feel about the treatment facility at the health centre?
2. When was the last time that you visited the health centre?
3. Do you attend the outreach services offered by the health centre?
4. When did you go last?
5. Were you satisfied with the services provided by the the health centre team?
6. How do you get information about the outreach services? Where and when they are held?
7. Who else gives you information about health services in your community?

Other means/paths of treatment available in the community:
1. What are the other treatments available in your community? What do you call/name them?
2. How often do you receive treatment for your child from the traditional healer?
3. Do most of the villagers get treatment from these service points?
4. How about the cost of treatment from these points? Are they cheaper and more convenient than the health centre/outreach?

Other barriers to access:
1. How far is the health facility from your village/community?
2. Are the location and distance of the health centre feasible to reach?
3. What is the type of transportation available?
4. How far is the outreach site from your village?

Homogeneity/heterogeneity of the community:
1. What is the common language used in this village/community?
2. How many ethnic groups are residing in this community?

Questionnaire: Community Leaders and Elders Group

Local disease classification for severe forms of malnutrition: (show pictures)
1. Did you see any children under 5 years old present as very thin/wasted or swollen (legs, hands, face) in this community/village (like this picture)?
2. Is this a disease/condition? If so, what do you call/name it?
3. What do you believe causes this disease/condition?
4. Is there a specific time when this disease is more common, such as the time of the year, rainy season or summer, or according to the age of the child?
5. Are all children likely to get this condition, or only some? Why are some children more likely to get this condition?

Health-seeking behaviour of the villagers:
1. What do you do when your children get sick?
2. Where do you seek health care? How far is it?
3. Are there any other treatment facilities (traditional treatment) available in your village/community?

Attitude toward existing MOH health services:
1. How do you feel about the treatment facility at health centre?
2. When was the last time that you visited the health centre?
3. Were you satisfied with the services provided by the team at the health centre?

4. Does your village receive outreach services? Where are they held and at what time?
5. Do you know the different community-based health volunteers in your village?
6. Who else gives you information about health services in your village?

Other means/paths of treatment available at community:
1. What are the other treatments available in your community/village? How do you call/name them?
2. Do most of the villagers get treatment from these service points?
3. How about cost of treatment from these providers? Are they cheaper and more convenient than the health centre/outreach?

Other barriers to access:
1. How far is the health facility from your village/community?
2. Is the location and distance of the health centre feasible to reach?
3. What is the transportation you use to get there?
4. How far is the outreach site from your village?

3. Strategy Formulation

Objective

At the end of the session you should have:
1. Identified the best candidate to carry forward community mobilisation and screening
2. Determined a strategy with the most potential for success
3. Identified a cost-effective training strategy (who, where and how) for the staff who will be engaged in community mobilisation and screening
4. Developed an understanding of the key barriers to the success of CMAM and prepared to develop a communication strategy
5. Developed a training plan

Participants: GHS staff members (CHN or CHO, disease surveillance officers) who participated in conducting the community meetings

Agenda

9.00- 11.00 am	*Briefing and data collection:* Facilitate discussion with the CHN, CHO and other health workers. Fill out Worksheet 1 and agree on implications for strategy. *Use the following questions to fill worksheet 1:* One hour • What is the understanding of malnutrition and SAM in the community? • What are the main health-care-seeking practices in the community (government services, other)? • What are some of the key barriers to seeking health care in general in the community? • Are there children from some families/groups at higher risk of malnutrition? How would you describe them?
11.30- 1.00 pm	*Group work:* 45 minutes • Keeping the implications in mind, fill out Worksheet 2 • Identify ways the implications for strategy (e.g., low knowledge, lack of trust in the GHS) can be addressed when the case-finding candidate selection is done .
2.00- 3.00 pm	*Final discussions on training and preparation for integration of services*: • Discuss the best training strategy, where and how; fill out Worksheet 3 • Discuss whether the CHO is able to conduct some of the trainings or needs support, and plan for training (when, where, who, how)

Worksheet 1. Community Outreach Strategy

	Key Findings	Implications for Strategy
1.		
2.		
3.		
4.		

Worksheet 2. Selection of Candidates for Case-Finding

Names	Job Description (including supervised by)	Proximity to Cases	Salary/Stipend Paid by	Breadth of Coverage (exist in every village or catchment)	Accessible/ Amenable to Training	Can Accept Additional Work	Capable of Measuring MUAC	Could Be Relied Upon for Follow-Up
Existing health extension workers and health volunteers								
Other extension workers and volunteers								
Important village figures								

XXX = high XX = medium X = low

Worksheet 3: Training Plan for Community Outreach

Community groups	Number of outreach workers	Type of outreach workers	Trainer	Date	Place	Resources

Annex 2. Community Outreach Messages

Examples from Agona

To All District and Community-Based Organisations

Date:
Postal Address/Name of Institution:

Dear Sir/Madam,

Re: New Treatment for Children with Severe Acute Malnutrition

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

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

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

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

Yours faithfully,

District Director of Health

To All District Health Facilities:

Date:
Postal Address:

Dear Sir/Madam,

Re: Community-Based Management of Severe Acute Malnutrition (CMAM)

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

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

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

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

We would like to involve a variety of health practitioners and service providers, including private clinics, to help us identify children with SAM so that they can be treated at an early stage. Currently, the services are provided in five facilities (Swedru Hospital and Kwanyako, Abodom, Duakwa and Nsaba Health Centres) under Agona District Health Directorate, but it is hoped that the services will be extended to other health centres in Agona District. We are writing therefore to kindly request that your health facility brief all staff members, especially those in the outpatient department, and have them refer children with bilateral pitting oedema and severe wasting to any of the above-mentioned health centres for treatment.

The GHS SAM team would be pleased to provide your clinic with MUAC tapes and train your staff in identifying and treating children with bilateral pitting oedema and severe wasting.

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

Yours faithfully,
District Director of Health

To All Mothers/Caregivers With Children Between 6-59 months:

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

How to Know Whether Your Child Needs this Treatment

Some people within your community have been trained to take an arm measurement of children with a small tape and check if both feet are swollen.

The Treatment

All children found to be thin or swollen are referred to the health centre, where the arm measurement and swelling are checked again. If the children have appetite and are clinically well, they are given medicines and a weekly supply of a nutritional food called **Plumpy'nut®.** Only the children who are very small or very ill will need referral to inpatient care.

If you know a child who appears to be very thin or whose feet are swollen, tell his/her parents or guardians about this new treatment. They can ask around their neighbourhood for a community health worker, volunteer or someone else trained to take the arm measurement. Or, they can go directly to the health centres to have their child measured any day. Follow-up service days in the health centres are:

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

Annex 3. Admission and Discharge Criteria for the Management of SAM in Children 0-59 Months

Inpatient Care for the Management of SAM with Medical Complications	Outpatient Care for the Management of SAM Without Medical Complications
Admission Criteria	
Children 6-59 months Bilateral pitting oedema +++ Or Any grade of bilateral pitting oedema with severe wasting (MUAC < 11.5 cm) Or SAM with any of the following medical complications: • Anorexia, no appetite • Intractable vomiting • Convulsions • Lethargy, not alert • Unconsciousness • Hypoglycaemia • High fever • Hypothermia • Severe dehydration • Lower respiratory tract infection • Severe anaemia • Eye signs of vitamin A deficiency • Skin lesion Or • Referred from outpatient care according to action protocol Infants 0- 6 months • Infants 0-6 months with bilateral pitting oedema or • visible wasting (or e.g., insufficient breastfeeding in vulnerable environment) • Other: e.g., infants ≥ 6 months who weigh < 4.0 kg	Children 6-59 months Bilateral pitting oedema + and ++ Or Severe wasting (MUAC < 11.5 cm) And • Appetite test passed • No medical complication • Clinically well • Alert
Discharge Criteria	
Children 6-59 months *Referred to outpatient care:* Appetite returned (passed appetite test) and medical complication resolved and bilateral pitting oedema decreasing and clinically well and alert (If bilateral pitting oedema and severe wasting: bilateral pitting oedema resolved)	Children 6-59 months *Discharged cured:* - The child has attained 15% weight gain or more for two consecutive weeks - No bilateral pitting oedema for two consecutive weeks - Child clinically well and alert

Inpatient Care for the Management of SAM with Medical Complications	Outpatient Care for the Management of SAM Without Medical Complications
<u>Children ≥ 5 years</u> See discharge criteria outpatient care <u>Infants < 6 months</u> Discharged cured if successful re-lactation and appropriate weight gain (minimum 20 g weight gain per day on breastfeeding alone for five days) and clinically well and alert (if no access to breastfeeding, alternative method of replacement feeding based on national guidelines is required).	

Annex 4. Anthropometric Measurements

Bilateral Pitting Oedema

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

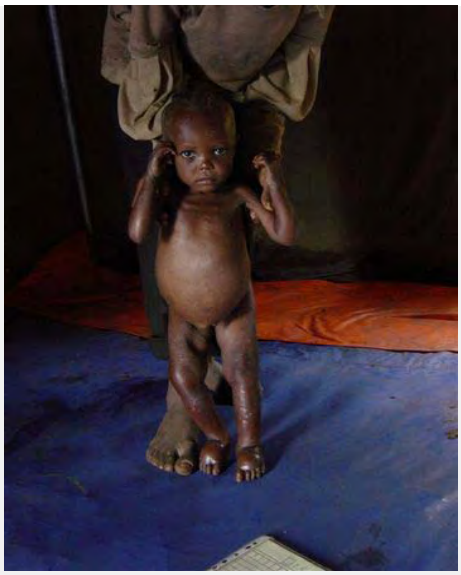
There are three grades of bilateral pitting oedema. When there is no bilateral pitting oedema, the grade is "absent." Grades of bilateral pitting oedema are classified by plus signs.

Grades of bilateral pitting oedema	Definition
Absent	Absent
Grade +	Mild: Both feet/ankles
Grade ++	Moderate: Both feet, plus lower legs, hands or lower arms
Grade +++	Severe: Generalised bilateral pitting oedema, including both feet, legs, arms and face

Pictures of Bilateral Pitting Oedema

Grade +

In this child, there is bilateral pitting oedema in both feet. This is grade + oedema (mild); however, the child might have grade ++ or +++, so legs and face will also need to be checked.

Grade ++ In this child, both feet plus the lower legs, hands and lower arms are swollen. This is grade + + bilateral pitting oedema (moderate).	
Grade +++ This child has +++ bilateral pitting oedema (severe). It is generalised, including both feet, legs, arms, hands and face.	

Mid-Upper Arm Circumference (MUAC)

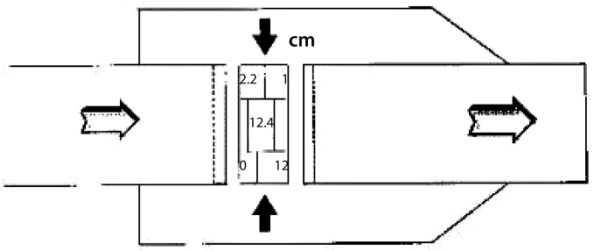
MUAC is used for children age 6-59 months. It is essential to use the age cutoff of 6 months for the use of MUAC. Never use a height cutoff as proxy to determine age. If the birth date is unconfirmed, use the recall of the mother/caregiver to estimate the young child's age.

How to Measure MUAC

(See photo)

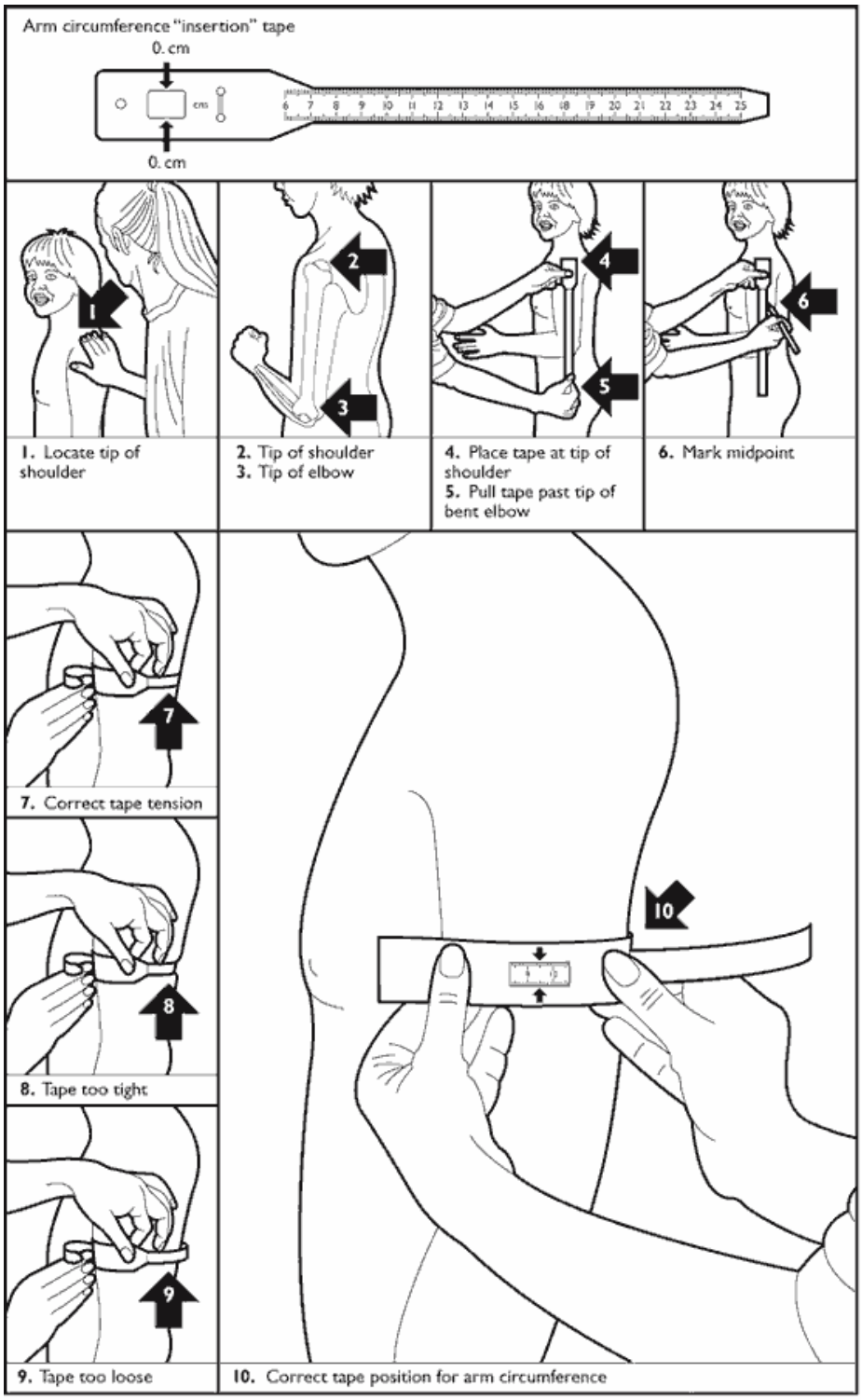
- MUAC is always taken on the left arm.
- Measure the length of the child's upper arm, between the bone at the top of the shoulder and the elbow bone (the child's arm should be bent).
- Mark the middle of the child's upper arm with a pen.
- The child's arm should then be relaxed, falling alongside his/her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

For numbered tapes, feed the end of the tape down through the first opening and up through the third opening. The measurement is read from the middle window where the arrows point inward. Read the number in the box that is completely visible in the middle window. For the example below, it is 12.4 cm.



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

Photo Credit: WHO-Tanzania, training on the management of severe acute malnutrition, September 2006 (Valid International).



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

Weight

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

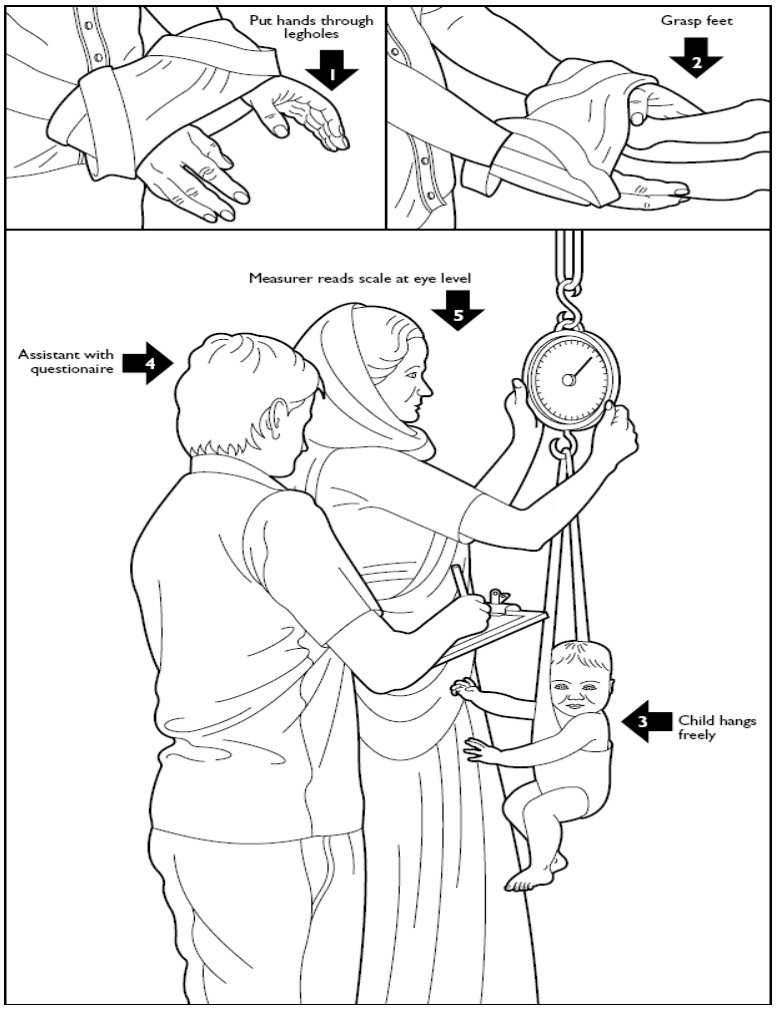
Hanging Spring (Salter) Scale

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

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

How to use the Salter Scale:
(See picture)

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



Considerations when using the Salter scale:

- Make sure the child is safely in the weighing pants or hammock with one arm in front and the other arm behind to help maintain balance.
- In cold climates or in certain cultures, it might be impossible or impractical to undress a child completely. The average weight of the clothes should be estimated and deducted from the measure. It is helpful to retain similar clothing for girls and boys during weighing to help to standardize the weight deductions.
- When the child is steady and settled, the weight is recorded to the nearest 100 g. If the child is moving and the needle does not

stabilise, the weight should be estimated by recording the value at the midpoint of the range of oscillations. The measurer announces the value read from the scale, the assistant repeats it for verification and records it on the clinic form or child health card (CHC). The child is then dressed.

- The scale should be checked daily against a known weight. To do this, set the scale to zero and weigh objects of known weight (e.g., 5 kg, 10 kg, 15 kg). If the measure does not match the weight to within 10 g, the scale should be replaced or the springs must be changed.

Measuring Weight Using an Electronic Scale "Tared Weighing"

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

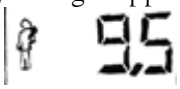
Explain the tared weighing procedure to the mother as follows. Stress that the mother must stay on the scale until her child has been weighed in her arms.

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

Mother's weight alone.

Taring the scale.

Baby's weight appears on display.



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

- The baby's weight will appear on the display. Record the weight. Be careful to read the numbers in the correct order (as though you were viewing while standing on the scale rather than upside-down).

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

Annex 5. Guidance Table to Identify Target Weight for Discharge

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

* Or weight free of oedema

Annex 6. Checklist for Medical History and Physical Examination

Medical History

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

Physical Examination

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

Annex 7. Routine Medicines Protocols

Name of Medication	When	Age / Weight	Prescription	Dose
VITAMIN A*	At admission (except children with oedema)	6 months to 12 months	100,000 IU	Single dose on admission (for children with bilateral pitting oedema-single dose on discharge)
		> 12 months	200,000 IU	
		DO NOT USE with bilateral pitting oedema		
ANTIBIOTIC Amoxicillin	At admission	All beneficiaries	See Protocol	3 times a day for 5-7 days
ANTIMALARIAL: Artesunate + Amodiaquine	At admission Test on admission. Repeat test later if initial test is negative and malaria is suspected	All beneficiaries	Artesunate 50 mg Amodiaquine 50 mg	Artesunate 4 mg/kg bodyweight + Amodiaquine 10 mg/kg bodyweight in two divided doses for 3 days[15]
ANTIHELMINTH Mebendazole **	On second visit	Less than 24 months	DO NOT GIVE	NONE
		24 months or over	500mg	Single dose on second visit
MEASLES VACCINATION	On week 4	From 6 months	Standard	

*VITAMIN A: Do not give if child has already received vitamin A in the past month. Do not give to children with oedema until they are discharged, unless there are signs of vitamin A deficiency.

** MEBENDAZOLE or other antihelminth can be given after 3 months if signs of re-infection appear.

IRON and FOLIC ACID are not to be given routinely in Outpatient Care for Managing SAM without medical complications. Where anaemia is identified according to Integrated Management of Childhood Illness (IMCI) Guidelines, treatment should begin after 14 days in the outpatient care programme and not before. When iron and folic acid are given, they should be given according National/World Health Organization (WHO) Guidelines (INACG 1998). For severe anaemia, refer the child to the inpatient care.

[15] No paracheck (Rapid Diagnostic Test) is undergone routinely for malaria treatment in the health centre. Treatment is advised on a presumptive diagnosis in absence of microscopy or paracheck in the National Guidelines.

Annex 8. Supplemental Medicines Protocols

Name of Product	When to Give	Prescription	Special Instructions
CHLORAMPHENICOL	To be given as second-line antibiotic for children not responding to amoxicillin: continued fever that is not due to malaria	See separate protocol	Continue for 7 days
TETRACYCLINE EYE OINTMENT	For treatment of eye infection	Apply 3 times a day: morning, afternoon and at night before sleep	Wash hands before and after use; wash eyes before application; continue for 2 days after infection is gone
NYSTATIN	For treatment of candida	100,000 units (1 ml) 4 times a day after food (use dropper and show caregiver how to use it)	Continue for 7 days
PARACETAMOL	For children with fever over 38.5° C	See separate protocol	Single dose only - do not give to take home
BENZYL BENZOATE	For treatment of scabies	Apply over whole body; repeat without bathing on following day; wash off 24 hours later	Avoid eye contact; do not use on broken or secondary infected skin
WHITFIELDS	For treatment of ringworm or other fungal infections of the skin	Apply twice a day	Continue treatment until condition has completely resolved
GENTIAN VIOLET	For treatment of minor abrasions or fungal infections of the skin	Apply on lesion	Can be repeated at next visit and continued until condition resolved
QUININE	2nd-line antimalarial treatment for children who have not responded to fansidar	See separate protocol	
FERROUS SULPHATE/ FOLATE	Treatment of anaemia identified according to Integrated Management of Childhood Illness (IMCI) Guidelines	According to WHO protocols (INACG 1998 and Donnen et al, 1998)	To be given only after 14 days in the programme

Annex 9. Drug Doses

Antibiotics

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

First-line antibiotics are always provided in outpatient care and inpatient care. If second-line antibiotics are needed in outpatient care, the child with severe acute malnutrition (SAM) is referred to inpatient care.

Box 1. Antibiotic Regimen

First-Line
Oral amoxicillin (use ampicillin if amoxicillin is not available)

Second-Line
Add chloramphenicol (do not stop amoxicillin)
or
Add Gentamicin (do not stop Amoxicillin)
or
Change to amoxicillin/clavulanic acid (Augmentin)

Third-Line
Individual medical decision

Notes:

- A systemic antifungal (fluconazole) is frequently added if there are signs of severe sepsis or systemic candidiasis.
- Co-trimoxazole is not active against small bowel bacterial overgrowth. It is inadequate for the severely malnourished child. If it is being given for preventive therapy in HIV-positive children, the other antibiotics should be given first and the prophylactic co-trimoxazole after one week.

Box 2. Duration of Antibiotic Treatment

Inpatient Care (stabilisation phase)
Every day in Phase 1 plus four more days or until referral to outpatient care

Outpatient Care (stabilisation and rehabilitation phases)
For a total of seven days

Note: Paediatric antibiotic formulation is preferred. For children < 5 kg, antibiotic tablets should be used and cut in half by the health care provider before they are given to the caregiver to give to the child.

Amoxicillin Doses

Give amoxicillin 15mg/kg bodyweight three times per day for five days.

Table 1. Amoxicillin Doses

Weight of the child	Syrup – 125 mg / 5 ml	Syrup – 250 mg / 5 ml	Tablets – 250 mg
	Dosage – give three times a day		
≤ 9.9 kg	125 mg (5 ml)	125 mg (2.5 ml)	125 mg (½ tablet)
10.0 - 30.0 kg	250 mg (10 ml)	250 mg (5 ml)	250 mg (1 tablet)
> 30.0 kg	*give tablets*	*give tablets*	500 mg (2 tablets)

Chloramphenicol Doses

Use chloramphenicol for second-line antibiotic treatment for children who have not responded to amoxicillin, e.g., have a continued fever that is not due to malaria. Give three times per day for seven days. Always complete the course.

Note: Always check label on bottles for dosages and dilution of syrups, as this can change between different manufacturers.

Table 2. Chloramphenicol Doses

Weight of the child	Syrup – 125 mg / 5 ml	Capsules – 250 mg
	Dosage – give three times a day	
2.0 – 5.9 kg	62.5 mg (2.5 ml)	Give syrup
6.0 - 10.0 kg	125 mg (5 ml)	125 mg (½ capsule)
10.0 - 30.0 kg	250 mg (10 ml)	250 mg (1 capsule)

Co-trimoxazole for children with confirmed or suspected HIV infection or children who are HIV exposed.

Co-trimoxazole should be given to children starting at 4-6 weeks old to:

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

Table 3. Co-trimoxazole dosage – single dose per day

Age	5ml syrup 40mg/200mg	Single strength adult tablet 80mg/400mg	Single strength paediatric tablet 20mg/100mg
0-6 months	2.5ml	¼ tablet	1 tablet
6-59 months	5ml	½ tablet	2 tablets
5-14 years	10ml	1 tablet	4 tablets
>15 years	NIL	2 tablets	-

Malaria Treatment

All severely malnourished children should be systematically screened for malaria. If in clinical doubt, repeat the test in the days or weeks following the initial test. A persistently negative test excludes *p. falciparum* malaria.

Notes:

- The malaria load in oedematous children might be low at testing.
- The usual clinical signs and symptoms of malaria might be absent in severely malnourished children as they might lack the ability to mount an acute phase inflammatory response as a result of pathophysiological changes in their bodies.
- Care should be taken not to give intravenous (IV) infusions of quinine to severely malnourished children within two weeks of treatment.
- Provision of insecticide-treated bednets is essential to protect children with SAM, especially in areas where malaria is endemic.

Artesunate + Amodiaquine Doses

Give artesunate 4 mg per kg bodyweight plus amodiaquine 10 mg per kg bodyweight in two divided doses for three days.

Table 3. Artesunate and Amodiaquine Doses

Weight	Artesunate 50 mg Dose	Amodiaquine 150 mg Dose
< 5 kg	¼	¼
5 - < 10 kg	½	½
10.0 - < 14 kg	1	1
14 - < 19 kg	1	1

Quinine Doses

Give quinine three times per day for seven days. Always complete the course.

Table 4. Quinine Doses

Weight	Dose
< 5 kg	0
5 - < 10 kg	¼ tablet every 8 hours
10.0 - < 14 kg	½ tablet every 8 hours
14 - <19 kg	½ tablet every 8 hours

Deworming Treatment

Inpatient Care

For children remaining in the rehabilitation phase in inpatient care, the deworming medicine is given at the start of rehabilitation phase.

Outpatient Care

For children admitted directly to outpatient care as well as those who have been transferred from inpatient care, deworming medicine is given at the second visit to outpatient care (i.e., after one week).

Table 5. Anthelmintic Drug Therapy Doses for Children With SAM

Age or weight of the child	Albendazole 400 mg	Mebendazole 500 mg
Under 1 year	Not given	Not given
< 10 kg	200 mg or ½ tablet once	250 mg or ½ tablet Once
≥ 10 kg	400 mg or 1 tablet once	500 mg or 1 tablet Once

Note: In Ghana, anthelmintics should only be given to children over 24 months old.

Measles Vaccination

Inpatient Care

All children 6 months and older should be vaccinated if they cannot give evidence (vaccination card) of previous vaccination. Vaccination should be given upon admission and discharge.

Note: The first measles vaccination given upon admission often does not give a protective antibody response in a severely malnourished child undergoing inpatient treatment. It is given because it ameliorates the severity of incubating measles and partially protects from nosocomial measles. The second dose provokes protective antibodies.

Outpatient Care

All children six months and older should be vaccinated if they cannot give evidence (vaccination card) of previous vaccination. Vaccination should be given on the fourth week of treatment. Children referred from inpatient care should also be vaccinated on week four of treatment if the repeat vaccination was not provided.

Note: Provision of two vaccinations (upon admission and discharge) is usually unnecessary with outpatient treatment as there is limited risk of crowding and thus of transmission, except in case of a measles epidemic or if the child was under 12 months when the first vaccination was given.

Paracetamol

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

Paracetamol Doses

Give a single dose of paracetamol for symptomatic treatment of fever.

Use extreme caution for children with SAM. Give treatment one time only and start antibiotic or antimalarial immediately. Monitor the child: If the fever is greater than 39° C, refer the child to

inpatient care where possible. If inpatient care is not possible, give a single dose of paracetamol and a tepid sponge bath to the child until the fever subsides. Return the child to the clinic if a high fever continues at home.

Note: Always check the label on bottles for doses and dilution of syrups, as this can change between different manufacturers. Give one dose only and start antibiotic or antimalarial.

Table 6. Paracetamol Doses

Weight of the child	Syrup – 125 mg / 5 ml	Capsules – 250 mg
	Dose – one-time treatment only	
< 4.0 kg	25 mg (1 ml)	25 mg (¼ tablet)
4.0 – 8.0 kg	60 mg (2.5 ml)	50 mg (½ tablet)
8.0 - 15.0 kg	120 mg (5 ml)	100 mg (1 tablet)
> 15.0 kg	240 mg (10 ml)	200 mg (2 tablets)

Annex 10. Sugar-Water Protocol

Sugar Water (10 Percent Dilution)

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

Notes:

- Use clean drinking water (slightly warm if possible to help dilution). Add the required amount of sugar and shake or stir vigorously.
- Give immediately to all children refusing ready-to-use therapeutic food (RUTF) or being referred to inpatient care.
- If possible, especially when very hot, give to all children in outpatient care while they are awaiting treatment.

Annex 11. Dietary Treatment

Overview of Dietary Treatment	
F75 Therapeutic Milk (100 kcal/kg/day)	Inpatient care – stabilisation phase
F100 Therapeutic Milk (150 and 200 kcal/kg/day)	Inpatient care – transition and rehabilitation phase
F100-Diluted Therapeutic Milk	Infants under 6 months (no oedema) in inpatient care – stabilisation phase to complement breastfeeding (130 kcal/kg/day) Infants with oedema in stabilisation phase will take F75 and change to F100-Diluted when the oedema is resolved
RUTF	Inpatient care transition and rehabilitation phase or outpatient care (200 kcal/kg/day)

Therapeutic Milk

F75 and F100 are therapeutic products that are available commercially as powder formulations. The formulas can also be prepared using basic ingredients of dried skim milk, sugar, cereal flour, oil, combined mineral and vitamin mix (CMV) for severe acute malnutrition (SAM). (See **Annex 12. Alternative Recipes for F75, F100 and ReSoMal Using CMV**.)

F75 Therapeutic Milk

- F75 therapeutic milk has 75 kcal per 100 ml. F75 has the correct balance of Type 1 and Type 2 nutrients, a greater nutrient density and bioavailability, lower osmolarity and renal solute load. It is designed to restore hydration, electrolyte and metabolic balance, provide the necessary calories and nutrients for maintenance needs and start the process of restoration of adequate immune function.
- F75 is provided in inpatient care (stabilization phase only).
- Quantities to give of F75: 100 kcal/130 ml/kg/day.

F100 Therapeutic Milk

- F100 therapeutic milk has 100 kcal/100 ml. F100 has the correct balance of Type 1 and Type 2 nutrients, and a greater nutrient density and bioavailability. The F100 diet is designed to provide adequate calories and nutrients to promote catch-up growth in children recovering from SAM.
- F100 should never be given for use at home or in outpatient care.
- F100 is provided in inpatient care – transition and rehabilitation phase.
- Quantities to give of F100 inpatient care – transition phase: 130 kcal/130 ml/kg/day.
- Quantities to give of F100 inpatient care –rehabilitation phase: 200 kcal/200 ml/kg/day, in case ready-to-use therapeutic food (RUTF) cannot be taken.

F100-Diluted Therapeutic Milk

- F100-Diluted therapeutic milk has 66 kcal/100 ml, as one-third of water is added to the F100 mixture.
- F100-Diluted is provided in inpatient care (all phases for infants under 6 months or below 4 kg, if no oedema).
- Quantities to give of F100-Diluted: 100 kcal/130 ml/kg/day.

Ready-to-Use Therapeutic Food (RUTF)

RUTF are soft foods or pastes that have been developed specifically with the right mix of Type 1 and Type 2 nutrients and are of adequate caloric composition to treat a child over 6 months with SAM. RUTF is easy for children to consume and requires no preparation and no mixing with water or other foods. RUTF has similar nutrient and caloric composition to the F100 therapeutic milk but has very low water activity, meaning that bacteria cannot grow in it. This allows it to be given as a take-home ration in outpatient care. RUTF can also be provided in the inpatient transition and rehabilitation phase. Plumpy'nut® is a commercial RUTF product manufactured by Nutriset. It comes in sachets of 500 kcal weighing 92 g. RUTF can also be produced locally using dried skim milk, sugar, oil, CMV and peanut paste.

92 g Packets Containing 500 kcal (average treatment based on 200 kcal/kg bodyweight/day)

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

Annex 12. Alternative Recipes for F75, F100 and ReSoMal Using CMV

Recipes for F75 Formula – Cooking Recipe

Type of milk	Milk (g)	Sugar (g)	Oil (g)	Cereal powder* (g)	CMV red scoop = 6.35g	Water (ml)
Dried skim milk	50	140	60	70	1	Up to 2,000
Dried whole milk	70	140	40	70	1	Up to 2,000
Fresh cow milk or full –cream (whole) long life milk	600	140	40	70	1	Up to 2,000

*Cereal powder is cooked for about 10 minutes and then the other ingredients are added.

To prepare the F-75 diet, add the dried skim milk, sugar, cereal flour and oil to water and mix. Boil for 5-7 minutes. Allow to cool, then add the CMV and mix again. Make up the volume to 2,000 ml with water.

Alternative Recipes for F75 Formula – No Cooking

Type of milk	Milk (g)	Sugar (g)	Oil (g)	CMV red scoop = 6.35g	Water (ml)
Dried skim milk	50	200	60	1	Up to 2,000
Dried whole milk	70	200	40	1	Up to 2,000
Fresh cow milk or full –cream (whole) long life milk	600	200	40	1	Up to 2,000

Recipes for F100 Formula

Type of milk	Milk (g)	Sugar (g)	Oil (g)	CMV red scoop = 6.35g	Water (ml)
Dried skim milk	160	100	120	1	Up to 2,000
Dried whole milk	220	100	60	1	Up to 2,000
Fresh cow milk or full – cream (whole) long life milk	1,760	150	40	1	Up to 2,000

Rehydration Solution for Malnutrition (ReSoMal)

ReSoMal is a rehydration solution for children with SAM provided in inpatient care only after careful diagnosis of dehydration based on history and clinical signs. It is made of a **CMV** for use in the dietetic treatment of severe malnutrition. CMV is packed in an airtight metallic tin. Each tin contains a measuring scoop equalling 6.35 g of mineral and vitamin mix to be added to 2 litres (L) of self-prepared F75, F100 or ReSoMal.

Recipe for ReSoMal using standards ORS (90 mmol sodium/L)

Ingredient	Amount
Standard WHO ORS	One L packages
CMV	1 red scoop or 6.35 g
Sugar	50 g
Water	2,000 ml

Recipe for ReSoMal using low osmolarity ORS (75 mmol sodium/L)

Ingredient	Amount
Low osmolarity WHO ORS	500 ml package
CMV	½ levelled red scoop or 3.175 g
Sugar	20 g
Water	850 ml

CMV should have a moderate positive non-metabolisable base sufficient to eliminate the risk of metabolic acidosis. The non-metabolisable base can be approximated by the formula: estimated absorbed millimoles (sodium +potassium + calcium + magnesium) - (phosphorus + chloride). The CMV reproduced has a suitable positive non-metabolisable base.

The composition of the therapeutic CMV complies with the recommendations for mineral and vitamin enrichment in the dietetic treatment of severe malnutrition. It can be used to prepare ReSoMal (from the current ORS [standard or low osmolarity] + sugar + water) and prepare enriched high energy milk (F100 or F75).

The shelf life is 24 months from manufacturing date.

Nutrition Value for 6.35 g (1 Levelled Measuring Spoon) of Product

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

Annex 13. Preparing F75 Milk Using Pre-Packaged F75

Quantity (Red Scoop)	Quantity of water (ml)	Amount of F75 milk prepared (ml)
1	20	
2	40	
3	60	
4	80	
5	100	
6	120	
7	140	
8	160	
9	180	
10	200	
Quantity of F75 (g)	**Quantity of water to add (ml)**	**Amount of F75 milk prepared (ml)**
¼ sachet (102.5 grams)	500	600
½ sachet (205 grams)	1,000	1,200
1 sachet (410 grams)	2,000	2,400

Annex 14. RUTF Specification

Severely malnourished children require specialised therapeutic food to recover, such as F100 and F75 therapeutic milk, according to the WHO protocol recommendations. Ready-to-use therapeutic food (RUTF) is an integral part of outpatient programmes as it allows children to be treated at home rather than at inpatient treatment centres. RUTF is an energy-dense mineral- and vitamin-enriched food that is equivalent to F100 therapeutic milk.

There are currently two commercial types of RUTF: Plumpy'nut® and BP 100®. Several countries are producing their own RUTF using recipes that are adapted to locally available ingredients, and the product produced has similar nutritional quality as F100. It has also been shown to be physiologically similar to both commercial forms of F100 and RUTF.

Plumpy'nut®

Plumpy'nut® is a ready-to-eat therapeutic spread, presented in individual sachets. It is a paste of groundnut composed of vegetable fat, peanut butter, skimmed milk powder, lactoserum, maltodextrin, sugar and combined mineral and vitamin mix (CMV).

Instructions for Use

Clean drinking water must be made available to children during consumption of ready-to-eat therapeutic spread. The product should only be given to children who can express their thirst.

Recommendations for Use

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

Storage

Plumpy'nut® has a shelf life of 24 months from the manufacturing date. Keep it stored in a cool and dry place.

Packaging

Plumpy'nut® is presented in sachets of 92 g). Each carton (around 15.1 kg) contains 150 sachets. One sachet = 92 g = 500 kcal.

Table 1. Mean Nutrition Value of Plumpy'Nut®

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

Local Production of RUTF

Required ingredients for producing RUTF:

- Basic ingredients: sugar, dried skim milk, oil, and a vitamin and mineral supplement
- Up to 25 percent of the weight of the product can come from vegetable sources, such as oil-seeds, groundnuts or cereals such as oats

In addition to good nutrition quality (protein, energy and micronutrients), RUTF should have the following attributes:

- Taste and texture suitable for young children
- Does not need additional processing, such as cooking before consumption
- Is resistant to contamination by microorganisms and a long shelf life without sophisticated packaging
- Ingredients are low cost and readily available in developing countries

WHO/UNICEF/WFP/SCN Specifications

Recently, WHO, the United Nations Children's Fund (UNICEF), the World Food Programme (WFP) and the United Nations Standing Committee on Nutrition (SCN) produced draft specifications for RUTF. They are as follows:

RUTF is a high nutrient- and energy-dense ready-to-eat food suitable for the treatment of severely malnourished children. This food should be soft or crushable, palatable and easy for young children to eat without any preparation. At least half of the proteins contained in the product should come from milk products.

Table 2. Nutrition Composition of RUTF[16]

Moisture content	2.5% maximum
Energy	520-550 kcal/100 g
Proteins	10 to 12% total energy
Lipids	45 to 60% total energy
Sodium	290 mg/100 g maximum
Potassium	1100 to 1400 mg/100 g
Calcium	300 to 600 mg/100 g
Phosphorus (excluding phytate)	300 to 600 mg/100 g
Magnesium	80 to 140 mg/100 g
Iron	10 to 14 mg/100 g
Zinc	11 to 14 mg/100 g
Copper	1.4 to 1.8 mg/100 g
Selenium	20 to 40 µg
Iodine	70 to 140 µg/100 g
Vitamin A	0.8 to 1.1 mg/100 g
Vitamin D	15 to 20 µg/100 g
Vitamin E	20 mg/100 g minimum
Vitamin K	15 to 30 µg/100 g
Vitamin B1	0.5 mg/100 g minimum
Vitamin B2	1.6 mg/100 g minimum
Vitamin C	50 mg/100 g minimum
Vitamin B6	0.6 mg/100 g minimum
Vitamin B12	1.6 µg/100 g minimum
Folic acid	200 mcg/100 g minimum
Niacin	5 mg/100 g minimum
Pantothenic acid	3 mg/100 g minimum
Biotin	60 µg/100 g minimum
n-6 fatty acids	3 to 10% of total energy
n-3 fatty acids	0.3 to 2.5% of total energy

Note: Iron is already added to RUTF, but not to F100.

Safety

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

- Aflatoxin level: 5 parts per billion maximum
- Microorganism content: 10,000/g maximum
- Coliform test: negative in 1 g
- Clostridium perfringens: negative in 1 g
- Yeast: maximum 10 in 1 g
- Moulds: maximum 50 in 1 g
- Pathogenic Staphylococci: negative in 1 g

[16] Reference document for F100 composition: WHO. 1999. *Management of Severe Malnutrition: A Manual for Physicians and Other Senior Health Workers*. Geneva: WHO. Available at www.//www.who.int/nutrition/publications/severemalnutrition/9241545119/en/.

- Salmonella: negative in 125 g
- Listeria: negative in 25 g

The product should comply with the International Code of Hygienic Practice for Foods for Infants and Children of the *Codex Alimentarius* Standard CAC/RCP 21-1979. All added mineral and vitamins should be on the Advisory List of Mineral Salts and Vitamin compounds for Use in Foods for Infants and Children of the *Codex Alimentarius* Standard CAC/GL 10-1979.

The added minerals should be water-soluble and should not form insoluble components when mixed together. This mineral mix should have a positive non-metabolisable base sufficient to eliminate the risk of metabolic acidosis or alkalosis.[17]

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

[17] The non-metabolisable base can be approximated by the formula: estimated absorbed millimoles (mmol) (sodium + potassium + calcium + magnesium) - (phosphorus+chloride). The mineral mix recommended for F100 by WHO is an example of mineral mix with suitable positive non-metabolisable base.

Annex 15. Outpatient Care Action Protocol

Sign	Referral to Inpatient Care	Home Visit
GENERAL CONDITION	Deteriorating	
BILATERAL PITTING OEDEMA	Grade +++	
	Any grade of bilateral pitting oedema with severe wasting (marasmic kwashiorkor)	
	Increase in bilateral pitting oedema	
	Bilateral pitting oedema not reducing by week 3	
ANOREXIA *	No appetite or unable to eat – Failed appetite test	
VOMITING *	Intractable vomiting	
CONVULSIONS *	Ask mother/caregiver if the child had convulsions since the previous visit	
LETHARGY, NOT ALERT *	Child is difficult to awake	
UNCONSCIOUS-NESS *	Child does not respond to painful stimuli	
HYPOGLYCAEMIA	A clinical sign in a child with SAM is eyelid retraction: Child sleeps with eyes slightly open Low level of blood glucose < 3 mmol/l	Child is absent or defaulting
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	Child is not gaining weight or losing weight on follow-up visit
HIGH FEVER	Axillary temperature ≥ 38.5° C, rectal temperature ≥ 39° C, taking into consideration the ambient temperature	
HYPOTHERMIA	Axillary temperature < 35° C, rectal temperature < 35.5° C, taking into consideration the ambient temperature	
RESPIRATION RATE	≥ 60 respirations/minute for children under 2 months	Child returned from inpatient care or refused referral to inpatient care
	≥ 50 respirations/minute for children 2 to 12 months	
	≥ 40 respirations/minute for children 1 to 5 years	
	≥ 30 respirations/minute for children over 5 years	
	Any chest in-drawing	
ANAEMIA	Palmer pallor or unusual paleness of skin	
SKIN LESION	Broken skin, fissures, flaking of skin	
SUPERFICIAL INFECTION	Any infection requiring intramuscular antibiotic treatment	
WEIGHT CHANGES	Below admission weight on week 3	
	Weight loss for 2 consecutive visits	
	Static weight for 3 consecutive visits	
REQUEST	Mother/caregiver requests treatment of child in inpatient care for social reasons (decided by supervisor)	
NOT RESPONDING	Child who is not responding to treatment is referred to inpatient care or hospital for further medical investigation. *It is recommended that children who are referred to the inpatient care facility due to failure to respond to treatment are tested for chronic illness such as HIV/AIDS and TB.*	

* Integrated Management of Childhood Illness (IMCI) danger signs

Annex 16. Key Messages Upon Admission

1. RUTF is a food and medicine for very thin children and children with swelling only. It should not be shared.

2. Sick children often don't like to eat. Give small regular meals of RUTF and encourage the child to eat often (if possible eight meals a day). Your child should have _____ packets a day.

3. For young children, continue to breastfeed. Offer breast milk first before every RUTF feed.

4. RUTF is the only food sick and thin/swollen children need to recover during their time in Outpatient Care. Always give RUTF before other foods, like porridge ("Koko").

5. Always offer plenty of clean water to drink while eating RUTF. Children will need to drink more water than normal.

6. Use soap to cleanse child's hands and face before feeding. Keep food clean and covered.

7. Sick children get cold quickly. Always keep the child covered and warm.

8. Never stop feeding if a child has diarrhoea. Give extra food and extra clean water.

Note: Ask the caregiver to repeat the messages to check if they have been correctly understood. Upon the next visits to the health facility, the health and nutrition messages are expanded (see **Annex 17. Messages for Health and Nutrition Education**).

Annex 17. Messages for Health and Nutrition Education

Key Points

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

Meeting Baby's Food Needs Starting at Six Months

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

Helping Your Baby to Grow Strong

1. From six months on, babies need more than one type of food at each feeding if they are going to maintain their health and grow well.
2. Fats/oil should be added to each meal. Any fat you have at home is OK for the baby. A small amount, such as one teaspoonful of fat/oil, is packed with energy.
3. Babies accept fats easily at six months.
4. Beans, fish, eggs, fish powder and meats help babies grow. Babies who eat them one to two times a day have good blood and are protected from illness.

5. All mothers are concerned about the cost of feeding their family, but luckily babies only need a small amount of animal protein. As part of a feeding, include a matchbox-size amount (or at least one tablespoonful) of mashed or chopped meat, egg or fish every other day to help your baby grow.
6. The same amount of mashed beans, ground nuts, agushi or fish powder is needed on the days you don't give animal protein.
7. Remember that frequent breastfeeding is still very important for your baby.

Vegetables and Fruits: Protecting Your Baby from Illness

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

How Much and How Often?

6 Months Old

1. 1 soup ladle of porridge at a meal
2. Feed the baby two times each day
3. Frequent breastfeeding day and night

7-8 Months Old

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

    And
    - 2 tablespoon of mashed fruits or vegetables
4. Breastfeed frequently day and night.

9 Months to 1 Year Old

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

    And
    - 2 tablespoon of mashed fruits or vegetables
7. Frequent breastfeeding is still very important for your baby.

Annex 18. Play and Stimulation

Structured Play Activities

Play therapy is intended to develop language skills and motor activities and is aided by simple toys. It should take place in a loving, relaxed and stimulating environment.

Language Skills

At each play session:

- Teach local songs and finger and toe games.
- Get the child to laugh and vocalise, repeat what he/she says.
- Describe all activities.
- Teach action words with activities (e.g., "bang bang" as he/she beats a drum, "bye bye" as he/she waves).
- Teach concepts at every opportunity.

Motor Activities

Encourage the child to perform the next motor milestone:

- Bounce the child up and down and hold him/her under the arms so that his/her feet support his/her weight.
- Prop the child up, roll toys out of reach and encourage the child to crawl after them.
- Hold hands and help the child to walk.
- When the child is starting to walk alone, give a "push-along" toy and later a "pull-along" toy.

Activities With Toys

Simple toys can easily be made from readily available materials. These toys can be used for a variety of different motor activities.

"Ring on a String"

- Swing the ring within reach and tempt the child to grab it.
- Suspend the ring over the crib and encourage the child to knock it and make it swing.
- Let child explore the ring, then place it a little distance from child with the string stretched toward him/her and within reach. Teach the child to retrieve the ring by pulling on the string horizontally.
- Sit the child on your lap. Holding the string, lower the ring toward the ground. Teach the child to get the ring by pulling up on the string vertically. Also teach the child to dangle the ring.

"Rattle and Drum"

- Let the child explore the rattle. Show child how to shake it while saying "shake shake."
- Encourage the child to shake the rattle by saying "shake" but without demonstrating.
- Teach the child to beat the drum with the shaker while saying "bang bang."

- Roll the drum out of reach and let the child crawl after it while saying "fetch it."
- Get child to say "bang bang" as he/she beats the drum.

"In and Out" Toy with Blocks

- Let the child explore blocks and the container. Put the blocks into the container and shake it, then teach child to take them out one at a time while saying "out" and "give me."
- Teach the child to take the blocks out by turning the container upside down.
- Teach the child to hold a block in each hand and bang them together.
- Let the child take the blocks in and out of container while saying "in" and "out."
- Cover the blocks with the container while saying, "Where are they? They are under the cover." Let the child find them. Then hide them under two and then three covers (e.g., pieces of cloth).
- Turn the container upside down and teach the child to put blocks on top of the container.
- Teach the child to stack blocks; first stack two, then gradually increase the number. Knock them down while saying "up up" then "down." Make a game of it.
- Line up blocks horizontally: first line up two, then more. Teach the child to push them along while making train or car noises. Teach older children words such as "stop" and "go," "fast" and "slow," and "next to." After this, teach children to sort blocks by colour, first two then more, and teach high and low building. Make up games.

Posting Bottle

- Put an object in the bottle and shake it. Teach the child to turn the bottle upside down and to take the object out while saying, "Can you get it?"
- Then teach the child to put the object in and take it out. Later try with several objects.

Stacking Bottle Tops

- Let the child play with two bottle tops. Teach the child to stack them while saying, "I'm going to put one on top of the other." Later, increase the number of tops.
- Older children can sort tops by colour and learn concepts such as high and low.

Books

- Sit the child on your lap. Get the child to turn the pages, pat pictures and vocalise. Later, let the child point to the picture you name. Talk about pictures and obtain pictures of simple familiar objects, people and animals.
- Let older children name pictures and talk about them.

Doll

- Teach the word "baby." Let the child love and cuddle the doll. Sing songs whilst rocking the child.
- Teach the child to identify his/her own body parts and those of the doll when you name them. Later s/he will name them.
- Put the doll in a box as a bed and give it sheets. Teach the words "bed" and "sleep," and describe the games you play.

Annex 19. Checklist for Home Visits

Community Health Worker's Name: _____

Date of Visit: _____

Child's Name: _____

Note: If problems are identified, please list any health education or advice given in the space below or on the other side of the page. Return this information to the health facility.

Feeding		
Is the ration of ready-to-use therapeutic food (RUTF) present in the home?	**Yes**	**No**
If not, where is the ration?		
Is the available RUTF enough to last until the next outpatient care session?	**Yes**	**No**
Is the RUTF being shared or eaten only by the sick child?	**Shared**	**Sick child only**
Yesterday, did the sick child eat food other than RUTF?	**Yes**	**No**
If yes, what type of food?		
Yesterday, how often did the child receive breast milk? (for children < 2 yrs)		
Yesterday, how many times did the sick child receive RUTF to eat?		
Did someone help/encourage the sick child to eat?	**Yes**	**No**
What does the caregiver do if the sick child does not want to eat?		
Is clean water available?	**Yes**	**No**
Is water given to the child when eating RUTF?	**Yes**	**No**
Caring		
Are both parents alive and healthy?		
Who cares for the sick child during the day?		
Is the sick child clean?	**Yes**	**No**
Health		
What is the household's main source of water?		
Is there soap for washing in the house?	**Yes**	**No**
Do the caregiver and child wash hands and face before the child is fed?	**Yes**	**No**
Is food/RUTF covered and free from flies?	**Yes**	**No**
What action does the caregiver take when the child has diarrhoea?		
Food Security		
Does the household currently have food available?	**Yes**	**No**
What is the most important source of income for the household?		
COMMENTS:		

Annex 20. Inpatient Care Treatment Card (Critical Care Pathway-CCP)

See following pages.

Name: _____ Page _____ of _____

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

SIGNS OF MALNUTRITION Severe wasting? Yes No

Bilateral Pitting Oedema? 0 + ++ +++

Dermatosis? 0 + ++ +++ (raw skin, fissures)

Weight (kg): Height/length (cm):

WFH z-score: MUAC (mm):

TEMPERATURE: °C rectal axillary

If rectal < 35.5° C, or axillary <35° C, actively warm child. Check temperatures every 30 minutes.

BLOOD GLUCOSE (mmol/l)

If <3mmol/l and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG).

If <3 mmol/l and lethargic, unconscious, or convulsing, give sterile 10% glucose IV: 5 ml x ___kg (child's wt) = ___ml *Then give 50 ml bolus NG.*

Time glucose given: Oral NG IV

HAEMOGLOBIN (Hb) (g/l): or Packed cell vol (PCV):

Blood type:

If Hb <40 g/l or PCV<12%, transfuse 10 ml/kg whole fresh blood (or 5-7 ml/kg packed cells) slowly over 3 hours. Amount: Time started: Ended:

EYE SIGNS None Left Right

Bitot's spots Pus/Inflammation Corneal clouding Corneal ulceration

If ulceration, give vitamin A & Atropine immediately. Record on Daily Care page. If no ulceration, give vitamin A upon discharge.

Record on Comments/Outcome page.

Oral doses of Vitamin A:	< 6 months	50 000 IU
	6 – 12 months	100 000 IU
	>12 months	200 000 IU

MEASLES Yes No

FEEDING *Begin feeding with F-75 as soon as possible. (If child is rehydrated, reweigh before determining amount to feed.*

New weight: _____ kg)

Amount for 2-hourly feedings: ____ ml F75* Time first fed: _____

** If hypoglycaemic, feed ¼ of this amount every half hour for first 2 hours; continue until blood glucose reaches 3 mmol/l.*

Record all feeds on 24-hour Food Intake Chart.

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

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

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

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

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

DIARRHOEA

Watery diarrhoea? Yes No
Blood in stool? Yes No
Vomiting? Yes No

If diarrhoea, circle signs present: Skin pinch goes back slowly Lethargic Thirsty
Restless/irritable Dry mouth/tongue No tears
Sunken eyes

If diarrhoea and/or vomiting, give ReSoMal. Every 30 minutes for first 2 hours, monitor and give:*
5 ml x ____ kg (child's wt) = ____ ml ReSoMal

For up to 10 hours, give ReSoMal and F75 in alternate hours. Monitor every hour. Amount of ReSoMal to offer:*
5 to 10 ml x ____ kg (child's wt) = _____ to _____ ml ReSoMal

Time	Start													
Resp. rate														
Pulse rate														
Passed urine? Y N														
Number stools														
Number vomits														
Hydration signs														
Amount taken (ml)						F75		F75		F75		F75		F75

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

** If bilateral pitting oedema, give ReSoMal 30 ml after each watery stool only.

ANTIBIOTICS (All receive) Drug/Route	Dose/Frequency/Duration	Time of I^st^ Dose

MALARIA TEST Type/Date/Outcome	Antimalarial: Dose/Frequency/Duration	Time of I^st^ Dose
HIV TEST Type/Date/Outcome		

DAILY CARE

	Week 1							Week 2							Week 3						
DAYS IN HOSPITAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Date																					
Daily weight (kg)																					
Weight gain (g/kg)	*Calculate daily after on RUTF or F100*																				
Bilateral pitting oedema 0 + ++ +++																					
Diarrhoea/Vomit O D V																					
FEED PLAN: Type feed																					
# daily feeds																					
Volume to give per feed																					
Total volume taken (ml)																					
NGT Y N																					
Breastfeeding Y N																					
Appetite test with RUTF F failed P passed																					
ANTIBIOTICS	*List prescribed antibiotics in left column. Allow one row for each daily dose. Draw a box around days/times that each drug should be given. Initial when given.*																				
ANTIMALARIAL (note type of drug)																					
FOLIC ACID (if not on RUTF)	5mg	1mg →																			
VITAMIN A	*		*Give day 1, 2 and 15 if child admitted with eye sign or recent measles. Else, give routinely single dose on week four or upon discharge unless evidence of dose in past month*																		
Drug for worms (note type of worms)																					
IRON (if not on RUTF) 2 x daily	*Begin iron after 2 days on F100. Do not give when on RUTF.*																				
FOR EYE PROBLEMS											*After 7-10 days, when eye drops are no longer needed, shade boxes for eye drops.*										
Tetracycline or Chloramphenicol 1 drop 4 x daily																					
Atropine 1 drop 3 x daily																					
Dermatosis 0 + ++ +++																					
Stool appearance																					
Ear problems																					
Mouth or throat problems																					
Bathing, 1% permanganate																					
OTHER																					

Name: _____ Page _____ of _____

MONITORING RECORD

Monitor respiratory rate, pulse rate and temperature 4-hourly until after transition to RUTF or F100 and patient is stable. Then monitoring may be less frequent (e.g., twice daily).

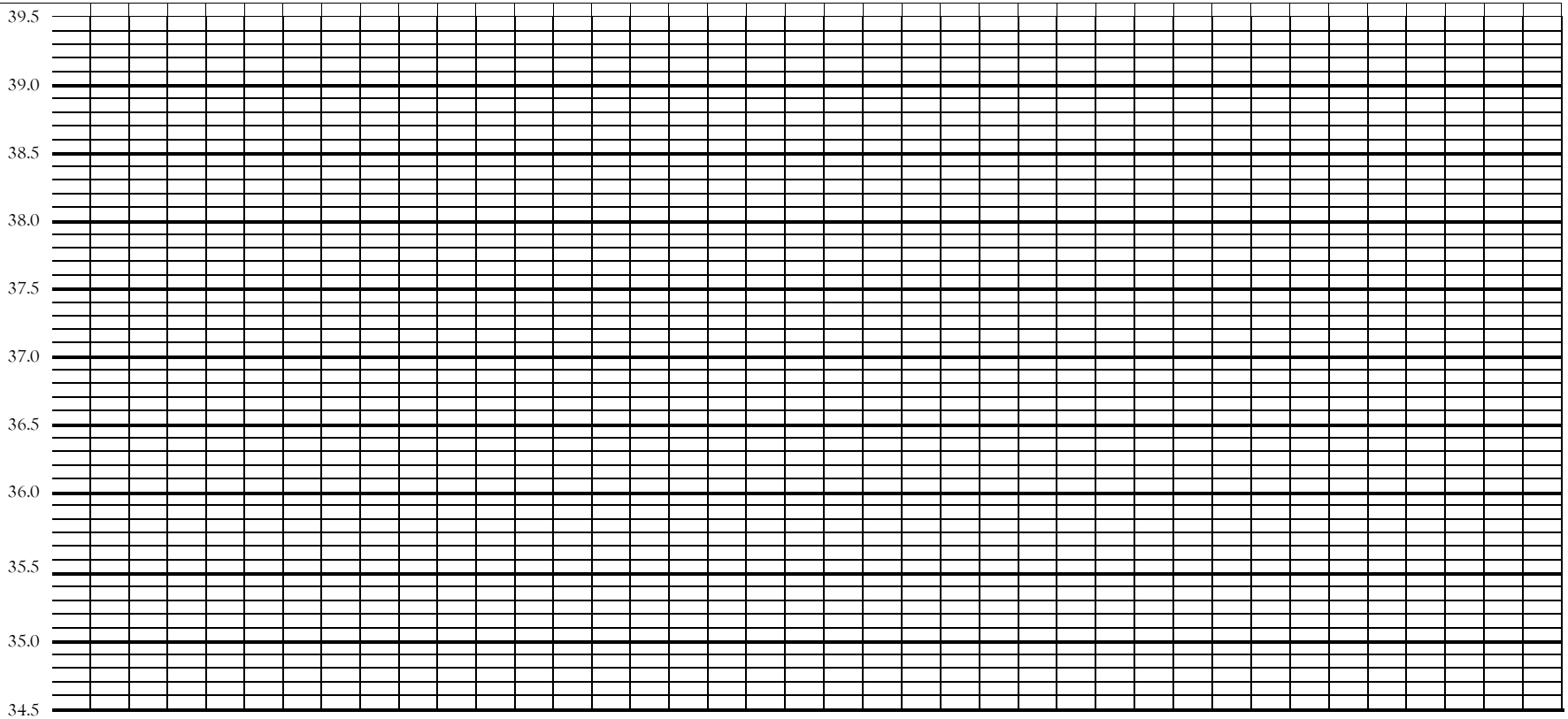
RESPIRATORY RATE

Breaths/ minute																																		

PULSE RATE

Beats/ minute																																		

TEMPERATURE



Danger Signs: Watch for increasing pulse and respirations, fast or difficult breathing, sudden increase or decrease in temperature, rectal temperature below 35.5°C, and other changes in condition. See Danger Signs listed on back of WHO F100 Reference Card. See normal ranges of pulse and respiratory rates also on back of WHO F100 Reference Card.

WEIGHT CHART

Weight on admission: _____ kg

Height / length: _____ cm

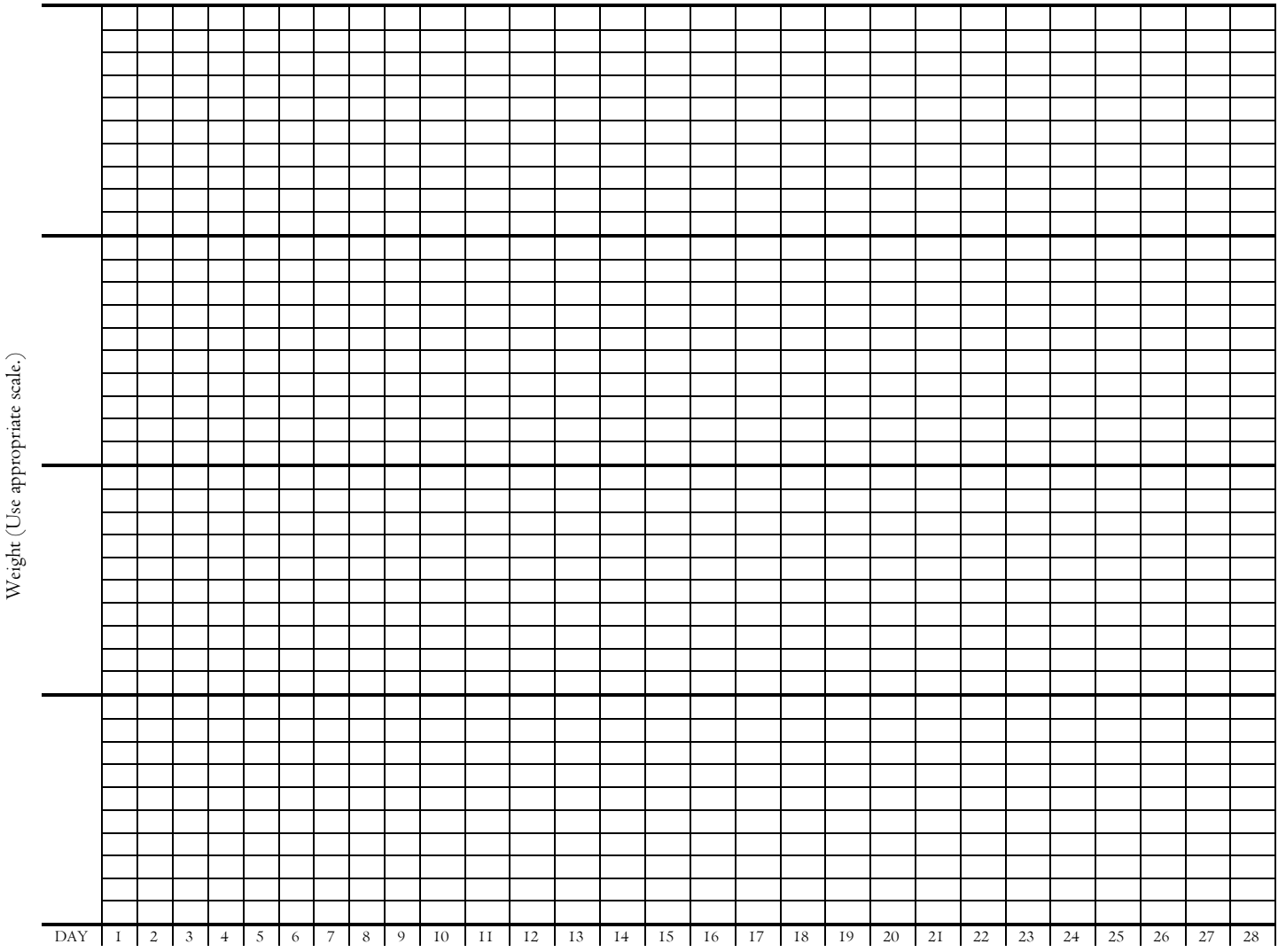
Bilateral pitting oedema on admission:
0 + ++ +++

Desired weight at discharge based on 15% weight change:
_____ kg

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

Actual weight at referral to outpatient care:
_____ kg

[Actual weight at discharge if treatment until full recovery in inpatient care
_____ kg]



COMMENTS/OUTCOME

COMMENTS

SPECIAL DISCHARGE AND FOLLOW-UP INSTRUCTIONS

TRAINING GIVEN TO PARENTS/ CAREGIVERS

IMMUNISATIONS

Immunisation card? Yes No

Circle immunizations already given. Initial and date by any given in hospital.

Immunization	First	Second	Third	Booster
BCG	At birth	Optional: > 6 months	__	__
Polio	At birth	2 months	3 months	12 months
DPT	3 months	4 months	5 months	12 months
Measles	6 to 9 months	__	__	__

PATIENT OUTCOME

	DATE	CIRCUMSTANCES/COMMENTS
Referral to Outpatient Care		Site:
In case of treatment until full recovery in Inpatient Care, ***Circle Outcome:***		
Discharge based on 15% weight change [or based on weight for height -1 z-score]		Discharge weight equal or above 15% weight gain: Y N [Weight for height Z-score: _____]
Early Departure (against advice)		Discharge weight equal or above 15% weight gain: Y N [Weight for height Z-score: _____]
Early Discharge		Discharge weight equal or above 15% weight gain: Y N [Weight for height Z-score: _____]
Referral for Non Response to Treatment		Discharge weight equal or above 15% weight gain: Y N [Weight for height Z-score: _____]
Death		Number of days after admission (circle): < 24 1-3 days 4-7 days >7 days Approximate time of death: Day Night
		Apparent cause(s): Had child received IV fluids? Yes No

Annex 21. Outpatient Care Treatment Card

ADMISSION DETAILS: OUTPATIENT CARE

ADMISSION INFORMATION

Name					Reg. N°	/ /		
Age (months)		Sex	M	F	Date of admission			
Community, Locality					Time to travel to site			
House location					Father alive		Mother alive	
Name of caregiver			Total number in household					
Admission	Direct from community	Referred from heath facility	Referred from inpatient care			Readmission (relapse)	Yes / No	

Admission anthropometry

MUAC (cm)		Weight (kg)		Oedema (+, ++, +++)		
Admission criteria	Bilateral pitting oedema	MUAC < 11.5 cm (6 months and above)	Other, specify			

Medical history

Diarrhoea	Yes	No	# Stools/day	1-3	4-5	>5	
Vomiting	Yes	No	Passing urine	Yes	No		
Cough	Yes	No	If oedema, how long swollen?				
Appetite	Good	Poor	None	Breastfeeding	Yes	No	
Additional information							

Physical examination

Respiratory rate *(# per min)*	<30	30 – 39	40 - 49	50+		Chest indrawing	Yes	No
Temperature	°C					Conjunctiva	Normal	Pale
Eyes	Normal	Sunken	Discharge		Dehydration	None	Moderate	Severe
Ears	Normal	Discharge			Mouth	Normal	Sores	Candida
Enlarged lymph nodes	None	Neck	Axilla	Groin		Hands & feet	Normal	Cold
Skin changes	None	Scabies	Peeling	Ulcers / Abscesses		Disability	Yes	No
Additional information								

Routine medicines upon admission

Drug	*Date*	*Dosage*
Amoxicillin		
Vitamin A (if not in last 1 months)		
Measles Immunization	Yes	No / date
2ND VISIT: *Drug*	*Date*	*Dosage*
Mebendazole		

Drug	*Date*		
Malaria test		Results:	
	Date	*Dosage*	
Malaria treatment			
Fully immunised	Yes	No	

Other medicines

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

MONITORING INFORMATION

NAME REG No. /OPC

Week	ADM.	I	2	3	4	5	6	7	8	9	I0	II	I2	I3	I4	I5	I6
Date																	
Anthropometry																	
15% Target Weight																	
Bilateral Pitting Oedema (0, +, ++, +++)																	
MUAC **(cm)**																	
Weight **(kg)**																	
Weight loss * *(Y/N)*				*		*											
*** If below admission weight on week 3, refer for home visit; if no weight gain by week 5, refer to inpatient care**																	
History																	
Diarrhoea *(# days)*																	
Vomiting *(# days)*																	
Fever *(# days)*																	
Cough *(# days)*																	
Physical examination																	
Temperature (^{0}C)																	
Respiratory rate*(# /min)*																	
Dehydrated *(Y/N)*																	
Anaemia / palmer pallor *(Y/N)*																	
Superficial skin infection *(Y/N)*																	
Appetite check / feeding																	
RUTF test *Passed/Failed*																	
RUTF *(# units given)*																	
Action / follow-up																	
ACTION NEEDED *(Y/N)*																	
Other medication *(see front of card)*																	
Name examiner																	
VISIT OUTCOME**																	

** **OK**=Continue Treatment **A**=Absent **D**=Defaulted (3 absences) **R**=Referral **RR**=Refused Referral **C**=Cured **NR**=Non-Recovered **HV**= Home Visit **X**=Died

Action taken during follow-up home visit *(include date)*

Name of Community Volunteer:

Annex 22. Outpatient Care RUTF Ration Card

Outpatient Care RUTF Ration Card

NAME of CHILD:					
OUTPATIENT CARE SITE:			REG. NO:	/OPC	
ADMISSION CRITERIA	Bilateral Pitting Oedema		MUAC < 11.5 cm	Other	
Date	Oedema (0, +, ++, +++)	MUAC (cm)	Weight (kg)	RUTF (# units given)	Comments
Notes:					
OUTCOME:	Cured	Died	Defaulted	Referred	Non-recovered
Comments/Home visits					

Annex 23. Health Facility Tally Sheet for the Management of SAM

HEALTH FACILITY: _____ DISTRICT:_____

FACILITY TYPE (Inpatient or Outpatient): _____ MONTH: _____

Week	1	2	3	4	5	TOTAL
Date						
Total start of week (A)						
New Cases 6-59 m (Oedema) (B1)						
New Cases 6-59 m (MUAC < 11.5 cm) (B2)						
New Cases Other (< 6 months, > 59 months with MUAC <11.5 or Oedema) (B3)						
Old Cases: Referred from other outpatient or inpatient care, or returned defaulter (C)						
TOTAL ADMISSIONS (D=B1+B2+B3+C)						
Cured (E1)						
Died (E2)						
Defaulted (E3)						
Non-Recovered (E4)						
Total Discharges (E=E1+E2+E3+E4)						
Referrals to other outpatient or inpatient care (F)						
TOTAL EXITS (G= E+F)						
Total end of week (A+D-G)						

ADDITIONAL INFORMATION						
Males						
Females						
RUTF Quantities (Issued during the week) -*In sachets/pots*						
RUTF Quantities (Balance at the end of the week) -*In sachets/pots*						

Annex 24. Health Facility Monthly Report for the Management of SAM

REGION	
DISTRICT	
FACILITY	

MONTH/YEAR		
TYPE OF MANAGEMENT (CIRCLE)	*Inpatient*	*Outpatient*
ESTIMATED MAXIMUM CAPACITY		
ESTIMATED TARGET malnourished < 5s (based on latest survey data and admission criteria)		

	Sachets/pots	kg equivalent
RUTF QUANTITIES (Received)		
RUTF QUANTITIES (Issued)		
RUTF QUANTITIES (Balance)		

Total beginning of the month (A)	New Cases (B)			Old Cases (C) Returned referral from outpatient or inpatient care, or returned defaulters	TOTAL ADMISSION (D) (B+C=D)	Discharges (E)				Referral (F) to inpatient or outpatient care	TOTAL EXITS (G) (E+F=G)	Total end of the month (H) (A+D-G=H)
	6-59 m (oedema cases) (B1)	6-59 m (MUAC < 11.5 cm) (B2)	Other (< 6, >59 months with MUAC < 11.5 cm or Oedema) (B3)			CURED (E1)	DIED (E2)	DEFAULTED (E3)	NON-RECOVERED (E4)			
						%	%	%	%			
					TARGET (Sphere standards)	>75%	<10%	<15%				

E1: Cured = meets discharge criteria

E3: Defaulted = absent for three consecutive sessions

E4: Non-recovered = does not meet discharge criteria after four months in treatment (medical investigation done)

Annex 25. District Monthly Report for the Management of SAM

REGION		NUMBER OF OUTPATIENT CARE FACILITIES		IMPLEMENTING PARTNER(S)	
DISTRICT		NUMBER OF INPATIENT CARE FACILITIES			
		ESTIMATED MAXIMUM CAPACITY		REPORTING PERIOD (MONTH/YEAR)	
		ESTIMATED TARGET Children with SAM <5 years of age in a given period			
		ESTIMATED COVERAGE			

	Sachets/ pots	Kg equivalent
RUTF QUANTITIES (RECEIVED)		
RUTF QUANTITIES (ISSUED)		
RUTF QUANTITIES (BALANCE)		

Total beginning of the period (A)	New Cases (B)			TOTAL ADMISSION (B)	Discharges (E)				TOTAL DISCHARGES (E)	Total end of the month (H) (A+B-E=H)
	6-59 m (Oedema cases) (B1)	6-59 m (MUAC < 11.5 cm) (B2)	Other (children > 59 months, infants <6 m) (B3)		CURED (E1)	DIED (E2)	DEFAULTED (E3)	NON-RECOVERED (E4)		
					%	%	%	%		
				TARGET (Sphere standards)	>75%	<10%	<15%			

E1: Cured = meets discharge criteria

E3: Defaulted = absent for three consecutive sessions

E4: Non-recovered = does not meet discharge criteria after four months in treatment (medical investigation done)

Annex 26. Minimal Reporting Guidance for the Management of SAM

The monthly, quarterly or yearly report presents key quantitative and qualitative information and analysis, and interprets the information in a comprehensive manner. The report should include the following essential information:

Introduction

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

Performance and output indicators for the management of SAM in inpatient care and outpatient care combined, per time period

- Number of new admissions
- Number of discharges
- Number of beneficiaries in treatment
- Number and percentage cured
- Number and percentage died
- Number and percentage defaulted
- Number and percentage non-recovered
- Number of referrals to inpatient care or hospital
- Number admitted from community outreach referral
- Number of sites
- Number of new sites added
- Number of staff (e.g., health managers, health workers, community health workers [CHWs], volunteers) trained

Figures

- Figure (graph) with trends of key performance and output indicators:
    - Bars with new admissions, discharges, beneficiaries in treatment
    - Lines for cured, died, defaulted and non-recovered rates
- Figure (graph) for monthly average length of stay (LOS) and average weight gain (AWG) per category of admission criteria
- Figure (pie chart) with distribution of admission criteria
- Figure (pie chart) with distribution of discharge categories

Death records: Date, sex, age, reported cause of death, LOS in service

Default records: Date, sex, age, reported/presumed reason for defaulting, LOS in service

Interpretation of overall progress

- Interpret findings on performance and coverage and any qualitative information that was obtained through community meetings, focus group discussions, etc.; then, triangulate the information.

- Discuss challenges, opportunities, lessons learned.
- Add success stories.

Annex 27. Supervision Checklists

SUPERVISION CHECKLIST
OUTPATIENT CARE

Health Centre: _____ Date: _____

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

Priorities for follow-up home visits are discussed with a outreach worker if needed			
Beneficiaries discharged according to protocol			
Correct number of absentees/defaulters passed to outreach worker for follow-up			
Outpatient care tally sheets, register and RUTF stock cards correctly completed (spot check)			
All absentees/defaulters from previous week followed up			
Outreach follow-up form filled in correctly and information noted on ration card			
Appropriate education (according to education message sheet) given to mothers/caregivers at home			
Mother/caregiver referred for additional care or services if appropriate			
Timely and appropriate referral to the clinician made for non-responders			
Volunteer/outreach worker returns follow-up visit checklists or observations to health centre			
Volunteer/outreach worker feedback provided on a timely basis (before the next outpatient session)			
Volunteer/outreach worker has a helpful, positive attitude with caregivers			

SUPERVISION CHECKLIST
COMMUNITY OUTREACH

Health Centre:_____ Date:_____

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

INPATIENT CARE
SUPERVISION CHECKLISTS

Checklist for Monitoring Food Preparation

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

Checklist for Monitoring Ward Procedures

OBSERVE	YES	NO	COMMENTS
Feeding			
Are correct feeds served in correct amounts?			
Are feeds given at the prescribed times, even on nights and weekends?			
Are children held and encouraged to eat (never left alone to feed)?			
Are children fed with a cup (never a bottle)?			
Is food intake (and any vomiting/diarrhoea) recorded correctly after each feed?			
Are leftovers recorded accurately?			
Are amounts of F75 kept the same throughout			

the initial phase, even if weight is lost?			
After transition, are amounts of F100 given freely and increased as the child gains weight?			
Warming			
Is the room kept between 25 and 30 degrees C (to the extent possible)?			
Are blankets provided and children kept covered at night?			
Are safe measures used for rewarming children?			
Are temperatures taken and recorded correctly?			
Weighing			
Are scales functioning correctly?			
Are scales standardised weekly?			
Are children weighed at about the same time each day?			
Are children weighed about one hour before a feed (to the extent possible)?			
Do staff adjust the scale to zero before weighing?			
Are children consistently weighed without clothes?			
Do staff correctly read weight to the nearest division of the scale?			
Do staff immediately record weights to the nearest division of the scale?			
Do staff immediately record weights on the child's Critical Care Pathway (CCP)?			
Are weights correctly plotted on the Weight Chart?			
Giving antibiotics, medications, supplements			
Are antibiotics given as prescribed (correct dose at correct time)?			
When antibiotics are given, do staff immediately make a notation on the CCP?			
Is folic acid given daily and recorded on the CCP?			
Is vitamin A given according to schedule?			
Is a multivitamin given daily and recorded on the CCP?			
After children are on F100 for two days, is the correct dose of iron given twice daily and recorded on the CCP?			
Ward environment			
Are surroundings welcoming and cheerful?			
Are mothers offered a place to sit and sleep?			
Are mothers taught/encouraged to be involved in care?			
Are staff consistently courteous?			
As children recover, are they stimulated and encouraged to move and play?			

Checklist for Monitoring Hygiene

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

Annex 28. Requisition Form for Therapeutic Food

Requisition Form for Therapeutic Food

REGION:……...

DISTRICT:……

SUB-DISTRICT/FACILITY:……..

1. NUMBER OF BENEFICIARIES

	OUTPATIENT	INPATIENT	TOTAL
NUMBER OF FACILITIES			
NUMBER OF BENEFICIARIES			

2. REQUEST

Products	Number of Beneficiaries	Number of Months Requested	Current Stock Levels (MT)*	Quantity Requested (MT)*

* MT = metric tons

REQUESTED FOR A PERIOD OF……..

PREPARED BY:……DESIGNATION:……

DATE OF REQUEST:……

QUANTITY APPROVED AND SUPPLIED:……

APPROVED BY:……DESIGNATION:…….....

Annex 29. Setup of Inpatient Care and Outpatient Care

Inpatient Care

Inpatient care is intended for the treatment of severe acute malnutrition (SAM) with medical complications and all infants under 6 months with SAM, as well as for those who cannot benefit from outpatient care due to distance or lack of caregivers. It is organised as residential care (24 hours, with the patients staying overnight). The decision between one or the other depends on available resources (particularly human resources for night shifts), security conditions (protection of the patients) and quality of care and follow-up of the patients (most severe and complicated cases should not be transported unless really necessary).

Inpatient care can be established at the paediatric ward or a specially assigned ward at the hospital or health facility, or as an independent structure if there is case overload. In the latter case, it is often set up as a semi-permanent structure (e.g., in refugee camps). In all cases, the inpatient care facility should have a good permanent supply of clean, potable water (for preparing the milk, washing and cleaning the wards).

Experience shows that, on average, 10 to 20 percent of children with SAM will need stabilisation at inpatient care. This figure may be much higher at the beginning of the intervention, if the setup of outpatient care is not covering all the area of origin of beneficiaries or if early detection of cases is deficient (late presentation). Children with SAM and medical complications are usually kept in a separate room from patients in the rehabilitation phase or other hospital patients. On average, patients in stabilisation care stay for three to 10 days. Those who need to complete treatment in inpatient care stay an average of 30 days. The majority can be treated on an outpatient basis directly (at the outpatient department) or referred to outpatient care once stabilised after a few days in a health facility with inpatient care (primary health care clinic or hospital).

Staff Needs

Clinical Care Staff

This includes senior nurses and junior nurses. The presence of a physician is recommended but is not always necessary. Only clinicians who have received specific training on the management of SAM should treat these patients, as many treatments normally given to children that are not malnourished might be dangerous for the malnourished child.

Feeding Assistants

Feeding assistants play a major role. They are in charge of weighing the child, supervising the meals, interacting with the caregivers, monitoring clinical warning signs and filling in most of the information on the patient's card. A ratio of one staff per 10 patients is considered appropriate in emergency inpatient care facilities. Other staff in this category might be in charge of the emotional and physical stimulation programme.

Support Staff

Cleaners and kitchen staff play a key role in maintaining a tidy environment and preparing therapeutic milks and food for caregivers. In large centres, a person in charge of the logistics and transport will be necessary. Guardians, storekeepers and other ancillary staff might be needed depending on the context and size of the facility.

Supervisors

One supervisor is needed for each ward with inpatient care (usually, but not necessarily, a clinician).

Outpatient Care

Outpatient care is intended for children presenting SAM without medical complications and for patients who have recovered in inpatient care after they have recovered appetite. Outpatient care can be set up in a health facility or can be organized at health outreach sites. It is always advisable to have a store, a covered waiting area and a separate protected area for clinical assessment of patients even if the centre is established in a provisional structure.

Outpatients visit the health facility once per week or once every two weeks. The number of patients attending an outpatient care facility can vary from 10 to 20 per session to several hundreds. When too many children are attending on the same day a decision should be taken as to whether it would be more appropriate to open new sites or increase the number of service days for existing facilities.

A nurse or health care provider is sufficient to take on the outpatient care (or several, depending on size). Health care providers need to be trained and able to identify danger signs and decide when and whether referral for inpatient care is necessary. They should be able to identify anorexia and assess progress of children, calculate indicators for monitoring and evaluation of patients (e.g., weight-for–height [WFH], weight gain, mid-upper arm circumference [MUAC]), fill in registration books and patient's treatment cards, and manage stores and supplies of food and drugs.

Where there are problems of access, or insufficient staff, mobile outpatient clinics can be planned for a limited period of time. One mobile team can visit up to five sites in a week (implementing weekly outpatient care once per week in each site).

Annex 30. Checklist of Materials Needed for Outpatient Care

Item	Amount per clinic
Outpatient care file for treatment cards	1
Stapler and box of staples	1
Pens	4
Scissors	1 pair
Small clock or watch with second hand	1
Bucket with lid	2
Soap for handwashing	1 bar
Small bowl	1
Small jug	1
Hand towels	2
Water jug (with lid)	2
Plastic cups	10
Small metal spoons	4
Thermometer	3
Salter scale (25k g) plus pants	1
Mid-upper arm circumference (MUAC) tape	2
Copies of community-based management of severe acute malnutrition (CMAM) protocols	1 of each

Other Items	Minimum amount, for the treatment of 500 children
Outpatient care treatment cards	500
Outpatient care ready-to-use therapeutic food (RUTF) ration cards	500
Tally and reporting sheets	
Drinking water	1 jerry can per site
Sugar to make 10 percent sugar water solution	5 kg
RUTF (500 children)	500 x 12 kg
Copies of protocols and guidelines	

Routine Medicines	Amount
Amoxicillin syrup 125 mg/5 ml	500 bottles
Albendazole 100 mg	4 tins
Paracheck (malaria rapid test)	200
Antimarlarial treatment	200
Antihelminth treatment	500
Vitamin A capsules	1 tin

Supplemental Medicines	Amount
Add if needed	

Note:

- All medicines must be clearly labelled.
- Stock should be reviewed after each outpatient care session following the first month as requirements will vary depending on admissions.
- Children with severe acute malnutrition (SAM) and severe diarrhoea and/or dehydration are referred to inpatient care where they will receive rehydration solution for malnutrition (ReSoMal). ReSoMal is never given in outpatient care.

Annex 31. Outpatient Care Staffing

Outpatient Care

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

- A qualified health worker (community health nurse [CHN], community health officer [CHO], nurse or medical assistant)
- One assistant (if needed due to caseload)

Community Outreach

Each health facility has established links with:

- A community outreach coordinator
- A team of community outreach workers: community health workers (CHWs) and/or volunteers

Training should be provided to all health workers and outreach workers. An orientation is given at the start of the service followed by continuous training (e.g., refresher training, mentoring, feedback meetings).

Staff Roles and Responsibilities

District Health Manager or District Nutritionist as Community-Based Management of severe Acute Malnutrition (CMAM) Focal Point/Coordinator

- Resource mobilisation and allocation (human resources, infrastructure, supplies, transportation, training)
- Planning of services
- Support and supervision
- Monitoring and evaluation (M&E)
- Training of health workers

District Community Outreach Coordinator

- Community assessment and mobilisation
- Support and supervision
- Training of outreach workers

Health Worker (CHO, CHN, nurse, medical assistant)

- Evaluation of the medical condition (anthropometry, medical history, physical examination, appetite test)
- Admission
- Referral to inpatient care
- Treatment of severe acute malnutrition (SAM) (prescription of medicines and ready-to-use therapeutic food [RUTF])
- Monitoring progress of children
- Health and nutrition counselling
- Organisation and supervision of outpatient care admission and follow-on sessions

- Discharge of children
- M&R of service (site tally sheets and monthly reporting)
- Monitoring of equipment and supplies
- Training of outreach workers

CHW

- Health facility-based health and nutrition education
- Community-based health and nutrition education and individual counselling
- Community screening and referral
- Follow-up home visits for problem cases
- Training of volunteers

Volunteers

- Community-based nutrition and health education and individual counselling
- Community screening and referral
- Follow-up home visits for problem cases

Detailed Responsibilities

Position	Responsibilities
CHO/CHN/Nurse *One CHO should be responsible for overall supervision and case management at the outpatient care service site.*	Organise setup of outpatient care and ensure smooth flow of patients
	Record registration information on treatment and ration cards
	Investigate medical history through caregiver interview
	Carry out initial physical examination
	Review child's growth and health at each follow-up outpatient care session
	Record medical history and physical examination results on outpatient care treatment card
	Refer children for further medical care/inpatient care treatment if necessary
	Prescribe routine and additional medicines according to protocol
	Identify non-responders for follow-up
	Identify absentees and defaulters for follow-up
	Link mother/caregiver to the nearest outreach worker for follow-up
	Allocate duties to staff
	Supervision of outpatient care staff
	Manage logistics (stock management, transport for referrals, storage and supply of RUTF)
	Maintain good filing system
	Track children in-between and across services
	Review accuracy of treatment cards at the end of the outpatient care session
	Complete, review, consolidate and submit site tally sheets and monthly reports to the District Health Office
	Monitor performance indicators at the health facility level
CHWs	Provide health and nutrition education sessions to mothers/caregivers at outpatient care sessions
	Weigh and check mid-upper arm circumference (MUAC) and oedema for all children attending outpatient care sessions
	Distribute RUTF ration
	Discuss follow-up cases with assigned volunteer/outreach worker
	Review follow-up visit checklists and report results to CHO
	Coordinate regular meetings with volunteers/outreach workers to refresh training,

	share information and discuss performance
	Give feedback to community leaders or committee on performance of CMAM and of volunteers
	Involve influential community groups in case-finding (women's groups, community-based organisations [CBOs], religious groups)
Outreach Worker	Case-finding in the community: check for oedema and measure MUAC
	Refer cases to the nearest outpatient care service
	Visit absentees or defaulters in their homes; encourage absentees and defaulters to return to outpatient care/inpatient care
	Follow-up children who are not responding in their homes; investigate issues and advise
	Record home visits and report to CHO on a timely basis
	Conduct community sensitisation meetings
	Give monthly verbal feedback to community leaders or committee on number of CMAM beneficiaries, on cure, defaulter and death rates, and on other issues

Annex 32. Inpatient Care Staffing

Inpatient Care Staff Needs[18]

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

Staff Roles and Responsibilities

Staff in the inpatient care centre will be responsible for managing the child with severe acute malnutrition (SAM) with medical complications on a 24-hour basis.

The recommended staff ratio in comparison with the number of beds is one to seven.

Experienced staff who are experts in the treatment of SAM with medical complications understand the needs of a child with SAM and are familiar with community-based management of severe acute malnutrition (CMAM) services and aspects that are essential for a well-functioning treatment facility. It is important, therefore, that loss of experienced staff be avoided wherever possible. Disruption of ongoing services should not happen.

Example: Princess Marie Louise Hospital

There are about five doctors in rotational duties for the management of SAM in inpatient and outpatient care. All nursing staff are trained in CMAM. There are about 15 beds, and six nurses, one health extension worker (HEW) and one ward assistant are deployed to manage inpatient care with 24-hour rotation duties. Nursing staff rotation is managed by the Deputy Director Nursing Staff (DDNS) and takes into consideration minimal changes for nurses trained in the management of SAM. As a result there is no disruption of the quality of the service. One dietician and two diet cooks are responsible for preparing formula milk in the kitchen; they also serve the milk. There is laboratory support on a 24-hour basis.

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

Annex 33. Checklist of Materials Needed for Inpatient Care

Item	Amount per Ward
Inpatient care file for treatment cards	2
Stapler and box of staples	1
Pens	6
Scissors-small	1 pair
Scissors- large	1 pair
Micropore	2 dozen
Small clock or watch with second hand	1
Bucket with lid	2
Soap for handwashing	10 bars
Small bowl	1
Small jug	1
Hand towels	10
Water jug (with lid)	10
Plastic cups	20
Small metal spoons	6
Thermometer	3
Salter scale (25 kg) plus pants	2
MUAC tape	2
Copies of community-based management of severe acute malnutrition (CMAM) protocols	1 of each
Dextrostix	2 dozen
Glucometer	1
Small torch	2
Saline stand	According bed number
Intravenous (IV) cannula	20
Transfusion set	
Source of clean water	
Central oxygen supply (or oxygen cylinder)	
Infusion set	
Stethoscope	2
X-ray box	1
Diagnostic set	
Adult beds for child and mother/caregiver	
Therapeutic milk: F75 (2 L/child) and F100 (60 L/child) Or equivalent in ingredients	
Combined mineral and vitamin mix (CMV) and oral rehydration solution (ORS) for rehydration solution for malnutrition (ReSoMal)	
Routine and supplemental medicines	

Kitchen Supply

Item	Amount
Refrigerator	1
Cooking utensils for boiling water	1
Spoon large	12
Spoon small	12
Stirrer	12
Measuring cup	20
Soap	2 Dozen
Gas cylinder	2
Food for mother/caregiver	

A well-equipped kitchen with a source of clean drinking water is needed.

Annex 34. Forecasting Nutrition Product Needs

Inpatient Care

- Assuming a duration of treatment of 10 days, 2 kg (five packets) of dry **F75** per child can be used for planning. This is equivalent to 6 kg per month of dry F75 for each paediatric bed dedicated for the management of complicated case of severe acute malnutrition (SAM).

  If F75 is prepared locally, needs for ingredients needed to prepare this quantity of F75 can be calculated: preparation of 6 litres (L) of F75 will require 19 g of combined mineral and vitamin mix (CMV) (three levelled scoops) and 150 grams (g) of dried skim milk or 210 g of dried whole milk, plus 420 g of sugar, 162 g of vegetable oil and 210 g of cereal flour.
- Usually less than 5 percent of children admitted for SAM with medical complications (or less than 1 percent of all SAM cases) will not be able to eat ready-to-use therapeutic food (RUTF) during the rehabilitation phase and will require **F100**. For these children, a planning figure of 12 kg of F100 per child for the whole rehabilitation phase can be used.
- **RUTF** is needed for a few days for every child in the transition phase and all children in inpatient care (any phase) with appetite.

Outpatient Care

- One treatment of a child with SAM based on +- 200 kcal/kg/day of RUTF diet corresponds approximately to 30 to 40 g/kg/day for 60 days, or 12 kg per treatment of a child with SAM.
- The total requirement of RUTF will depend on the duration of the treatment and on the weight of the child at the beginning of treatment, but for planning purposes, an average requirement of 12 kg RUTF per child treated can be assumed.

Estimating the Quantities of Nutrition Products Needed for the Management of SAM for Planning

Therapeutic food	When needed	Proportion of children with SAM admitted needing the product	Duration of treatment	Total quantity needed to treat one child (kg)	Total quantity needed to treat 100 children (kg)
F75	Inpatient care (stabilisation phase)	15%	5-10 days	2	30
F100	Inpatient care (recovery phase)	< 5%	4-6 weeks	12-15	60-75
RUTF	Outpatient care and inpatient care (transition/ recovery phase)	> 95%	6-8 weeks	12	1,200

Annex 35. List of Job Aids

For Community Outreach Workers

- Messages for community outreach
- Health and nutrition education messages
- M&R tools: referral slip, home visit report

For Health Care Providers in Inpatient Care

Distribute the following as desk or wall charts, or forms to be filled in at health facilities with inpatient care.

- Manual and guidelines on the community-based management of severe acute malnutrition (CMAM)
- Admission and discharge criteria chart
- Appetite test chart
- Entry and exit categories chart
- Routine medicines protocols chart
- Supplementary medicines protocols chart
- Dietary treatment protocols and tables for the use of F75, F100 and ready-to-use therapeutic food (RUTF)
- Alternative recipes for F75, F100 and rehydration solution for malnutrition (ReSoMal) using combined mineral and vitamin mix (CMV)
- Key messages upon admission
- Health and nutrition education messages
- 15 percent weight gain look-up table
- Weight-for-height (WFH) look-up table
- List of sites with their catchment areas, service days and outreach workers' names
- M&R tools: inpatient care treatment cards (Critical Care Pathway [CCP]), Road to Health cards, referral forms, site tally and reporting sheets, supervision checklists, supply checklists

For Health Care Providers in Outpatient Care

Distribute the following as desk or wall charts, or forms to be filled in at health facilities with outpatient care.

- Manual and guidelines on CMAM
- Admission and discharge criteria chart
- Appetite test chart
- Entry and exit categories chart
- Routine medicines protocols chart
- Supplementary medicines protocols chart
- Dietary treatment protocols and tables for the use of F75, F100 and RUTF
- Alternative recipes for F75, F100 and ReSoMal using CMV
- Key messages upon admission

- Health and nutrition education messages
- Action protocol for outpatient care chart
- 15 percent weight gain look-up table
- WFH look-up table
- List of sites with their catchment areas, service days and outreach workers' names
- M&R tools: outpatient care treatment cards, Road to Health cards, referral forms, home visit forms, site tally and reporting sheets, supervision checklists, supply checklists

For Health Managers

- Manual and guidelines on CMAM
- Packages of job aids and M&R tools for community outreach, inpatient care and outpatient care
- M&R tools: inpatient care treatment cards (CCP), outpatient care treatment cards, Road to Health cards, referral slips, referral forms, home visit forms, site tally and reporting sheets, supervision checklists, supply checklists
- List of sites with their catchment areas, service days and outreach workers' names
- Data repository
- Minimal reporting guidance
- Job descriptions
- Training packages for community outreach, inpatient care and outpatient care

APPENDIX: Clinical Management of SAM with Medical Complications in Inpatient Care

Box 1. Acknowledgement

The Ghana Health Service (GHS) is grateful to Professor Michael Golden and Dr. Yvonne Grellety for permission to copy their original material in this section. This material is reproduced on the understanding that it can be taken and used by national governments of developing countries and their teaching institutions without payment of any fees or the need to obtain further permission, provided that the material is not edited, abstracted or altered. Those from developed countries and those who wish to abstract or edit the material should seek permission from the copyright holders.

All children with severe acute malnutrition (SAM) with medical complications should be managed in inpatient care in a health facility with bed capacity and with staff trained in the special management of SAM with medical complications. These children should not be treated upon admission in the emergency ward but transferred to a special SAM ward where skilled health care providers will start life-saving treatment. The following paragraphs detail the diagnosis and treatment of the most common medical complications that occur in children with SAM.

Dehydration

Misdiagnosis and inappropriate treatment for dehydration is the most common cause of death for malnourished children. The appearance of a severely wasted child who is not dehydrated is similar to a normal child who is dehydrated; therefore an untrained clinician may easily misdiagnose dehydration in SAM. With SAM, the "therapeutic window" is narrow so that even dehydrated children can quickly go from having a depleted circulation to over-hydration with fluid overload and cardiac failure. Intravascular infusions are therefore rarely used in children with SAM. In malnourished children, both marasmus and to a greater extent kwashiorkor, there is a particular renal problem that makes the children sensitive to sodium overload. The standard rehydration protocol for a well-nourished dehydrated child should therefore not be used.

Access to Rehydration Solution for Malnutrition (ReSoMal) should be restricted and must never be freely available for the caregivers to give to their children whenever they have a loose stool. Although a common practice, it is very dangerous to freely give ReSoMal or oral rehydration solution (ORS) to these children. This can lead directly to heart failure, as well as failure to lose oedema, development of refeeding oedema, and failure to report and record significant problems while the diet and phase remains unchanged. If there is no dehydration, diarrhoea must not be treated with rehydration fluids as a means of "preventing" the onset of dehydration. This again can lead to over-hydration and heart failure.

Dehydration in Children with Marasmus

All the classical signs of dehydration (i.e., skin pinch test, sunken eyes) are unreliable in marasmic children and should therefore not be used to make the diagnosis of dehydration in these patients.

- The skin of marasmic children normally lies in folds and is inelastic such that the "skin pinch" test is usually positive without there being any dehydration.
  Do NOT use the skin pinch test to diagnose dehydration in malnourished children.

- Eyes of marasmic children are normally sunken[19] without there being any dehydration. Do NOT assume that malnourished patients with sunken eyes have dehydration.

The diagnosis of dehydration in marasmic children is therefore much more uncertain and difficult than in normal children. Incorrect and over-diagnosis is very common and treatment is often given inappropriately. It is good practice not to make a definitive diagnosis of dehydration: If you think the child is dehydrated then make a provisional diagnosis and observe the response to treatment before confirming the diagnosis.

Box 2. Diagnosis of Dehydration in the Marasmic Patient

The main diagnosis of dehydration in marasmic children comes from the history rather than from physical examination.

There needs to be:
- A definite history of significant recent fluid loss - usually diarrhoea which is clearly watery (not just soft or containing mucus) and frequent with a sudden onset whose occurrence is within the past few hours or days.
- There should also be a history of a recent change in the child's appearance.
- If the eyes are sunken, the caregiver must confirm that the appearance of the eyes has changed to become sunken since the diarrhoea started.
- The child must not have any oedema.

Children with persistent or chronic diarrhoea (without an acute watery exacerbation) are not dehydrated and do not need acute rehydration therapy. They have adapted over the weeks to their altered hydration state and should therefore not be rehydrated over a few hours or days.

Diagnosis of Shock With Dehydration in the Marasmic Patient

- When there is definite dehydration diagnosed from both the history and examination and there is presence of a weak or absent radial or femoral pulse and cool or cold hands and feet (check with back of hand gently), the patient is going into shock.
- Severe shock occurs when, in addition to the above signs, there is also a decrease in the level of consciousness so that the patient is semiconscious or cannot be aroused.
- There are other causes of shock in the severely malnourished child, in particular: 1) toxic shock,[20] 2) septic shock, 3) liver failure and 4) cardiogenic shock.
- Treatment of cardiogenic shock or liver failure based on the assumption that the patient has shock due to dehydration is very dangerous and the treatment itself may then lead to death.

[19] The orbit contains an eye, small muscles and nerves, fat, the lachrymal gland and a venous plexus. In marasmus, the fat and the lachrymal gland atrophy so that the eyes sink. In dehydration, there is contraction of the venous plexus forcing blood out of the orbit so that the eyes sink.

[20] Toxic shock may be caused by traditional medicines or self-treatment with other medicine such as aspirin, paracetamol, metronidazole, etc. Septic shock is a specific type of toxic shock where the damage is caused by overwhelming sepsis. These are frequently associated with liver failure.

Treatment of Dehydration in the Marasmic Patient

Whenever possible, a dehydrated patient with SAM should be rehydrated orally. IV infusions are very dangerous and are not recommended unless there is severe shock with loss of consciousness from confirmed dehydration. The management of the rehydration process is based upon accurate measurements of weight (this is the best measurement of fluid balance). The weight measurements should be taken using an infant scale or, in the case of older children, a hanging scale to which a basin is attached with rope.[21] The basin hangs close to the ground and is easily cleaned. The patients should be weighed naked.

Monitoring Rehydration in the Marasmic Patient

Before starting any rehydration therapy, do the following:

- Weigh the child
- Mark the edge of the liver and the costal margin on the skin with an indelible marker pen
- Record the respiration rate

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

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

Box 3. Rehydration in the Marasmic Patient

Rehydration of the child with SAM is managed entirely on the basis of the following:

- Weight changes
- Clinical signs of improvement
- Clinical signs of over-hydration

Fluid balance is measured at intervals by weighing the child.

- Give rehydration fluid until the weight deficit (measured or estimated) is corrected.
- Stop as soon as the child is "rehydrated" to the predetermined target rehydrated weight.
- Additional fluid is not given to the malnourished child with a normal circulatory volume in order to "prevent" recurrence of dehydration.
- Normally much less ReSoMal is sufficient to restore adequate hydration in malnourished children than in normally nourished children (e.g., a total of 50 millilitres per kilogram (ml/kg) bodyweight - 5 percent bodyweight).
- Begin rehydration therapy with a volume of 5 ml/kg bodyweight given at 30-minute intervals for the first two hours orally or by nasogastric tube (NGT; 2 percent bodyweight), and then adjust the volume of ReSoMal according to the weight changes observed. Weigh the child each hour and assess his/her liver size, respiration rate and pulse.
- After the rehydration therapy is completed usually no further treatment is given; however, for malnourished children aged 6-24 months, 30 ml of ReSoMal can be given for each watery stool that is lost. The standard instructions to give 50-100 ml for each stool should not be applied – it is dangerous.

[21] Hanging pants used for surveys should not be used to weigh sick children in health facilities or those likely to soil the pants and pass infection to the next child.

- As the child gains weight, during rehydration there should be a definite clinical improvement and the signs of dehydration should disappear; if there are no signs of improvement accompanying the weight gain then the initial diagnosis was wrong and rehydration therapy should be stopped.
- Make a major reassessment at two hours.

If there is continued weight loss:
- Increase the rate of administration of ReSoMal by 10 ml/kg bodyweight/hour
- Formally reassess in one hour

If there is no weight gain:
- Increase the rate of administration of ReSoMal by 5 ml/kg bodyweight/hour
- Formally reassess in one hour

If there is weight gain and deterioration of the child's condition with the rehydration therapy:
- The diagnosis of dehydration was definitely wrong. It must be noted that even senior clinicians also make mistakes in the diagnosis of dehydration in malnutrition.
- Stop the ReSoMal and commence the child on the F75 diet.

If there is no improvement in the mood and look of the child or reversal of the clinical signs:
- The diagnosis of dehydration was probably wrong.
- Either change to F75 or alternate F75 and ReSoMal.

If there is clinical improvement but there are still signs of dehydration:
- Continue with the treatment until the appropriate weight gain has been achieved.
- Either continue with ReSoMal alone, or F75 and ReSoMal can be alternated.

If there is resolution of the signs of dehydration:
- Stop rehydration treatment and commence the child on F75 diet.

Target Weight for Rehydration With Watery Diarrhoea in the Marasmic Patient

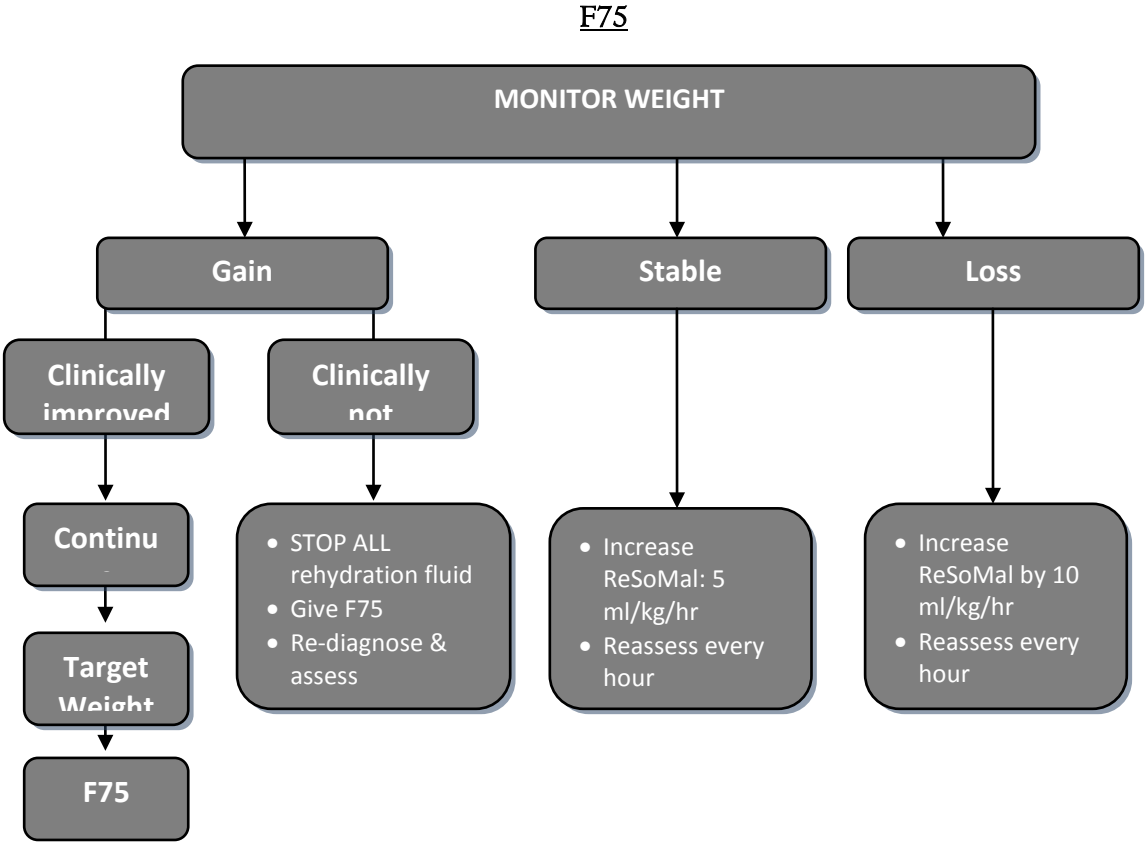
1. If the child has been under treatment for SAM and there is a known pre-diarrhoeal weight just before the diarrhoea starts:
   - If there has been no weight loss with the diarrhoea, rehydration treatment should not be given.
   - If there has been weight loss, the actual fluid loss is equal to the weight loss and the target rehydration weight is the pre-diarrhoeal weight. Treatment should not be given to increase the weight beyond the pre-diarrhoeal weight. "Prophylactic" administration of ReSoMal to prevent recurrence of dehydration is not given.

2. If the patient is newly admitted, it is extremely difficult to judge the amount of fluid that has been lost in the child with marasmus. Because of the narrow therapeutic window and the danger of going from underhydration to overhydration, the estimated weight deficit should be very conservative. It is better and much less dangerous to slightly underestimate the amount of weight deficit than to overestimate the weight deficit.
   - In practice, the weight loss is generally 2 to 5 percent of bodyweight.
   - Do not attempt to increase bodyweight by more than 5 percent in conscious children.

- If there is weight gain of up to 5 percent of bodyweight with rehydration, the truly dehydrated child will show dramatic clinical improvement and be out of immediate danger from death due to dehydration; treatment can then be continued with F75.

3. Breastfeeding should not be interrupted during rehydration. Begin to give F75 as soon as possible, orally or by NGT. ReSoMal and F75 can be given in alternate hours if there is still some dehydration and continuing diarrhoea. Introduction of F75 is usually achieved within two to three hours of starting rehydration.

Figure 1. Rehydration in the Marasmic Patient



Treatment of Shock from Dehydration in the Marasmic Patient

If there is definite dehydration (e.g., a history of fluid loss, a change in the appearance of the eyes) and the patient is semiconscious or unconscious AND has a rapid weak pulse AND has cold hands and feet, the patient should be treated with IV fluids. The amounts given should be half or less of that used in normally nourished children.

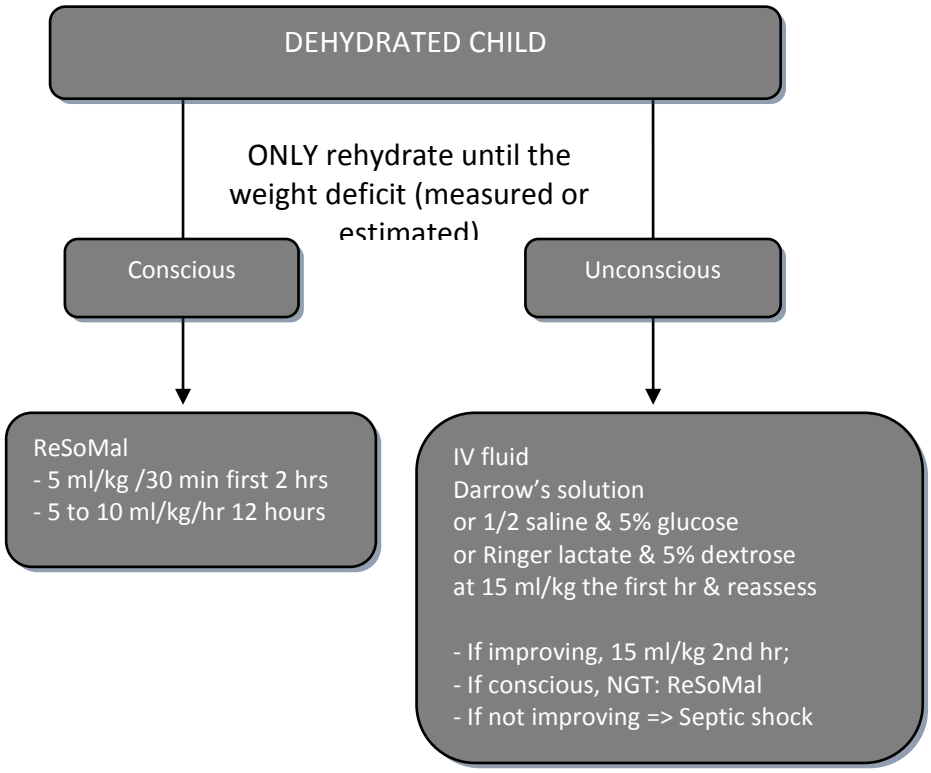
Use one of the following solutions:

- Half-strength Darrow's solution
- Ringer-Lactate with 5 percent dextrose
- Half-strength saline with 5 percent dextrose

Management:

- Give 15 ml/kg bodyweight intravascular over the first hour and reassess the child.
- If there is continued weight loss or the weight is stable, repeat the 15 ml/kg intravascular over the next hour. Continue until there is weight gain with the infusion. (15 mg/kg is 1.5 percent of bodyweight, so the expected weight gain after two hours is up to 3 percent of bodyweight.)
- If there is no improvement and the child has gained weight, then assume that the child has toxic, septic or cardiogenic shock or liver failure. Stop rehydration treatment. Search for other causes of loss of consciousness.
- As soon as the child regains consciousness or the pulse rate drops toward a normal level, stop the drip and treat the child orally or by NGT with 10 ml/kg/hour of ReSoMal. Continue with the protocol (above) for rehydration of the child orally using weight change as the main indicator of progress.
- There should never be a drip present in a malnourished child who is able to drink or is absorbing fluid adequately from an NGT.

Figure 2. Treatment of Dehydration in the Marasmic Child



Monitoring Rehydration

All rehydration (oral or IV) therapy should be stopped immediately if any of the following are observed:

- The target weight for rehydration has been achieved (change to F75)
- The visible veins become full (change to F75)
- The development of oedema (over-hydration – change to F75)
- The development of prominent neck veins*
- The neck veins engorge when the abdomen (liver) is pressed*
- An increase in the liver size by more than one centimetre (cm)*
- The development of tenderness over the liver*

- An increase in the respiration rate by five breaths per minute or more*
- The development of a "grunting" respiration (this is a noise on expiration not inspiration)*
- The development of crepitations in the lungs
- The development of a triple rhythm

** If these signs develop, the child has fluid overload, an over-expanded circulation and is going into heart failure.*

Diagnosis of Dehydration in a Child with Kwashiorkor

All children with oedema have increased total body water and sodium levels. In other words, they are over-hydrated. Oedematous patients cannot be dehydrated, although they are frequently hypovolaemic. The hypovolaemia (relatively low circulating blood volume) is due to a dilatation of the blood vessels with a low cardiac output.

Diagnosis

If a child with kwashiorkor has definite watery diarrhoea and the child is deteriorating clinically, then the fluid lost can be replaced on the basis of 30 ml of ReSoMal per watery stool.

Treatment

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

Hypernatraemic Dehydration[22]

Hypernatraemic dehydration is common in areas with a low relative humidity (very dry atmosphere), particularly if there is also a high temperature.[23] It is caused by loss of water without loss of salt, leading to pure water deficiency. This is because water is lost through the skin and breath at a high rate under these conditions. If solutions high in sodium or other osmolyte that is not metabolised are given, then water will still be lost while leaving the osmotically active solute in the body. Also, in areas where bottle feeding is common, mothers frequently over-concentrate infant formula;[24] this can lead to hypernatraemic dehydration even in wet or cold climates and is lethal in hot and dry climates and seasons. The malnourished child is particularly at risk because he/she has a very low renal-concentrating ability and a high surface area relative to his/her body mass.

During development of the high plasma osmolarity, there is a balancing increase in intra-cellular osmolytes to prevent water being drawn out of the cells. During treatment, if the extracellular fluid osmotic pressure is reduced too quickly leaving a high intracellular osmotic pressure, sudden cellular swelling occurs that can lead to swelling of the brain to a sufficient degree to give convulsions and death.

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[22] This is the same as "hyper-osmolar syndrome" and other synonyms that denote that the plasma osmolarity is increased above normal. The increased osmoles can be urea if a very high protein diet has been taken or there is inadequate renal function or it can be glucose in patients with glucose intolerance.

[23] The dry atmosphere is the more important feature. Where the climate is very hot and wet, much less water is lost so that the child presents first with fever because of an inability to excrete the heat generated during metabolism.

[24] All infant formulae have a very much-higher renal solute load than breast milk. In very hot and dry climates even correctly made up infant formulae can result in hypernatraemic dehydration. This is a real danger that arises from the failure of breastfeeding in such climates. Because of the low renal solute load of human breast milk, exclusive breastfeeding is the best way to avoid hypernatraemic dehydration.

Although hypernatraemia is difficult to treat safely, it is easy to prevent safely. Malnourished children, particularly those in dry and hot environments should have continuous access to sufficient water without a high ion content that requires renal excretion to fulfil their requirements for water.

The first sign of hypernatraemic dehydration is a change in the texture and feel of the skin, which develops a plasticity similar to the feel of dough (flour and water mixed for bread making). The eyes can sink somewhat. The abdomen then frequently becomes flat and may progressively become sunken and wrinkled (so-called "scaphoid abdomen or "prune belly"). The child may then develop a low-grade fever if there is insufficient water to evaporate to excrete the heat generated during normal metabolism. The child becomes progressively drowsy and then unconscious. Convulsions follow this stage, which leads to death if treatment for hypernatraemia is not instituted. The convulsions are not responsive to the normal anti-convulsants (e.g., phenoparbitone, diazepam).

Failure to control convulsions with anti-convulsants may be the first indication of the underlying diagnosis. The diagnosis can be confirmed by finding an elevated serum sodium: normally hypernatraemia is diagnosed when the serum sodium is greater than 150 millimoles per litre (mmol/L).

For insipient hypernatraemic dehydration – a conscious, alert child who is only showing changes in the texture and feel of the skin – breast milk is the best diet. This can be supplemented with up to about 10 ml/kg/hour of water that should be given as a 10 percent sugar-water solution in sips over several hours until the thirst of the child is satisfied. At this early stage – when impending water deficiency should be recognised and treated – treatment is relatively safe.

Treatment must be slow for developed hypernatraemic dehydration. If it is possible to measure serum sodium, aim to reduce the serum sodium concentration by about 12 mmol every 24 hours. Trying to correct the hypernatraemia quicker than this risks death from cerebral oedema. If it is not possible to measure the serum sodium, aim to correct hypernatraemic dehydration over at least 48 hours. The treatment should start slowly, and as the serum sodium approaches normality, the rate of repletion can increase.

The textbook treatment of hypernatraemia is to slowly give normal saline either orally or intravenously. This is dangerous in the severely malnourished child and should not be used, as it is based upon the premise that the excess sodium given can be safely excreted by the kidneys, which is not the case in the severely malnourished child.

Treatment progress is assessed by serial weighting of the child:

- First, put the child in a humid, thermoneutral (28° to 32°C) environment. This is critical to prevent further water loss as well as hyperthermia if the humidity in the air is increased in a hot environment.[25]
- Weigh the child on an accurate balance and record the weight.

[25] If the child is small, this can be in an incubator similar to that used for neonates. It can also be achieved with aerosol sprays into the atmosphere or a humidifying tent, such as that used to treat bronchiolitis. If such facilities are not available, hanging wet sheets in the room or spraying the walls with water intermittently will both humidify and cool the atmosphere. Wet clothes should not be placed directly onto the child unless he/she has a high fever. In one study in Chad (daytime climate of 43 ° C with 15 percent humidity), the turnover of water in malnourished children was one-third of body water per day (250 ml/kg/day). It is critical to prevent this ongoing excessive water loss, otherwise it is very difficult to judge the amount of fluid to give the child that is needed for slow rehydration, which is a relatively small faction of the requirements for replacing ongoing losses, which are unmeasured and very difficult to assess with any accuracy. The only way to judge ongoing losses and the rate of rehydration is with serial accurate weights.

The objective of treatment is to put the child into a positive water balance of about 60 ml/kg/day,[26] which is equivalent to 2.5 ml/kg/hour of plain water. This amount should not be exceeded until the child is awake and alert.

- If the child is conscious or semi-conscious and there is no diarrhoea, put down an NGT and start 2.5 ml/kg/hour of a 10 percent sugar-water solution.[27] Do not give F75 at this stage, as it gives a renal solute load (mainly as potassium). Never give F100 or infant formulae.
- Reweigh the child every two hours.
    - If the weight is static or there is continuing weight loss, recheck the environment to try to prevent ongoing water losses then increase the amount of sugar-water intake to compensate for the ongoing weight loss (calculated as g/hour and increase the intake by this amount).
    - If the weight is increasing, continue treatment until the child is awake and alert.
- If there is accompanying diarrhoea, give one-fifth the normal saline in 5 percent dextrose orally or by NGT.
- If the child is unconscious, the same volumes of fluid (5 percent dextrose if there is no diarrhoea and one-fifth normal saline in 5 percent dextrose if there is diarrhoea) can be given by IV infusion. There should be a peristaltic pump or accurate paediatric burette in order to ensure that that the rate of administration of fluid is not exceeded during treatment.
- When the child is awake and alert, recommence feeding with F75.

Septic (or Toxic) Shock

Septic shock presents with some of the signs of true dehydration and also of cardiogenic shock; the differential diagnosis is often very difficult.

Children that appear "very ill" may have septic shock, cardiogenic shock, liver failure, poisoning with traditional medicines, malaria, acute viral infection or other severe conditions. All "very ill" children should not be automatically diagnosed as having septic shock; the true reason for the condition should be sought. If this develops after admission to inpatient care, the treatment given to the child should be carefully reviewed to determine if the treatment is the cause of the clinical deterioration. Any "unusual" drugs should be stopped.

Diagnosis of Septic Shock

Diagnosis of developed septic shock requires that the signs of hypovolaemic shock be present. They include a fast weak pulse with:

- Cold peripheries
- Disturbed consciousness
- Absence of signs of heart failure

[26] The extracellular fluid volume is about 250 ml/kg, depending on the level of body fat and the extent of cellular atrophy. If the extracellular sodium concentration is about 160 mmol/L and this is to be reduced by 12 mmol/day, the extracellular fluid should be expanded by about 0.75 percent per day. However, the extra water given will be distributed in both the intra- and extracellular compartments, so it is necessary to have a positive water balance of 0.75 percent of body water per day. There is a higher body water percentage in malnourished children than in normal children. Therefore, the daily positive water balance should be about 60 ml/kg/day, which equals 2.5 ml/kg/hour.

[27] Sugar-water should be used rather than plain water. It is isotonic and so empties from the stomach, and is absorbed more quickly. The treatment will last for about 48 hours. Sugar water prevents hypoglycaemia in these children.

Treatment of Septic Shock

All patients with signs of incipient or developed septic shock should immediately be:

1. Given broad-spectrum antibiotics
    a. Second-line and first-line antibiotics should be given together.
    b. For developed septic shock, consider third-line antibiotics, antifungal treatment and anti-staphylococcal treatment.
2. Kept warm to prevent or treat hypothermia
3. Given sugar-water by mouth or NGT as soon as the diagnosis is made (to prevent hypoglycaemia)
4. Be physically disturbed as little as possible (e.g., no washing, no excess examination, no investigations in other departments)
5. Never be transported to another facility – the stress of transport leads to dramatic deterioration

For Incipient (Early) Septic Shock

Give the standard F75 therapeutic diet by NGT.

For Developed Septic Shock

If the patient is unconscious because of poor brain perfusion, a slow intravascular infusion of one of the following can be given:

- Whole blood of 10 ml/kg over at least three hours – nothing should be given orally during the blood transfusion

Or

- 10 ml/kg/hour for two hours of one of the following (do not give if there is a possibility of cardiogenic shock):
    - Half-strength Darrow's solution with 5 percent glucose
    - Ringer-Lactate solution with 5 percent glucose
    - Half-normal (0.45 percent) saline with 5 percent glucose

Monitoring Treatment

Monitor the child every 10 minutes for signs of deterioration, especially overhydration and heart failure, including:

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

As soon as the patient improves (e.g., stronger radial pulse, regain of consciousness) stop all intravascular intake and continue with an F75 diet.

If there are absent bowel sounds, gastric dilatation and intestinal splash with abdominal distension:

- Give first- and second-line antibiotic treatment by intramuscular (IM) injection.
- Consider adding third-line antibiotics.
- Stop all other drugs that may be causing toxicity (such as metronidazole).
- Give a single IM injection of magnesium sulphate (2 ml of 50 percent solution).
- Pass an NGT and aspirate the contents of the stomach. Then "irrigate" the stomach with isotonic clear fluid (5 percent dextrose or 10 percent sucrose – the solution does not need to be sterile). Do

this by introducing 50 ml of solution into the stomach and then gently aspirating all the fluid back again. This should be repeated until the fluid that returns from the stomach is clear.
- Put 5 ml/kg of sugar water (10 percent sucrose solution) into the stomach and leave it there for one hour. Aspirate the stomach and measure the volume that is retrieved. If the volume is less than the amount that was introduced then either a further dose of sugar water should be given or the fluid returned to the stomach.
- There is frequently gastric and oesophageal candidiasis. In this case, give oral nystatin suspension or fluconazole.
- Keep the child warm.

If the child's level of consciousness is poor, given IV glucose:
- Do not put up a drip at this stage. Monitor the child carefully for six hours, without giving any other treatment.
- Improvement is measured first by a change in intestinal function (i.e., decrease in the distension of the abdomen, visible peristalsis seen through the abdominal wall, return of bowel sounds, decreasing size of gastric aspirates) and secondly by improvement in the general condition of the child.

If there is intestinal improvement, start to give small amounts of F75 by NGT (half the quantities given in the stabilisation phase look-up table – subsequently adjust by the volumes of gastric aspirates).

If there is no improvement after six hours:
- Consider putting up an IV drip. It is very important that the fluid given contains adequate amounts of potassium. Sterile potassium chloride (20 mmol/L) should be added to all solutions that do not contain potassium. If it is available, use one-fifth normal saline in 5 percent dextrose, otherwise use Ringer-Lactate in 5 percent dextrose or half-strength saline in 5 percent dextrose. The drip should be run very slowly – the amount of fluid that is given should not be more than 2 to 4 ml/kg/hour.
- Start to give the first- and second line antibiotics intravenously.
- When the gastric aspirates decrease such that one half of the fluid given to the stomach is absorbed, discontinue the IV treatment and continue with oral treatment only.

Heart Failure

Diagnosis

Heart failure should be diagnosed when there is:
- Physical deterioration with a gain in weight: This is the most common way of making the diagnosis and does not require any equipment or particular clinical skill
- A sudden increase in liver size (this is why the liver is marked before starting any infusion)
- Tenderness developing over the liver
- An increase in respiration rate
    - An acute increase in respiration rate of more than five breaths per minute (particularly during rehydration treatment)
    - > 50 breaths/minute in infants
    - > 40 breaths/minute in children aged 1-5 years
- Respiration that has or develops a "grunting" sound during each expiration
- Crepitations in the lungs
- Prominent superficial and neck veins

- Engorgement of the neck veins when the abdomen (liver) is pressed
- Enlargement of the heart (very difficult to assess in practice)
- Appearance of triple rhythm (very difficult to assess in practice)
- Increasing oedema or reappearance of oedema during treatment
- An acute fall in haemoglobin (Hb) concentration[28] (needs laboratory)

During the last stage of heart failure development, there is either: 1) marked respiratory distress progressing to a rapid pulse, cold hands and feet, oedema and cyanosis; or 2) sudden, unexpected death. This is known as cardiac shock; it commonly occurs in the severely malnourished child after treatment has started. It has to be differentiated from shock due to dehydration or sepsis because the treatment is quite different.

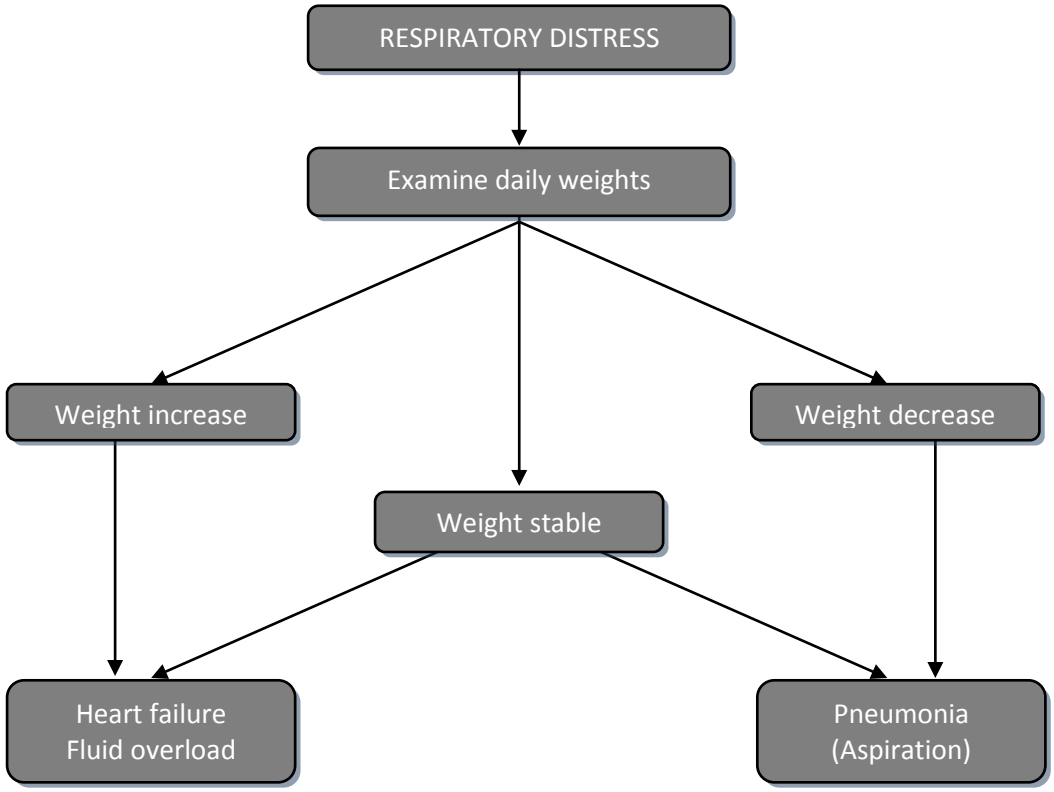
Heart failure is usually preceded by weight gain. As heart failure usually starts after treatment, there is nearly always a record of the weight of the patient that was taken before the onset of heart failure. Heart failure and pneumonia are clinically similar and very difficult to tell apart. If there is an increased respiratory rate and any gain in weight, heart failure should be the first diagnosis. If there is an increased respiratory rate with a loss of weight, pneumonia can be diagnosed. If there is no change in weight (fluid balance), the differentiation has to be made using the other signs of heart failure. Pneumonia should not be diagnosed if there has been a gain of weight just before the onset of respiratory distress.

Children with oedema can go into heart failure without a gain in weight if the expanded circulation is due to oedema fluid being mobilised from the tissues to the vascular space. During the initial treatment of SAM, any sodium containing fluid that has been given will have to be safely excreted later. Initial over-treatment can lead to death several days later from heart failure when intracellular sodium (marasmus and kwashiorkor) and oedema fluid are being mobilised.

As oedema fluid is mobilised (in kwashiorkor patients) and the sodium is coming out of the cells (both kwashiorkor and marasmus), the plasma volume expands and there is a fall in Hb concentration. This dilutional anaemia happens to some extent in nearly all children as they recover. A substantial fall in Hb as a sign of an expanding circulation is also a sign of impending or actual heart failure. These children should never be transfused.

[28] All children have a fall in Hb during the early phase of treatment. This "dilutional anaemia" is due to the sodium coming out of the cells and mobilisation of oedema – it must not be treated.

Figure 3. Diagnosis of Heart Failure



Treatment of Heart Failure

When heart failure is diagnosed:

- Stop all intakes of oral or IV fluids. No fluid or food should be given until the heart failure has improved. This may take 24 to 48 hours. Small amounts of sugar water can be given orally to prevent hypoglycaemia.
- Give frusemide (1 mg/kg).
- Digoxin can be given in single dose (5 micrograms per kilogram [µg/kg] – note that this is lower than the normal dose of digoxin. A loading dose is not given. Use the paediatric preparation and not small quantities of the adult preparation).

If heart failure is associated with severe anaemia, the treatment of the heart failure takes precedence over the treatment of the anaemia. A patient in heart failure should never be transfused (unless there are facilities and experience with exchange-transfusion).

Monitoring Treatment of Heart Failure

The following parameters should be monitored:

- Weight
- Respiration rate and sound
- Pulse rate
- Jugular vein or visible vein engorgement
- Liver size
- Heart sounds

Hypothermia

Severely malnourished patients are highly susceptible to hypothermia (rectal temperature below 35.5°C or under arm temperature below 35°C).

Diagnosis

- Check the temperature of the room (28-32°C).
- Check if the child sleeps with his/her caregiver.
- Check the temperature of the patient: rectal temperature < 35.5°C; axillary temperature < 35°C.

Management

- Care should be taken not to bathe malnourished patients on admission. Bathing should be done after the child has stabilised. Bathe patients during the warmest part of the day using warm water. Drying of patients should be done quickly and gently after washing.
- Use the "kangaroo technique": put the naked child on the naked skin of the caregiver, put a hat on the child and wrap caregiver and child together, give hot drinks to the caregiver so her skin gets warmer (plain water, tea or any other hot drink).
- Monitor body temperature during re-warming.
- The room should be kept warm, especially at night (between 28-32°C): a maximum-minimum thermometer should be on the wall in the stabilisation phase area to monitor the temperature.
- Treat for hypoglycaemia and give second-line antibiotic treatment.

Note: The thermo-neutral temperature range for malnourished patients is 28-32°C. This is often uncomfortably warm for the staff and caregivers who may adjust the room to suit themselves.

Children with SAM should always sleep with their caregivers and not in traditional hospital child-cots/cages. There should be adequate blankets and a thick sleeping mat or adult bed.

Most heat is lost through the head; hats should be worn by malnourished children. Windows and doors should be kept closed at night.

Severe Anaemia

Diagnosis

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

Management

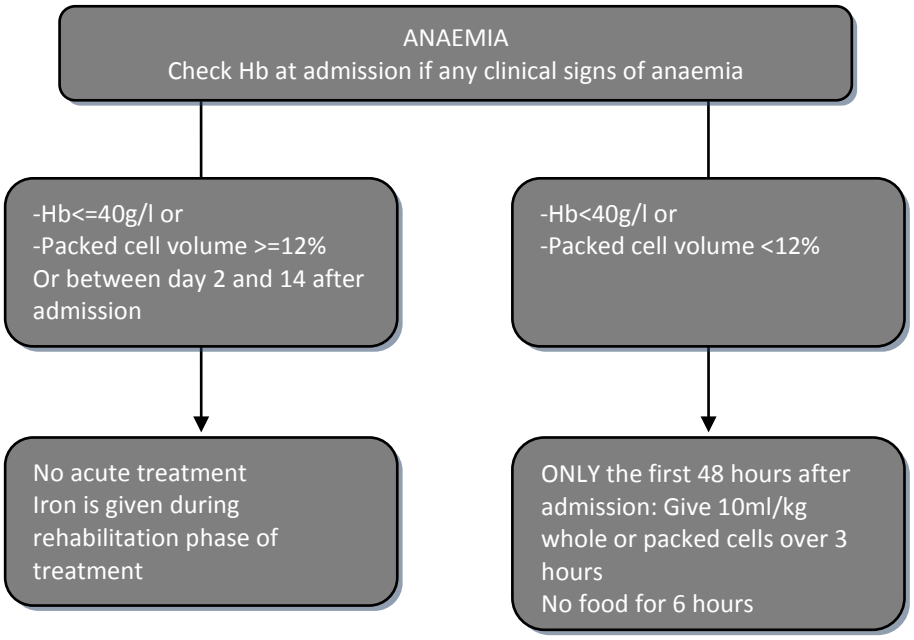
Transfusion is a radical treatment and extremely dangerous for children with SAM who often present with cardiac dysfunctions, reduction in renal function and with iron-carrier protein deficiency.

- Give 10 ml/kg bodyweight of packed red cells or whole blood slowly over three hours.
- All children should fast during the procedure and for at least three hours after a blood transfusion.
- Do not transfuse a child between 48 hours after the start of treatment with F75 until 14 days later.

- Do not give iron during the stabilisation phase of treatment.
- If the facilities and expertise exist (neonatal units), it is preferable to give an exchange transfusion to severely malnourished children with severe anaemia.

If there is heart failure with very severe anaemia, transfer the patient to a health facility with the capacity to perform an exchange transfusion. Heart failure due to anaemia is clinically different from "normal" heart failure. In heart failure due to anaemia, there is "high output" failure with an overactive circulation. Increasing anaemia and heart failure or respiratory distress is a sign of fluid overload and an expanding plasma volume. It should be borne in mind that the heart failure is not being "caused" by the anaemia; these patients should never be given a straight transfusion of blood or even packed cells.

Figure 4. Diagnosis of Anaemia



Hypoglycaemia

Children with SAM can develop hypoglycaemia, though it is a very uncommon medical complication. All children who have travelled for long distances or have waited a long time for attention should be given sugar water as soon as they arrive (approximately 10 percent sugar solution: 10 g of sugar per 100 ml of water).

Children who are at risk of hypothermia or septic shock should be given sugar water whether or not they have a low blood glucose level.

A child who has taken the diet during the day will not develop hypoglycaemia overnight and does not need to be woken for night-time feeding. If the diet has not been taken during the day, the mother should give at least one feed during the night.

Diagnosis

There are often no clinical signs of hypoglycaemia. One sign that does occur in malnutrition is eyelid retraction – if a child sleeps with his eyes slightly open.

Management

- If a child sleeps with his /her eyes slightly open, then he/she should be woken up and given sugar solution to drink.
- Patients who are conscious and able to drink should be given about 50 ml (approximately 5 to 10 ml/kg bodyweight) of sugar water (about 10 percent ordinary sugar in potable water) or F75 (or F100) milk by mouth. The actual amount given is not critical.
- Patients losing consciousness should be given 50 ml (or 5-10 ml/kg bodyweight) of sugar water by NGT immediately. When consciousness is regained, give milk feed frequently.
- Unconscious patients should be given sugar water by NGT. They should also be given glucose as a single IV injection (approximately 5 ml/kg bodyweight of a sterile 10 percent glucose solution).
- All patients with SAM with suspected hypoglycaemia should be treated with second-line antibiotics.
- The response to treatment is dramatic and rapid. If a very lethargic or unconscious patient does not respond in this way, then there is another cause giving rise to the clinical condition that has to be identified and treated.

SAM and HIV or Tuberculosis (TB)

Dietary management of children with SAM with HIV does not differ from dietary treatment of children with SAM who are HIV-negative. HIV-infected children are likely to present more often with associated infection, and therefore rates of weight gain and recovery may be lower than in HIV-negative children.

The management of SAM in HIV-infected patients should take into account:

- High prevalence of TB: Always consider diagnosis of TB in HIV-infected patients. The signs are the same as those in children without HIV infection.
- Cotrimoxazole prophylaxis: Prophylactic doses of Cotrimoxazole should be given to patients when HIV is suspected, and provision should be indefinite in situations where antiretroviral therapy (ART) is not yet available. This antibiotic is added to the other systematic antibiotics for treatment of SAM given at the start of treatment.
- ART should be considered for HIV-positive patients with SAM where available: ART is potentially toxic for the child with SAM as it takes several weeks or months before having an impact on the cluster of differentiation 4 (CD4) cell count. Therefore, it is safe to wait until recovery of nutritional status (at least the end of inpatient care) to commence ART treatment. The most appropriate schedule for commencement of ART treatment for children with SAM and HIV infection is, however, not yet established and is currently being investigated.
- Voluntary testing and counselling of children with SAM and their parents in high HIV prevalence areas: Testing for HIV in children with SAM is advised in areas with a high HIV prevalence. It has implications for the treatment of SAM and it may lead to detection of HIV in the accompanying parent, with implications for counselling and treatment. If families of HIV-infected children are food-insecure, they will also need special nutrition support.

Although guidelines for the management of SAM are considered appropriate for HIV-infected patients with the minor adaptations described above, extensive research is currently under way to further adapt protocols for these patients. These include, among other considerations:

- Comparison of recovery rates of HIV-infected and HIV-negative children with SAM treated in CMAM
- Development of nutrition products specifically designed for HIV-infected malnourished patients

- Use of micronutrient supplementation for HIV-infected individuals
- Development of nutrition support for PLHIV in ART
- Studies of the interaction between ART and nutritional status of the patient
- Assessment of SAM in HIV-infected adults
- Impact of nutrition support on HIV-infected individuals
- Integration of HIV programmes with CMAM

Until such a time where the evidence base is established, it is advised to treat SAM in HIV-infected patients with this standard treatment protocol for SAM, combined with prophylaxis (Cotrimoxazole) and start of antiretrovirals (ARVs), if necessary, only after initial recovery of nutritional status.

Other Medical Complications

Children diagnosed with SAM may also be suffering from other underlying illnesses. In such circumstances these children should be treated according to this standard protocol for SAM. Those who fail to respond to treatment need further investigation for an underlying condition that makes them fail to respond to treatment.

Great care should be exercised in prescribing drugs for patients with SAM. They have abnormal kidney and liver function, altered levels of the enzymes necessary to metabolise and excrete drugs, excess entero-hepatic circulation (reabsorption) of drugs that are excreted in the bile, decreased body fat which increases the effective concentration of fat-soluble drugs and, in kwashiorkor, there may be a defective blood-brain barrier. Moreover, very few drugs have had their pharmacokinetics, metabolism or side effects examined in patients with SAM.

The following considerations are strongly advised:

- The underlying malnutrition should be treated first before standard doses of drugs are given. Drugs used for HIV and TB can damage the liver and pancreas. These diseases do not usually cause immediate death (except military TB and TB meningitis) so treatment should normally be delayed for up to one week while the nutritional treatment returns the metabolism of the patient back to normal.
- If it is critical that a particular drug be given at the start of treatment for SAM, then it should initially be administered in reduced doses.
- Many drugs should be avoided altogether until there is research to show that they are safe and guidance is provided on the dosage appropriate for the malnourished child. Common drugs, such as paracetamol, do not function well in most children with SAM being treated in the stabilisation phase and can cause serious hepatic damage. Metronidazole should be avoided if at all possible, and ivermectin or other drugs that are dangerous if they cross the blood-brain barrier should never be given to oedematous patients.