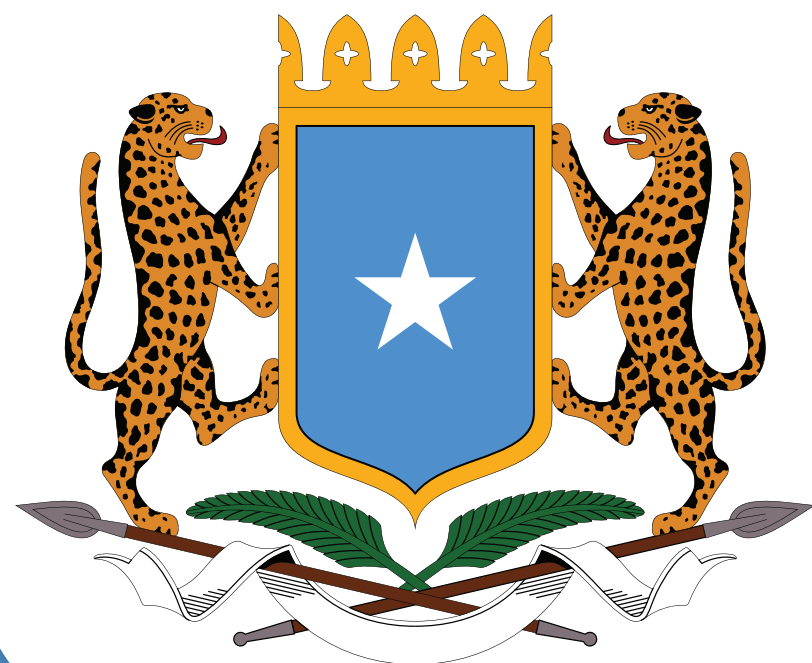
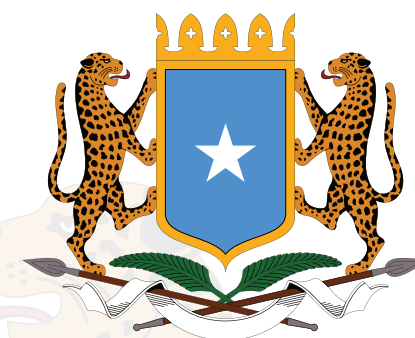




Somali Federal Republic
Ministry of Health and Human Service



Somali Federal Republic
Ministry of Health and Human Service

SOMALI GUIDELINES FOR INTEGRATED MANAGEMENT OF ACUTE MALNUTRITION



Foreword Letter

The management of acute malnutrition is a vital link in reducing mortality and promoting optimal nutrition and development for Somali children. There is considerable regional variation in the burden of acute malnutrition. Children in the area most at risk of conflict, displacement, and a lack of access to basic services typically experiences a chronic nutrition crisis. Globally; children with wasting and stunting are approximately 49 million and 149 million respectively. In Africa, the estimated prevalence of wasting is 14 million while stunting is 58.8 showing that undernutrition remains a serious public health problem in the Africa.

The Somali Health and Demographic Survey (SHDS 2020) has shown that malnutrition statuses of Somali children under the age of five are 28% stunted, 12% wasted and 23% underweight. Also, The Somalia Micronutrient Survey 2019 showed that good nutrition is still out of reach for large numbers of Somali children under the age of five. The survey revealed that 34% of children under the age of five suffer from vitamin A deficiency, 43% of anemia and 28.6% of iron deficiency anemia; 47% of pregnant women are also anemic.

In 2010, the Ministry of Health and Human Services developed the first integrated management of acute malnutrition protocol (IMAM protocol) and later in 2018, the ministry developed the second edition of the IMAM guideline in line with WHO guidelines of management of acute malnutrition.

The development of this IMAM guideline was carried out under the auspices of the Ministry of Health and Human Services of the Federal Government of Somalia with the active participation of nutrition experts from federal member state MOH, partners and institutions in Somalia.

Use of the IMAM package will help to streamline management protocols and improve the quality of the services provided. The guideline provides an opportunity for all health care providers to realize the importance of proper management at health facility and community levels, ensure successful diagnosis and treatment and, consequently address one of the objectives and goals in the National Development (NDP-9) as well as Sustainable Development Goal (SDG) on reducing child mortality.

The Ministry of Health and Human Services of the Federal Government of Somalia will provide the necessary leadership and coordination to all partners in the field of nutrition in addressing the problem of malnutrition in a holistic manner.

Sincerely

Mohamed Abdulkadir Hersi
General Director (Acting)



ACKNOWLEDGEMENTS

This protocol is derived from the **generic UNICEF-WCARO protocol version 6.6.5**, copyright Professor Michael Golden & Doctor Yvonne Grellety, with permission; it has been edited during a consensus meeting by the government and organizations to adapt it to the situation in Somalia:

Ministry of Health - Federal Republic of Somalia
Ministry of Health - Federal Member States
(Somaliland, Jubbaland, Puntland, South-West,
Hirshabelle, Galmudug)

Action Contre la Faim

African Network for the Prevention and Protection against
Child Abuse and Neglect - ANPPCAN

Comitato Internazionale per lo Sviluppo dei Popoli - CISP

Food Security and Nutrition Analysis Unit - FSNAU

International Rescue Committee - IRC

International Committee of the Red Cross - ICRC

Skills Active Forward - UK

Save the Children

Somali Red Crescent Society

Trocaire

United Nations Children's Fund

World Food Programme

World Health Organisation

World Vision International

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ACRONYMNS

ACT	Artemisinin-based Combination Therapy	IPF	In-Patient Facility
ARV	Anti-Retroviral	IU	International Units
ART	Anti-Retroviral Therapy	LoS	Length of Stay
BMI	Body Mass Index	MUAC	Mid-Upper Arm-Circumference
BMS	Breast Milk Substitute	MAM	Moderate Acute Malnutrition
BSFP	Blanket Supplement Feeding Program	MCHN	Maternal and Child Health Nutrition
CCM	Community Case Management	NCHS	National Centre for Health Statistics of USA
CHW	Community Health Worker	NGT	Naso-Gastric Tube
CLTS	Community-Led Total Sanitation	NND	National Nutrition Department
CMV	Complex of Minerals and Vitamins	NFP	Nutrition Focal Point
CMW	Community Mid-Wife	OPD	Out-Patient Department
CSB	Corn Soya Blend	OTP	Outpatient Therapeutic Programme;
DHMT	District Health Management Team	PHU	Primary Health Unit
DNO	District Nutrition Officer	RDA	Recommended Dietary Allowances
DMO	District Medical Officer	ReSoMal	Oral REhydration SOLution for severely MALnourished patients
ENA	Essential Nutrition Action	RUSF	Ready to Use Supplementary Food
EPI	Expanded Program on Immunisation	RUTF	Ready-to-Use Therapeutic Food
ER	Emergency Room	RWG	Rate of Weight Gain
F75	Therapeutic milk used in Acute-phase of SAM in-patient treatment	SAM	Severe Acute Malnutrition
F100	Therapeutic milk used in Transition/Recovery Phases of SAM treatment	SC	Stabilization Centre
F100dil	Diluted F100, used in the treatment of severely malnourished infants less than 6 months	SFC	Supplementary Feeding Centre
FBP	Food by Prescription Program	SFP	Supplementary Feeding Programme
HC	Health Centre	TFC	Therapeutic Feeding Centre
IEC	Information, Education, Communication (programs and strategies)	TSFP	Targeted Supplementary Feeding Programme
IFE	Infant Feeding in Emergency	VCT	Voluntary Counselling and Testing (program for HIV/AIDS)
IMAM	Integrated Management of Acute Malnutrition	WHO	World Health Organisation
IMCI	Integrated Management of Childhood Illness	W/H - W/L	Weight-for-Height - Weight-for-Length

INTRODUCTION

Malnutrition is a major public health problem of the world. It dramatically increases the risk of early death, is responsible either directly or indirectly for more than one third of all childhood deaths, and deprives children of the opportunity to develop to their potential. It is both a cause and a result of poverty and underdevelopment.

The nutrition situation in Somalia is deteriorating with a national median global acute malnutrition level of 17.4% (emergency level is 15%) with 1.2 million children under the age of five with acute malnutrition, including over 231,829 who have, or will suffer, life-threatening severe acute malnutrition (SAM). Without appropriate treatment, acute malnutrition may result in the death of the child. Even children who survive may remain vulnerable to other episodes of malnutrition and disease and present lower intellectual and psycho-motor abilities, which will in turn reduce their chances later in life.

Since 2008, there has been a progressive introduction and scaling up of nutrition interventions to manage severe and moderate acute malnutrition in Somalia. These programs have been organized and managed by several implementers with the assistance of many different international and local agencies and non-governmental organizations in collaboration with Ministry of Health authorities.

The nutrition and overall health sector context in Somalia has evolved, thus these guidelines have been updated according to the current nutrition situation and Somalia context, and in line with the revised WHO (2013) recommendations and relevant health sector policies and guidelines in Somalia. To this effect, UNICEF, in coordination with the Nutrition cluster, is supporting the Ministry of Health authorities in the revision and updating of the current IMAM guidance, training package, and reporting tools that would enable partners to respond effectively and efficiently to manage acute malnutrition in Somalia.

The IMAM programme in Somalia is marred by several challenges covering infrastructure, capacity, and community engagement. Capacity of health systems to take on treatment of SAM in terms of staffing, logistics, monitoring, and supervision requires a more holistic systems approach. Staff capacity gaps root from a lack of integration of IMAM in the national training curriculum for health workers. A high staff attrition/turn over has resulted in a shortage of trained staff in facilities. Furthermore, the IMAM programme implementation quality is still non-optimal due to the difficulty in integrating service delivery and the inadequate linkage and reinforcement with wider preventative interventions. Issues around coverage of services including monitoring of progress on reaching

children with SAM (numbers admitted, effectiveness of treatment and coverage) also prevail. Difficulties in estimating incidence complicates the estimation of the burden and coverage of nutrition services in Somalia. The community component has often been neglected, and there is extensive evidence showing that IMAM without a strong community component results in limited coverage and therefore limited impact. Overall, conflict, insecurity, difficult social environment related to complex clan structure, population displacement and the inability for IDPs to access services in some host areas, and the transhumance nature of pastoralist populations further exacerbates the already fragile nutrition service delivery environment in Somalia. Lack of health infrastructure and discontinuity of programmes in some areas, with regular closure and re-opening of programmes often results in overall fragmentation of interventions to prevent malnutrition.

These guidelines take into consideration these specific challenges of implementing the management of acute malnutrition in Somalia and the adaptations that programmes have made as a consequence. In order to increase coverage, promote early diagnosis and reduce the need for transfers, these guidelines promote the use of intense community mobilisation as the first priority in all programmes. When possible, protocols are adapted for the eventuality of a complicated cases that cannot be transferred to a Stabilization centre (SC).

Conceptual Framework for Malnutrition:

Malnutrition, whether acute or chronic, has multiple causes that usually work in conjunction, reinforcing each other to the point that no single action or intervention can prevent it. Only exceptionally, a single cause can be found. Managing acute malnutrition implies having an understanding of the causes of malnutrition and how they interact. The immediate causes are usually easier to observe, but they cannot be addressed unless their underlying causes are understood and addressed. Sustainable eradication of malnutrition can only be based in the elimination of its basic causes. The division of the causes of malnutrition into different levels facilitates understanding and analysis of a given context and can be used for planning of programmes.

Immediate Causes of Malnutrition

Inadequate dietary intake and disease are immediate causes of malnutrition and create a vicious cycle in which disease and malnutrition exacerbate each other. Thus, food intake and disease must both be addressed in order to support recovery from malnutrition.

Underlying Causes of Malnutrition

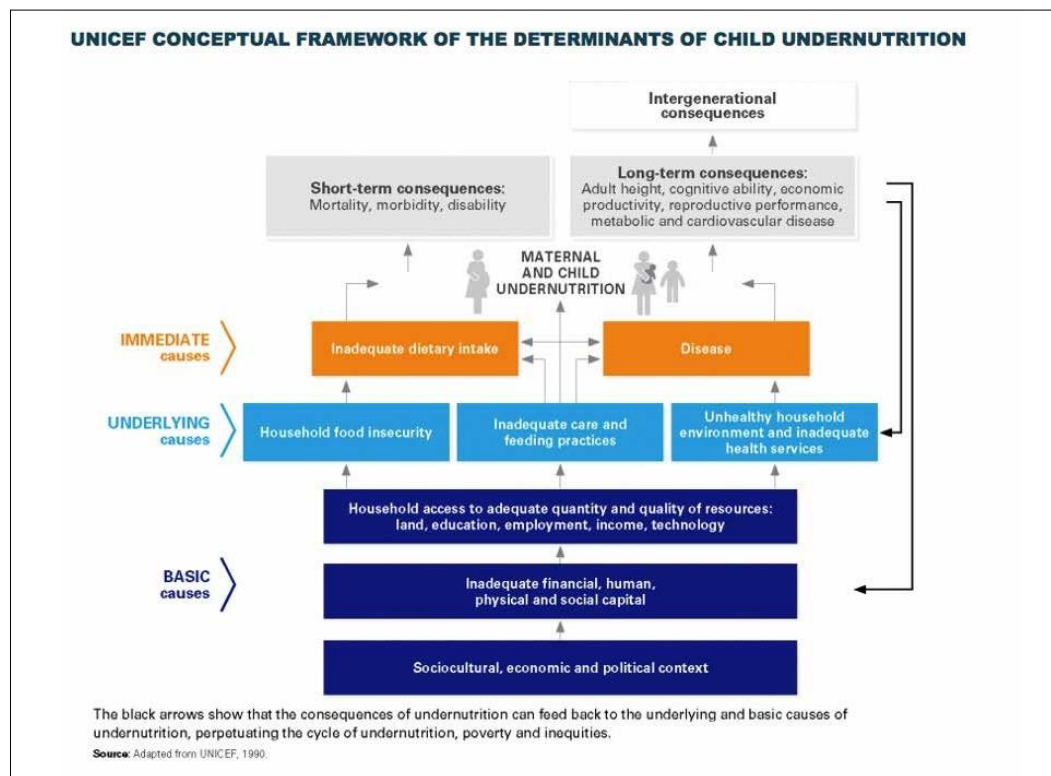
Three major underlying causes of malnutrition include:

- **Food:** Inadequate household food security (limited access or availability of food).
- **Care:** Inadequate social and care environment in the household and local community, especially with regard to women and children.
- **Health:** Limited access to adequate health services and/or inadequate environmental health conditions (including access to safe water and sanitation facilities).

All underlying causes of malnutrition are usually the consequence of poverty.

Basic Causes of Malnutrition

The basic causes of malnutrition in a community originate at the regional and national level, where strategies and policies that affect the allocation of resources (human, economic, political and cultural) influence what happens at the community level. Geographical isolation and lack of access to markets or services due to poor infrastructure, displacement, or conflict can have a huge negative impact on maternal and childhood health and nutrition outcomes.



Pathophysiology of Severe Acute Malnutrition

Severe acute malnutrition can result in profound metabolic, physiological, and anatomical changes. Virtually all physiological processes are altered due to severe acute malnutrition. Every organ and system is involved in reductive adaptation.

Reductive adaptation is the physiological response of the body to undernutrition i.e. systems slowing down to survive on limited macro and micro-nutrient intake. The system reduces activity, to adapt to the lack of nutrients and energy. Reductive adaptation results in profound physiological and metabolic changes, some of which can be observed by the clinician and others which are not. The initial reductions will not alter normal functioning of the body BUT will affect its capacity to adapt to any other new situation (an infection, cold, or even to an IV infusion or excessive oral liquids). For example, the circulatory system may still be working correctly with no signs or symptoms of presence of a problem, BUT it may not be able to adapt to a sudden increase of circulatory volume (after an infusion or a transfusion, for example). Since the adaptive mechanisms to increased volume cannot be mobilised, a simple infusion may result in cardiac overload and lethal pulmonary oedema. Similar situations occur

with: the digestive system, and the amount of proteins and other nutrients that can be absorbed in one meal; the immune system, and its ability to respond to infection; the liver's ability to detoxify; and the kidney's ability to excrete, etc.

In addition, some of the changes mentioned result in unusual signs and symptoms. For example, a child with severe acute malnutrition may not be able to present fever in the face of an infection. In fact, very often the infection will present with hypothermia! You can see other examples in the following page.

The changes in metabolic and physiological responses in the malnourished child are so important that therapeutic decisions which are lifesaving in a well-nourished child can be potentially deadly in a malnourished child. That is why it is so important to follow standard protocols for the treatment of severe acute malnutrition and its complications described in these guidelines.

The following table presents some of the main alterations in each of the body systems. Knowing them can help understand the evolution and therapy of severe acute malnutrition and its complications.

Cardiovascular system • Cardiac output and stroke volume are reduced. • Infusion of saline may cause an increase in venous pressure. • Any increase in blood volume can easily produce acute heart failure. • Any decrease will further compromise tissue perfusion. • Blood pressure is low. • Renal perfusion and circulation time are reduced. • Plasma volume is usually normal and red cell volume is reduced.	Gastro-Intestinal System • Production of gastric acid is reduced. • Intestinal motility is reduced. • Pancreas is atrophied and production of digestive enzymes is reduced. • Small intestinal mucosa is atrophied. • Secretion of digestive enzymes is reduced. • Absorption of nutrients is reduced.
Liver Function • Synthesis of all proteins is reduced. • Abnormal metabolites of amino acids are produced. • Capacity of liver to take up, metabolize, and excrete toxins is severely reduced. • Energy production from galactose and fructose is much slower than normal. • Gluconeogenesis is reduced, with a high risk of hypoglycaemia during infection. • Bile secretion is reduced.	Genitourinary System • Glomerular filtration is reduced. • Capacity of kidney to excrete excess acid or a water load is greatly reduced. • Urinary phosphate output is low. • Sodium excretion is reduced. • Urinary tract infection is common.
Circulatory System • Basic metabolic rate is reduced by about 30%. • Energy expenditure due to activity is very low. • Both heat generation and heat loss are impaired. • The child becomes hypothermic in a cold environment and hyperthermic in a hot environment.	Endocrine System • Insulin levels are reduced and the child has glucose intolerance. • Insulin growth factor 1 (IGF-1) levels are reduced. • Growth hormone levels are increased. • Cortisol levels are usually increased.
Immune System • All aspects of immunity are diminished. • Lymph glands, tonsils and thymus are atrophied. • Ig-A levels in secretions are reduced. • Complement components are low. • Phagocytes do not kill ingested bacteria efficiently. • Tissue damage does not result in inflammation or migration of white cells to the affected area. • Acute phase immune response is diminished and cell-mediated immunity is severely depressed. • Typical signs of infection, such as an increased white cell count and fever, are frequently absent. • Hypoglycaemia and hypothermia are signs of severe infection usually associated with septic shock.	

1. PROGRAMME OVERVIEW

1.1 Components of the IMAM programme

The objectives of the IMAM programme are:

- to prevent acute malnutrition,
- to prevent the development of severe acute malnutrition in moderate acute cases,
- to establish links with other programmes/services to prevent future relapse, and
- to save the lives of individuals that have developed acute malnutrition.

Well-run programmes can successfully achieve these objectives through the combination of the different IMAM components, particularly when they are well coordinated, integrated, and linked with other relevant interventions and services.

The IMAM programme is based on four basic principles:

- Access and high coverage: the use of decentralized service delivery units/facilities provides easier access as well as a large number of community workers to follow up outpatients in their homes.

- Timeliness: the provision of integrated services and the initiation of active case findings before the prevalence of malnutrition escalates. IMAM aims to treat acute malnutrition before additional medical complications occur.
- Sectoral integration: the integration with other programmes/services, including health and nutrition education, promotion of exclusive breastfeeding and hygiene, food security interventions, protection, etc.
- Capacity building: building on existing structures and stakeholders through collaboration, training, and ongoing support.

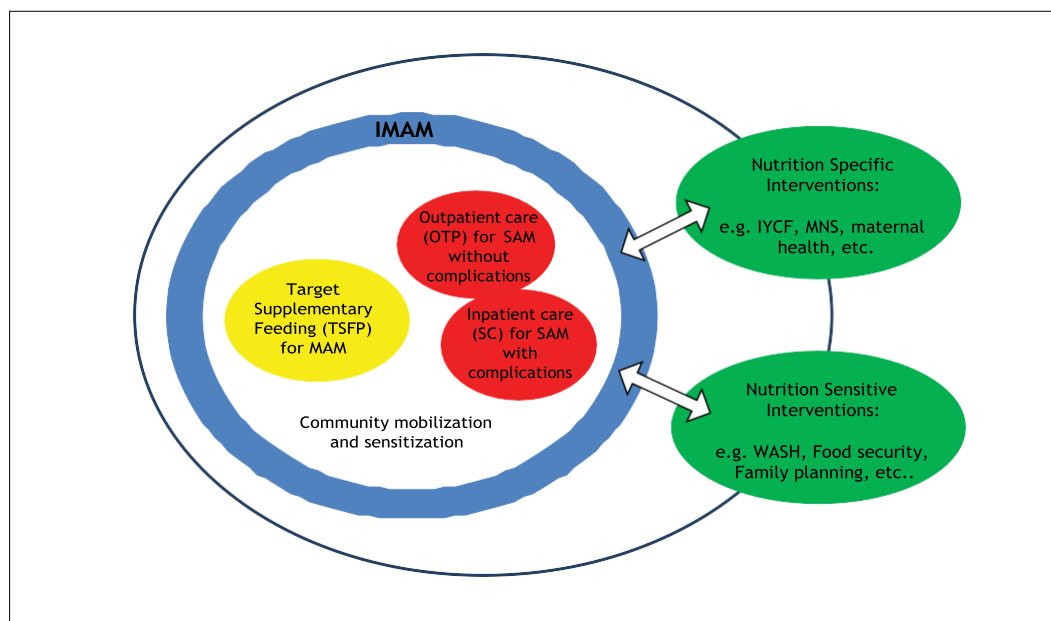
The core of the IMAM programme includes four distinct but integrated components/services:

- Community mobilization and sensitization
- Targeted Supplementary Feeding Programme - TSFP
- Outpatient Therapeutic Programme (Outpatient care) - OTP
- Stabilisation Centre (Inpatient care) - SC

2. IMAM ENVIRONMENT

As discussed in section 1, the causes of malnutrition are multiple which implies that prevention and treatment of malnutrition requires an intra-sectoral and multi-sectoral approach. The IMAM programme is not a stand-alone set of services and other interventions are necessary; these can be “nutrition specific” or “nutrition sensitive” interventions. All together can be referred to as the IMAM environment, as indicated in the figure below, where

IMAM represents the core component ensuring the link with the various interventions able to support children and their family in preventing and fighting against malnutrition and, for children already suffering from malnutrition, establishing the link with the existing interventions able to prevent the child from relapsing once rehabilitated



Nutrition specific interventions or programmes address the **immediate determinants** of foetal and child nutrition and development—adequate food and nutrient intake; feeding; caregiving and parenting practices; and low burden of infectious diseases. Some of these interventions are already provided within the existing health services at the facility level. Infant young child feeding (IYCF) interventions (exclusive breastfeeding and complementary feeding) as well as maternal health interventions (activities undertaken in MCHN clinics) are good examples of currently existing interventions in Somalia.

Nutrition sensitive interventions^{1,2,3} or programmes address the **underlying determinants** of foetal and child nutrition and development — food security; adequate

caregiving resources at the maternal, household, and community levels; and access to health services and a safe and hygienic environment. Nutrition sensitive programmes can serve as delivery platforms for nutrition-specific interventions, potentially increasing their scale, coverage, and effectiveness.

As an example of nutrition sensitive interventions, in the Somalia programme, an agreement has been reached to put institutional WASH activities in place. Under the agreement, all OTPs will have water and hand washing facilities and will distribute hygiene kits to children discharged from an OTP.

1 Unlocking WFP's potential: Guidance for nutrition-sensitive programming'– March 2017. Version 1.0, Interim

2 Marie T. Ruel, Agnes R. Quisumbing, Mysbah Balagamwala 2017. Nutrition-Sensitive Agriculture: What Have We Learned and Where Do We Go from Here? IFPRI Discussion paper

3 Several references can be found in <http://www.fao.org>

3. IMAM PROGRAMME IN SOMALIA

This section presents the objectives and the services of the IMAM programme in Somalia. The scale up of the IMAM strategy is still on-going but the elements below indicate the services which should be delivered within each component. Nutrition specific interventions are listed for each component while nutrition sensitive interventions will vary within the country and according to the existing interventions and field partners.

In Somalia, the IMAM programme refers to an integrated service provided within the usual package of activities delivered by the health system/health facilities or supporting field partners.

3.1 Objectives of the IMAM programme

- Improve equitable access to quality lifesaving preventive and curative nutrition services through systematic identification, referral, and treatment of acutely malnourished cases
- Reduce nutrition related morbidity and mortality rates to below emergency thresholds
- Reduce cost and maximize service utilization
- Establish integrated nutrition programs between and across relevant sectors such as health, Water, Sanitation and Hygiene (WASH), FS, and education through enhanced coordination and joint programming including nutrition sensitive actions.

3.1.1 IMAM Services

Community mobilization

Targeted Supplementary Feeding Programme (TSFP)

Outpatient Therapeutic Programme (Outpatient care) - OTP

Stabilisation Centre (In-patient care) - SC

3.1.2 Community mobilisation (section 4):

Objective:

To sensitize the population on the problem of malnutrition and how to identify it in order to reach more children and women at an earlier stage in their development of acute malnutrition, thereby increasing coverage and recovery.

Activities:

Screening children through assessments of MUAC and nutritional oedema; referring to the nearest health facilities; mobilising key community stakeholder's and organizations; education and sensitization on nutrition health related topics as well as existing community services to enhance understanding and acceptance by the community; following up with patients that default or present recovery difficulties.

3.1.3 Targeted Supplementary Feeding Programme – TSFP (section 5):

Objective:

To treat patients with Moderate Acute Malnutrition (MAM) and prevent the development of Severe Acute Malnutrition (SAM).

Activities:

Biweekly prescription of take-home rations in the form of Supplementary Food commodities (e.g. CSB+ or Ready to Use Supplementary Foods [RUSFs]) and routine medicines and nutritional monitoring of the patient. Follow up of OTP children discharged as cured.

3.1.4 Outpatient Therapeutic Programme (Outpatient care) – OTP (section 6):

Objective:

To treat patients with SAM who have a good appetite and no medical complications and to prevent further deterioration of SAM cases.

Activities:

Weekly prescription of Ready to Use Therapeutic Foods (RUTFs) and routine medicines and medical and nutritional monitoring of the patient. After recovery and discharge, the child will be transferred to TSFP for two months to consolidate the nutritional status and prevent relapse.

3.1.5 Stabilisation Centre (In-patient care) – SC (section 7):

Objective:

To treat patients with SAM who have a poor appetite or medical complications.

Activities:

Use of therapeutic milk and medical treatment in inpatient facility (hospital or stand-alone centre). A child with complicated SAM will start treatment at an SC (inpatient) and when the medical conditions are stabilized and/or the appetite returns, he/she will continue treatment as an outpatient at the OTP. After recovery and discharge the child will be transferred to TSFP for two months to consolidate the nutritional status and prevent relapse.

A performant referral system must be in place to transfer patients from one component to the next (when the patient condition worsens), or to return to the previous one if the evolution of treatment is satisfactory. This is particularly important if all services are not provided in the same facility, which is often the case for the inpatient service.

Refer to the respective sections for more information on each service presented here.

3.1.6 Additional services linked to IMAM

Basic Nutrition Services Package (BNSP)

Essential components	Justification
Management of acute malnutrition	Contributes to reducing mortality and morbidity.
Micronutrient supplementation	Reduces micronutrient deficiencies and contributes to reducing morbidity/mortality, contributes to improving growth and development, helps prevent neural tube defects, and helps ensure the quality of breastmilk.
Immunizations	Reduces morbidity and risk of malnutrition.
Deworming	Reduces micronutrient deficiencies and morbidity.
Promotion and support for optimal IYCF	Ensures optimal nutrient intake and contributes to reducing childhood morbidity/mortality and micronutrient deficiencies. Contributes to growth and development and to reducing chronic and acute malnutrition. Also contributes to the health of the mother.
Promotion and support for optimal maternal nutrition and care	Prevents maternal undernutrition/micronutrient deficiencies and reduces the likelihood of low birth weight babies. Helps maintain the ability to breastfeed and ensure high-quality milk.
Prevention and management of common illnesses (anaemia, malaria, diarrhoea, pneumonia, and kala-azar where appropriate, etc.)	Contributes to reducing mortality and risk of malnutrition.
Fortification (Home-based and food vehicles) and promotion of appropriate food fortification	Increases dietary quality and reduces micronutrient deficiencies. It also assists in targeting harder to reach vulnerable groups such as women of child-bearing age or the elderly.
Monitoring and surveillance	Supports program decision-making and ensures an up-to-date understanding of needs and programs to support resource allocation.

3.1.7 IMAM operational settings

- IMAM should be an integrated service, this means bringing TSFP and OTP services together and implementing the two in the health facilities. In special circumstances where there is no health facility, the TSFP and OTP services will be implemented in selected locations. All nutrition services should be integrated into the existing public health facilities.
- Health facilities should be homogeneously geographically spread out according to WHO standards, with a least two hours walk from each other.
- Health facilities are defined as government and Community-owned facilities that offer free services. In some cases, the proximity of fixed facilities delivering nutrition services will depend on population density and the geographical dispersion of the targeted population where

WHO walking distance criteria is not applicable. If OTP and TSFP are not under the same roof, they should not be located more than 3km apart.

- There should be at least one SC per district and at least one OTP/TSFP/ MCHN/BSFP integrated per village. It has to be noted that keeping outpatient beneficiaries at the SC until discharge is not desirable.
- OTP and TSFP should be implemented at all levels of health service delivery including at the Primary Health Unit (PHU), Health Centre (HC), Referral Health Centre (RHC), and Hospitals.
- A village is defined in terms of minimum population (1000 households) and minimum distance between two villages should be 10km.

- Mobile services should be provided in villages situated more than 5 km from the health facility. The mobile team headquarters should be at an SC or health facility. Mobile teams do a mop-up service in areas where the facility team is not able to cover.
- IYCF activities should always be integrated in OTP/TSFP services.
- All OTP/TSFP services should have community component (CBW/CNW/CHW) resilience.
- All nutrition services should be integrated into Health (Maternal and child health services).

3.1.8 Guiding principles for implementation partners (IP):

- The geotagging capacity of the IP should be considered while doing mapping of facilities and partners in different geographical locations.
- Any IP doing trainings either for facility-based staff or community volunteers should conduct training for both SAM and MAM.
- Every partner should attend quarterly cluster meetings within their respective areas of operation as part of capacity building, information sharing, and situation analysis.
- Every partner should follow and align to the policy directions and strategic priorities of the country.
- Each partner should have partnership agreement with Ministry of Health prior to the start of programming.
- Each partner should be supporting the existing government systems, rather than creating additional parallel systems.
- Use common standardized tools for treatment and prevention. All IPs should use the IMAM national guidelines except in special circumstances which should be discussed with the MoH.
- Staffing levels: Staffing at all nutrition sites should be as per the national IMAM guidelines.

3.2 Key elements for programme quality

The implementation of IMAM programmes requires a series of elements to ensure quality and success. Some of these elements are particularly important in the Somalia context. Each of them needs to be given careful attention and dedication during the duration of the programme. The main elements are:

Integration of the different components of the programme. As previously mentioned, except under special circumstances, IMAM should be an integrated programme offering both TSFP and OTP services. Integration also consists in referral of patients from one level of care to the next level (e.g. from OTP to SC), as needed and without interruption in the continuity of treatment. It also includes coordination and exchange of information to monitor and

improve programme results. IMAM programmes should also be integrated into health services as much as possible.

Community mobilisation, TSFP, OTP, and SC need to be understood as the components of the same programme. This needs to be particularly stressed when facilities are managed by implementing partners. Regular meetings and exchange of information are mandatory.

Training of all staff involved in the management of acute malnutrition is of the utmost importance. This includes all levels of staff, from the community volunteers to the doctors in hospitals. In Somalia, IMAM has not yet been integrated in the academic curriculum. Therefore, continuous training should be in place in order to train new staff, incorporate new developments, and to learn from experiences.

Supervision is key to maintaining and improving the quality of the programmes. It also allows for quick reaction to specific problems and for adapting to changing circumstances. Supervision should be implemented in a systematic way and be an opportunity for learning from your own work, rather than just an inspection of duties.

In the Somalia context, training and supervision are often difficult or challenging, given the limited access of senior (and particularly international) staff to the centres. Innovative ways of training and supervising staff need to be developed for this purpose. These rely extensively on communication technology - usually available at the district or regional level in most parts of Somalia. Some approaches that are used for Somalia to support supervision of nutrition programmes include:

- Partner reporting through the District Health Information System 2 (DHIS2) online reporting platform, enabling access to monthly statistics in real time;
- Engaging third party monitors (TPM) on behalf of government, UN, and implementing agencies to regularly conduct monitoring in hard to reach areas;
- Joint supervision exercises to programme sites led by Ministry of Health (MoH), ensuring collective efforts to address any bottlenecks to service delivery; and
- Documentation of interest stories including taking pictures of key programme activities.

Community mobilisation and early diagnosis.

Regardless of the set-up of the IMAM programme, community mobilisation and early diagnosis are the most important components. When properly implemented, they will contribute to increased coverage of the programme and will identify children at an early stage of malnutrition before the development of complications that can result in the death of the patient if he/she cannot be transferred to the SC. Community mobilisation also will help to develop good relationships and understanding within the local community.

ORGANISATION OF THE IMAM PROGRAM

The organisation of an Integrated Management of Acute Malnutrition (IMAM) program is critical to its success. Implementation of an IMAM program requires adequate funding and trained personnel at each level of organisation. It will not be sustained (because of staff turnover and the resulting “brain drain”) until all pre-service training institutions include malnutrition and its management into their curricula; involvement of academic institutions should always be part of the strategy.

1. NATIONAL LEVEL

The Ministry of health/National Nutrition Section (NND) should:

- Set the strategy and standards;
- Develop and disseminate the national nutrition policies, strategies, protocols, tools and guidelines;
- Arrange training of trainers;
- Arrange central ordering, storage, and dispersal of therapeutic and supplementary products;
- Establish mechanisms for, and facilitate coordinate from, the national, regional, and District Nutrition Officer (focal point) to integrate the IMAM program with other health activities;
- Establish effective cooperation between curative and preventive services and public health services with respect to IMAM and seek to integrate IMAM with IMCI;
- Advocate nutrition intervention into Reproductive, Maternal, Child, Adolescent Health interventions.
- Ensure decentralisation of in-patient care (SC) as far as possible, not only at the provincial hospital;
- Give the codes to be used for IMAM facilities to each district in a standard format and maintain a register of all facilities offering IMAM services (SAM and MAM);
- Compile all the data of the districts, submit and incorporate them at the district level to the District Health Information System / DHIS2;
- Liaise with the Ministry of Education to ensure that IMAM training is incorporated into the curricula of Medical, Nutrition, and Nursing Schools;
- Develop contingency plans and an organisation for communication, coordination, monitoring, and implementation if a crisis or other nutritional emergency arises (usually as part of a National Disaster preparedness plan); and
- When an emergency is declared or anticipated, or where the nutritional status of the population is expected to change rapidly, ensure that weekly reports of number of patients with Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM) are submitted to the National Emergency Surveillance System.

2. STATE LEVEL

State Level Nutrition Officer will be responsible on the following in close collaboration with national Nutrition Manager:

- Support the implementation arrangement of nutrition strategies, protocols, tools and guidelines at their respective regions;
- Facilitate implementation of programme arrangement of Nutrition Intervention in their respective regions.
- Establish coordination mechanism at state level for nutrition programmes management in the regions.
- Supervise and improve the quality nutrition service in their respective regions
- Support the nutrition data analysis and use for action at state level.
- Monitor the nutrition supplies in the health facilities at their respective districts, regions and states
- Monitor the nutrition integration into the other sectors including health, WASH, Livelihood, Social Protection

3. REGIONAL LEVEL

The Regional Nutrition Officer will be responsible on the following activities:

- Has responsibility for all nutrition programmes within the region under the direction of the Head of Nutrition Section at [state](#) level;
- He/she has to plan, implement, organise, coordinate, and control the IMAM programme within the district. In each district, there should be one person responsible for nutrition (nutrition officer) so that the organisation and control point is close to the main SC and no more than four hours (maximum) by vehicle from the furthest OTP and SFC sites; and
- He/she is in charge of the overall organisation of the programme in the district: on the job training, supervision, monitoring and evaluation, management of the therapeutic and supplementary products and routine drugs at OTP level, and coordination with the In-patient facilities at district level.

3. DISTRICT LEVEL

The District Nutrition Officer will be responsible

1. Prerequisite

A doctor, senior nurse, or senior nutritionist trained in IMAM theory and practice with organisational, communication, and networking skills.

2. Activities

- Her/his main duties are to be part of the District Health Management Team (DHMT) and coordinate the IMAM program with those responsible for other health programs and activities within the district: EPI, IMCI, TB, HIV, MCH, Statistics and Evaluation and Health Information Systems within the ministry;
- Organise a periodic meeting at the district level with all involved with the IMAM program in the district, particularly including the community leaders and a representative from the Nutrition Department at the national level;
- At this meeting the bi-annual report (written by the District Nutrition Officer and comprising the consolidated monthly reports together with an overview of the progress of the program, problems and constraints faced, budget, and survey/screening data, etc.) is presented;
- Organise monthly coordination meetings at the district level with all the OTP, SFC and SC supervisors (reports, supplies of therapeutic products, drugs);
- Assess the needs of the program and make provision for their procurement;
- Ensure the availability of transport and fuel to enable supervision and meetings to occur regularly;
- Ensure the flow of therapeutic and supplementary products from the centre to the district, storage at the district level, transport from the district to the OTP (HC) and SFC site, and supply to the SC;
- When a new OTP or SFC is opened, ensure that all material (tools, RUTF, RUSF, drugs, etc.) are available;
- Ensure mechanisms 1) to transfer patients safely between OTPs and SC and 2) to establish mechanisms for information on the individuals transferred to be passed to the receiving facility (telephone);
- Ensure regular (monthly) supervision of the quality of

service provided by all the facilities (SC and OTP, SFC sites) within the district;

- Ensure good coordination between SC (hospital) and OTP and between OTP and SFC sites;
- Examine and correct any problems found during supervision (using check-lists) for SC, OTPs, SFC, storage facilities, and RUTF and RUSF stocks and supplies (charts, registers etc.);
- Identify particularly vulnerable villages for additional support;
- Re-adjust OTP & SFC sites, reassign staff and open and close OTPs & SFC sites as needed (according to the reports and screening data);
- Conduct in-job training as necessary and train all newly appointed staff;
- Formulate contingency plans for action in case of likely emergency;
- Register and give the code to each facility within the district as authorised by the Ministry of Health (Nutrition Department) and submit the registration details to the regional/central level;
- Establish a list of the day of consultation for each OTP & TSFP site in the district with the name and contact phone numbers of the persons in charge and disseminate this list to all IMAM sites;
- Ensure the completion of monthly reports by each IMAM facility;
- Compile the OTP and SC Monthly reports (with the District Information and Statistics Officers) and submit them in time to the DMO and the DHMT;
- Compile, analyse, and map the screening tally sheets (in collaboration with the District Rural Development focal point person) in order to determine the degree of and change in nutritional state at the village level and give feedback to the supervisors of the OTP and SFC sites;
- Submit the monthly individual and compiled reports to the regional Department in a timely manner;
- Implement the strategy for Community mobilisation; and
- Facilitate outreach-workers activities.

COMMUNITY ASPECTS OF IMAM

1. OVERVIEW

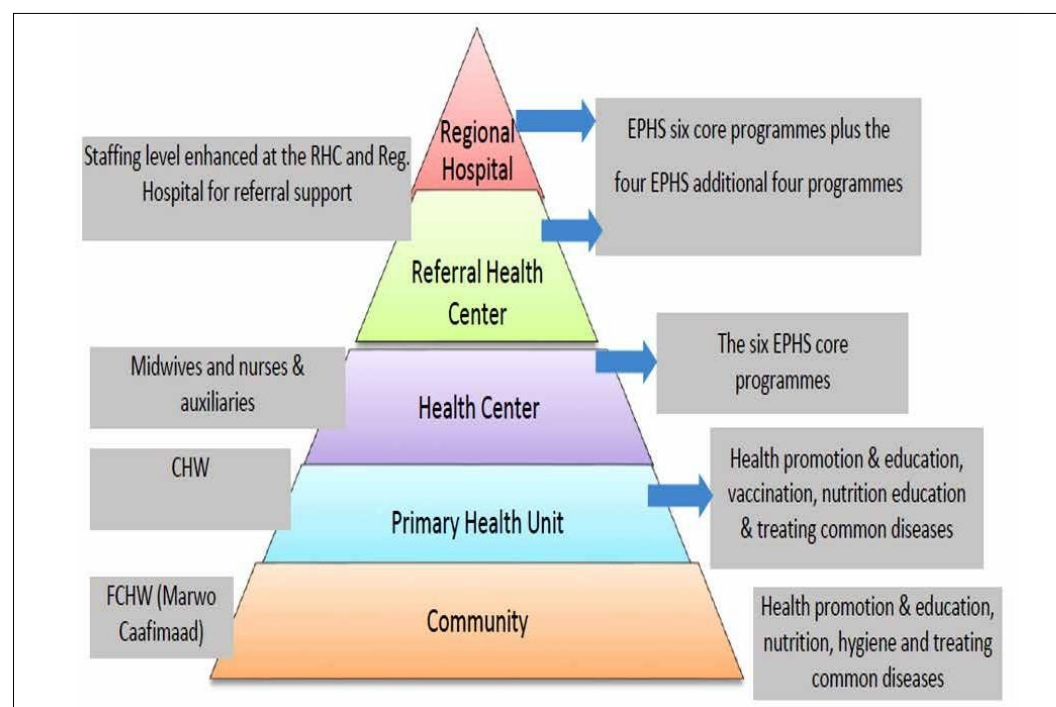
In 2015, Somalia endorsed the “Somali Community Health Strategy”⁴ which was developed in consultation with all partners and stakeholders. The strategic objective is to provide an integrated community-based package of health, nutrition, and hygiene/sanitation services, with a focus on poor women and children.

The strategy provides clarity of vision and direction for the implementation of community-based health services. The focus is on standardisation and scaling up of community-based health services which were provided by numerous cadres of community health workers and ensuring quality of services delivered at the doorsteps of the Somali population.

The community health strategy adopted a twin track approach to strengthen the health system by building on the existing health system - particularly Health Centres and Primary Health Units (PHUs) implementing the

Essential Package of Health Services (EPHS) - and adding an additional level to the health system at the household/ community level.

The first phase of the implementation of the community health strategy has been the rationalisation and standardisation of two community health cadres including a slightly revised role for the Community Health Worker (CHW) at the PHU and a community based Female Health Worker (FHW) providing an integrated package of community health services (health, nutrition, and WASH). This guideline should adopt the strategic guidance of the community health strategy using Female Health workers for household level interventions and Community Health Workers for community mobilization and sensitization.



2. COMMUNITY INVOLVEMENT

2.1. National level

The Nutrition [Section](#) should plan with the other community health sectors how to develop the community program for [Nutrition Services](#). These need to be coordinated with immunization, community-IMCI, Community Case Management (CCM), maternal and child health services, Community-Led Total Sanitation (CLTS), and breast-feeding support as well as with other programs such as food security, agriculture, micro-credit and income-generating programs. These latter features of community mobilisation are beyond the scope of this protocol. Ministry of Health and Human Services - Federal Republic of Somalia aims to strengthen the Female Health Workers Programme specifically and the community health systems in general by establishing community health workers, community health committees, health facility committees, and using any other community networks.

2.1.1. The National Nutrition [Section](#) (NND) should:

1. Produce visual aids and fliers (after testing) posted in key places and arrange for debate, discussion and advertising on the National media (radio and TV);
2. Produce tools for Female Health workers for active screening within the community (screening sheets, MUAC tapes etc.);
3. Use community health workers for community mobilization, sensitization and advocacy at community levels and for community nutrition screening where Female health workers are not present.
4. Plan the organization of the community mobilization with the regional health manager to facilitate coordination at district level within the DHMT. The rural development focal point and the DNO can be in charge of community mobilization within the DHMT;
5. Standardize the amounts and methods of recognition of incentives and remuneration of community workers and volunteers, and ensure that there is no disparity or “competition” between different implementing agencies or programs;
6. Standardize the training of trainers (IMAM, active screening, Essential Nutrition Action, Breast Feeding Community Initiative, mother-to-mother network group, etc.); and
7. Coordinate at regional and district levels the integration of the active screening and research of defaulters at the community level within the training of trainers’ module.

2.2. State Health Authorities:

- Are responsible for operational planning in their respective states;
- Support the operational management of the regional health offices in their respective regions;
- Coordinate the implementation arrangement of the programme in their respective regions and districts;
- Supervise the functions of the regional health management team in their respective regions; and
- Collate community health and nutrition information from their respective regions and districts.

2.3. Regional/District level

- Active screening should be under the direction of a regional medical officer, organized by the District/ Regional Nutrition Officer/ Focal Point and involving all sectors related to health and nutrition programs to ensure coordination and so that the various outreach programs do not compete with each other or overburden the village workers. The training of trainers on active screening, nutrition education of the outreach workers and/or volunteers should be delivered at district level to all the nurses in health centres in charge of the community mobilization. The frequency of the active screening should be coordinated with regional health management team including district health/ nutrition officer/ focal point.

The screening data should be collated at the district level under the guidance of the RHO to determine:

- The degree and change in nutritional state at village level and in the district as a whole; and
- The reliability of the data collected.

Active screening for SAM and MAM should also be organized in conjunction with community level vaccination, vitamin A distribution campaigns, child health days/weeks, and maternal & child health days/weeks.

4 Adapted from: 'Somali Community Health Strategy' - Health Services at the doorstep of Somali Communities. Ministry of Health, Federal

2.4. Health centre and Community level

2.4.1. At health centre level

The nurse in charge of the Health Centre/OTP is usually responsible for:

- Choosing the outreach workers with the DHMT;
- Coordinating the community health workers and/or female health workers for outreach activities once a month;
- Training the community health workers and/or Female Health workers for outreach services to conduct active screening using MUAC tapes and examination for bilateral oedema and following up on defaulters from the program and integrating these activities with the other community-based activities (EPI, community IMCI, midwifery, CCM, CLTS, etc.). The training curriculum should be designed nationally;
- Meeting with the community health workers and/or Female Health workers for outreach and other regular activities monthly to collect the community information and address any difficulties that arise.

The terms and conditions of employment/deployment for all community/Female Health workers/staff supported by the different programs should be identical and decided at the national level. The number of villages and frequency of visits is determined by the funding of the program. There should be secured funding for a minimum of two years for each CHW/FHW.

The advantage of paying for community health workers and/or Female Health workers for outreach services is that screening is more organized, the work more regular, and they are more likely to remain with the program and see their work as a priority.

If cash payment is not feasible, or if the program is dependent upon volunteers, funds are required for regular training (with travel and subsistence allowance) and reimbursement for time and fuel spent upon the program in order to maintain motivation.

2.4.2. Outreach activities

1. For the villages that are more than 5 km (or 2 hours walk) from the OTP site, compliance with the treatment is much less than for villages close to the OTP - "the catchment area." These more remote villages must be screened and have a village focal point (volunteer) taught to screen children. Depending upon the accessibility and numbers of SAM children in remote villages there should be scheduled visits (weekly) by a nurse aid from the OTP (for example by motorbike), provision of a mobile team, or the opening of a new OTP site.

2. Where there are no health facilities, the program sites should be organized much closer within the villages depending mostly on the logistical constraints.

2.4.2.1. Community/Female Health workers (Outreach Activities)

Community/Female health workers are employed full time to go into the communities for outreach activities. [Where there is no Community / Female Health Workers, we can deploy trained Village volunteers to perform health, nutrition and WASH promotion, screening, follow up and Outreach services.](#)

Pre-requisite

- 1- Honest and trusted by the community;
- 2 Both males and females should be selected (with a bias towards females);
- 3- With a true desire to benefit the community altruistically; and
- 4 Being able to read and write is a distinct advantage, but not absolutely essential

S/he has to

- Sensitize the community about the program before and during its implementation and have the approval of the community;
- Visit periodically the village or group of villages close together within the catchment area of an OTP. Visit villages where there appears to be a problem (excessive defaulting, low rate of weight gain, etc.) or when requested during a monthly meeting or when the village focal person comes, in rotation, to help with the OTP and recruit volunteers;
- Inform the community leaders, traditional and modern health practitioners, other members of civil society, and local organisations about the nature and purpose of the program and the nature of their involvement;
- Use both formal and informal communication to inform the community about malnutrition and good nutrition practices taking into account literacy levels, who takes care of children, who determines the use of resources within the household (husband, mother-in-law, etc.), and the beliefs within the society about the causes of malnutrition as well as their usual health seeking behaviour;
- Recruit volunteers, particularly where the burden of work is high and the community poor. However, suitable volunteers may not be available;
- Work with the community volunteers and collect the tally sheets from screening, observe any screening, and do any follow-up and home visits required;
- Check with the village elders to maintain their involvement in the program and to provide feedback about the program;

- Visit the defaulters to obtain any complaints about the program, reasons for defaulting (program is a low priority for the family, child has died or moved away, etc.) and determine the outcome of patients;
- Conduct home visits on children that are failing to respond to treatment;
- Maintain a strong link between the health centre/OTP and the village leaders, village volunteers, and other community workers; and
- Coordinate and collaborate with the different agencies and programs, in particular, the type and value of the incentives offered (travel, meal allowance, telephone and credit, clothing, food, money, etc.) and the subsistence and travel allowances for training/attending meetings.

2.4.2.2. Volunteer

A volunteer is a person living within the community itself who is willing to spend time providing services to their neighbours without formal employment or pay. Compensation can be given in kind or/and with regular training. Many countries have an institutionalized stipend for volunteers to retain them and make them more accountable for results.

Selection of volunteer

- S/he can be selected by the community itself, the outreach worker, or directly by the nurse in charge of the area.
- The major difficulties with a volunteer-based program are: 1) choosing volunteers who are representative of their communities; 2) providing adequate support; 3) maintaining their motivation; and 4) having volunteers in the poorest communities where they are most needed and perform during times of increased hardship when they are most needed.
- Volunteers are usually self-selected. However, it is critical that the community itself selects and approves of the volunteers. The most common problem is for communities to select the community leaders' relatives and males.
- Once the program is working, mothers who have successfully treated their own malnourished children and who otherwise fulfil the criteria for selection should be invited to volunteer. These mothers who have been through the program, and are of the same

socio-economic class as the new cases, are particularly credible and are able to relate to and guide new caretakers and can obtain information (for example on reasons for defaulting) that others may not solicit. It is important for outreach health workers to be employed to regularly visit and support the volunteer network.

- Pre-existing volunteers that have been trained in other aspects of health promotion usually have standing in the community and villagers are accustomed to seek their assistance.
- However, they should never be overloaded. The amount of time they can devote to volunteering is always limited. It is usually necessary to recruit additional volunteers so that the workload can be shared and they can work together as a team. Existing village volunteers are best placed to identify new volunteers.
- Community midwives can also be used for recruiting, training, and following volunteers. There is no limit to the numbers of volunteers that can be within a village, but they have to be organised and cooperative.

Community assessment

A community assessment⁵ is the first step in the development of community engagement activities. It is a research and learning process which leads to an understanding of the community dynamics, which may influence and/or have an impact on the IMAM program access and uptake. A community assessment involves the collection and analysis of data including, but not limited to, the demographic and socio-cultural profile, social organization and communication channels, key community actors, local understanding of malnutrition, local perceptions of nutritional treatment and preventive programs, and any existing community engagement strategies. Once completed, the community assessment should drive the elaboration of community engagement activities, instantly applying research and learning into programmatic planning.

Objectives of the community assessment are multiple and include:

- o Exploring the community systems, structures, and actors which could potentially be used for community engagement;
- o Understanding community knowledge and perceptions and behaviours regarding childhood acute malnutrition and other illnesses (local disease classification and

- terminology, attitude towards formal health services, and other paths of treatment like consulting traditional healers and auto-medication);
- o Understanding community perceptions of IMAM services (target population, admission and discharge criteria, treatment given, etc.);
- o Assessing the homogeneity/heterogeneity of the community in terms of language, ethnicity, religion, politics, building mothers capacities etc. These aspects can divide communities, making it necessary to adapt information and services to reach excluded or marginalised groups;

- o Identifying factors and barriers influencing community decisions to access and to use health and IMAM services;
- o Assessing the strengths and weaknesses of the current community engagement strategies as well as opportunities and threats for future IMAM collaboration; and
- o Developing an action plan and a comprehensive community engagement strategy to improve access and uptake of the IMAM services.

3. COMMUNITY INVOLVEMENT IN IMAM PROGRAMME

Community involvement is a multi-functional approach that highly contributes to the successful implementation of nutrition programs in both emergency and development contexts. This means placing the affected population at the centre of decision making.

In Somalia, community involvement and mobilisation are of critical importance for the following reasons:

- The need to provide early identification and diagnosis of malnourished children before they develop complications. In spite of the integration strategy of the health services, some communities are still living in difficult-to-reach areas and services, like hospitals/SC, may not always be available.
- The need to obtain maximum programme coverage through the identification of the children at their homes

and the involvement of more peripheral communities that have low access to curative and preventative nutrition services.

- Communities should be sufficiently involved to take ownership of the program once it is established and shown to be effective.
- The need to develop good relationships with the elders and representatives from the community ensure that the purpose and objectives of the IMAM programme are well understood and prevent potential misunderstandings or problems.
- The need to have good relationships with all implementing partners and local leaders to ensure security and continuity of the programme.

4. MESSAGES

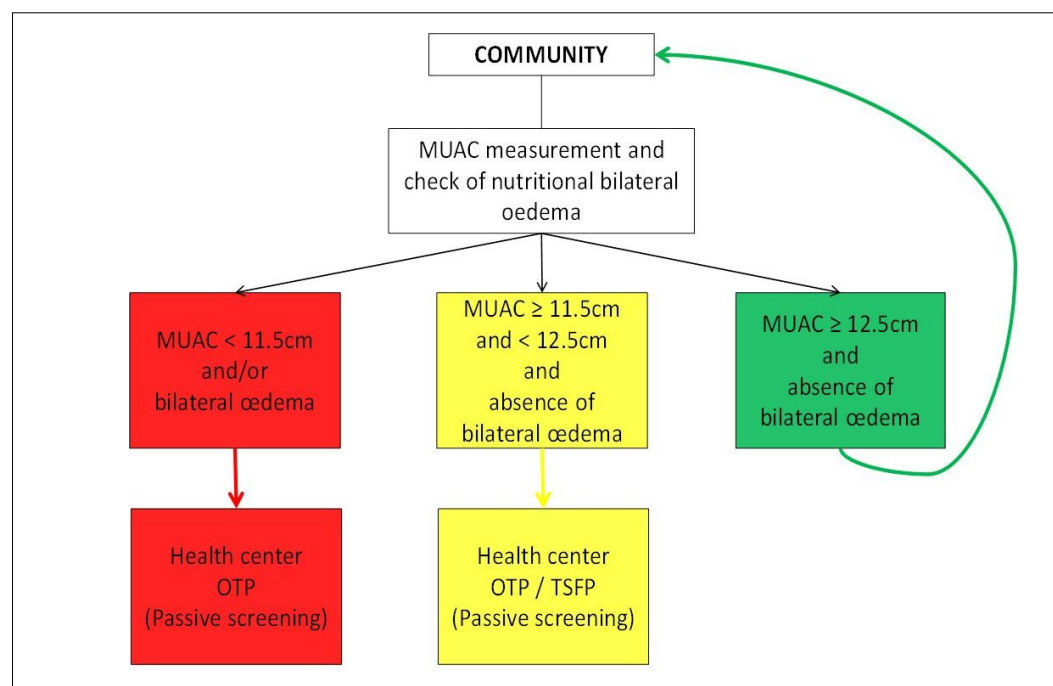
The simple messages and memorable slogans have to be revised by the local community itself (religious leaders, village elders, traditional healers, and other authority figures such as teachers, CHWs, community midwives, traditional birth attendants, and health centre staff) who is then responsible for spreading the information within their communities. However, it is often more effective to use informal methods of passing on information about the program. The information should then be passed on by the community figures themselves and not by strangers to the community. Information is most effectively passed on at places where people gather normally, particularly the

market and where women collect water or wash clothes and men gather to drink and socialise. The use of women's groups, schools (child-to-child or child-to-parent), football and sporting, and other networks should be explored. A particularly important group to involve is the religious leaders of the community as passing on information at places of worship can be particularly powerful. The target groups must include the decision makers in households, husbands and mothers-in-law in particular.

5 Adapted from: CMN. How to conduct community assessment.

5. ACTIVE CASE FINDING, REFERRAL FOR TREATMENT, FOLLOW UP, AND COUNSELLING

Flow chart 1: Nutritional Strategy for Screening for Acute Malnutrition within the community



The primary activities that take place in the community are:

- > Community sensitisation
 - Promotes understanding of the various services (MCHN, MNP, BSFP, TSFP, OTP and SC,,), including objectives and specificities (target population, admission and discharge criteria, treatment given, etc.)
- > Active case finding in the community
 - Community based workers identify cases of acute malnutrition in a timely and effective way, promoting healthy practices through communication for behaviour change.

5.1.1 Activities

- Screen all the children in the community using an MUAC tape and check for bilateral oedema going from house to house and at any other opportunity (particularly “National Days” when vaccinations are given, Vitamin A, HIV, IMCI, child health days, CCM, community development programs, etc.);
- Examine each child for bilateral oedema;
- Measure MUAC;
- Recheck all MUAC measurements of <115mm

1. Refer those with a MUAC < 15mm to the nearest OTP centre for direct admission to the program;
2. Refer those with a MUAC from 15mm to <125mm to the nearest SFC sites;
3. Record every child on a tally sheet in the red, yellow, or green column (SAM, MAM, and normal) - i.e. not only those who require treatment;
4. Bring to the supervisor (Outreach Worker or Nurse from the HC) all the tally sheets collected whenever they meet; and
5. Participate in periodic coordination/experience sharing meetings with other volunteers and the supervisor.

The outreach worker/nurse should travel to the village monthly. During the visit s/he will discuss any problems with the village volunteer face-to-face and see the village elders to get feed-back on their follow-up visits

Sometimes beneficiaries are absent or default from the IMAM programme. In such instances, the community worker should follow up with the individual cases to investigate reasons for absence or defaulting and encourage them to return to the programme. A follow-up can also be done for those individuals that do not

respond to treatment; the community worker can explore the potential behavioural and cultural causes and provide information to the health facility staff for additional support and care.

The reasons for absenteeism are many, but the commonest relates to the staff attitude to the caretaker. If a caretaker is treated badly, not only will the child be denied treatment for this episode, but if the child recovers s/he is less likely to come for treatment of future illness and the caretaker will pass a negative message to her friends and neighbours. The reputation of the program within the community depends to a large extent upon spread of individual experiences informally. Every staff member must treat the parents of the children as those primarily responsible for the health of the child. Parents are, in effect, part of the health team as far as that patient is concerned and should be treated as such.

It is important that the home visitor determines how RUTF is being given during the home visit. If it is being shared or otherwise used for other purposes s/he should explain the proper use of RUTF, especially if the visit is because the child is not responding to treatment.

5.1.2 Remuneration

A key element of this guideline is to build a standardized human resource system to implement the preventive and curative nutrition service. Thus, trained community-based health cadres (female health workers) should be used for cost saving purposes. Ministry of Health (MOH) will ensure the humanization of integrated community-based activities. Each village/section with a minimum of 200 households should have one person supporting community-based aspects of health and nutrition service including promotive activities. In order to keep them producing reasonable outcomes and to enhance service utilization by the community along with other important outputs related to the IMAM programme performances, including reduction of defaulters by follow up of patients, persons engaged for community-based nutrition activities should be provided standard CHWs/FHWs incentives - at minimum \$200 (two hundred USD). The partners supporting integrated health and nutrition services have endorsed this standard remuneration and currently they are implementing accordingly. This guideline adopts those standards (Somali community health strategy and EPH standard incentives).

5.1.3 Tools

The village focal point/volunteer/outreach worker needs to have a kit. This should be comprised of:

1. MUAC tapes (including spare tapes)
2. Screening tally sheets
3. Referral slips
4. Pencils, paper, pencil sharpener, and an eraser
5. Bag
6. Mobile phone and credit with a list of key telephone numbers
7. Written simple guidelines (in the local language) adapted to the level of education of the village focal point. It should be given even if the focal point/volunteer is unable to read - this will avoid humiliation and s/he will nearly always have someone in the village who can read for them if they are illiterate
8. Counselling cards

5.1.4 Data collation

From the tally sheets and during the visit to the village by the CHW/outreach worker, the following information should be collected:

- Village name (GPS coordinates should have been determined and entered in database)
- Names of persons doing the screening
- Date of screening
- Total number of children screened
- Number of children with oedema
- Number in the red band: <115mm = SAM
- Number in the yellow band: between 115 to 125mm = MAM
- Number in the green band: above or equal to 125mm = normal
- Number referred and the site to which they were referred
- Number who refused to go to a program

The village tally sheet can then be given to the nurse of the health centre and sent or given once a month to the nutrition focal point to be analysed and entered into a database. This information gives a prevalence of SAM and MAM in the screened community at the time of screening. These results should be mapped to identify pockets of malnutrition. With regular screening not only are malnourished children identified, but also screening forms the basis of a nutritional surveillance system to define seasonality and determine whether the situation in the district is deteriorating or improving.

PASSIVE SCREENING IN ALL HEALTH STRUCTURES

Passive screening should be done by doctors, nurses, and assistant-nurses in all the health structures and in out-patient departments and emergency and paediatric wards⁶. Any child (6 to 59 months old) with a MUAC of less than 125mm, but more than or equal to 115mm should be referred for treatment of moderate malnutrition.

1. ACTIVITIES

- Assess all children using MUAC and oedema. Although it is not appropriate to measure height and weight routinely in busy hospital emergency departments they should all be examined for clinical signs of malnutrition, oedema, and have their MUAC taken;
- Apart from integration of MUAC measurement and oedema assessment into IMCI consultations (hospital, health centre, and community-based), screening should always be done along with other programs.
- Patients attending the TB and ART programmes should be systematically screened for severe malnutrition and referred to the OTP if they fulfil the admission criteria. If there are many such patients an OTP should be opened in conjunction with the TB or ART programs.
- Refer to someone who has been trained specifically in the treatment of the severely malnourished. It is critical that treatment given to normally nourished children is not automatically ordered for the severely malnourished, this is why the nutritional assessment should be made before any other condition is diagnosed and treatment ordered.
- In health facilities, take the weight and height/length of all those with a MUAC below 125mm. Older children (more than 5 years of age) and adolescents can be severely malnourished without fulfilling the MUAC criteria for SAM; they should have their weight and height taken if they are suspected of being malnourished and treated according to this protocol. The training, equipment, and tables to take weight-for-height should be put in place in all permanent health structures and services.
- Record all children assessed on a tally sheet (the normal as well as the malnourished) or in the IMCI registration book.

2. TOOLS

1. MUAC tapes (including spare tapes)
2. Length board/height board
3. Scale within at least 100g precision
4. Screening tally sheets or IMCI register
5. Referral slips
6. Pencils, paper, pencil sharpener, eraser
7. Weight/Height tables for children⁷ and adolescents and BMI table for adults

⁶ See annex 1

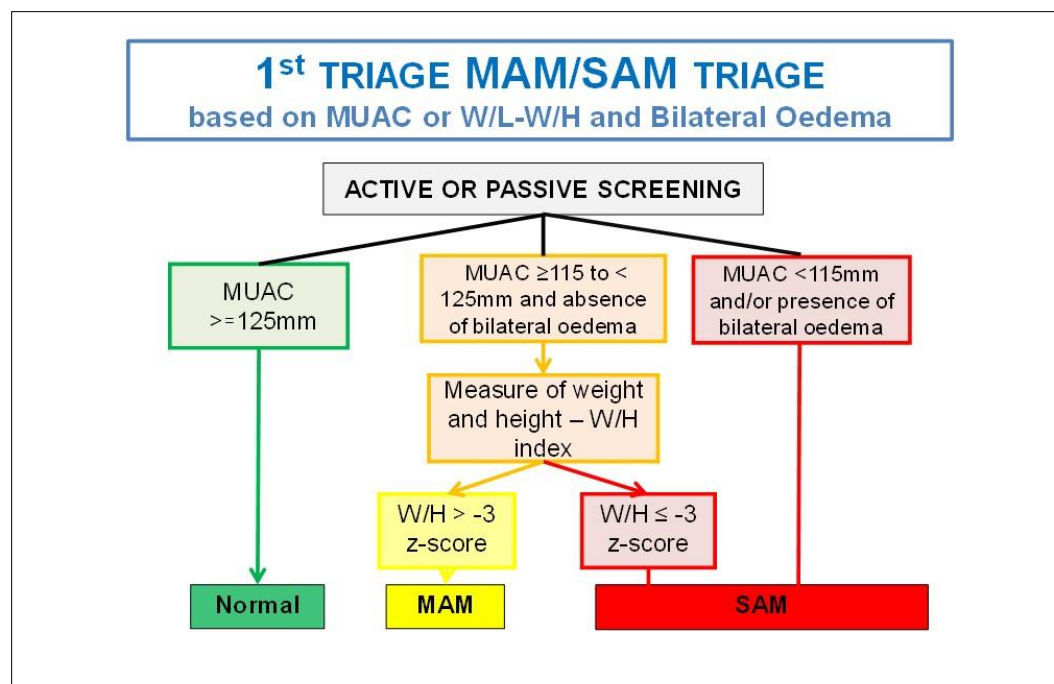
⁷ See annex 3, 4, 5

MAM & SAM TRIAGE

This section covers the principles, design elements, and implementation strategies to manage acute malnutrition at the health facility. In Somalia, management of acute malnutrition strategies are linked to national health programs and are incorporated into Maternal and Child Health programs (MCH) which form part of the primary health care infrastructure.

Children screened in the health facilities will be referred to an OTP or TSFP where the first stage triage is made, deciding if the patient has SAM, MAM, or is not acutely malnourished.

Flow chart 2: Nutritional Strategy for Screening and Triage for Acute Malnutrition (normally at the health centre level).



1. PRINCIPLES FOR TRIAGE

Children with severe acute malnutrition usually have the profound changes in metabolism, physiology, and immunological status from which moderately malnourished children do not suffer. SAM children are at increased risk of death compared to MAM and normal children. For both these reasons the treatment protocols for moderate (MAM) and severe acute malnutrition (SAM) are quite different.

In a healthy population, there are 10-fold MAM children compared to SAM. This has implications for the relative size of the programs and consequently on the

organization, staffing, logistics, storage of products, and costs of the program. MAM children do not have the level of physiological changes of the SAM child, the diagnosis of illness is relatively straightforward, and they do not need special protocols for the management of “complications.”⁸ For MAM children, the IMCI criteria and protocols should be used - when they are admitted to hospital, they do not need to be mixed with the SAM children, but should be treated with the non-malnourished children.

A summary of these differences and similarities is given in the following table.

⁸ For example, in MAM the sinking of eyes and skin pinch tests for dehydration are relatively reliable and their renal function is sufficiently preserved for them to be treated with standard WHO guidelines for diarrhoea and dehydration; their inflammatory response is relatively intact, so that fever is usually due to infection and with pneumonia they develop a fast respiratory rate; they can safely metabolise standard doses of most drugs. This is different from the SAM child where different diagnostic criteria and treatments have to be applied.

Table 1: Differences between SAM and MAM treatments

Procedures	MAM treatment	SAM treatment
Screening	Same	
Number of persons	About 10 times SAM numbers	About one tenth of MAM numbers
Organisation	Need more space for waiting, measurement – distribution – storage and time	Needs less space for OTP, may require to manage sick patients who cannot be transported
Place	TSFP – Can be done in the communities as well as health facilities,	OTP - Should normally be in a health facility and part of the normal health services.
Staff	Does need Health Worker, midwife, other trained community health workers and TSFP should be ideally near the HC.	Need a trained and experienced nurse or aid nurse for OTP
Visit	Bi-weekly (every 14 days)	Every week in OTP – 24h in SC
Admission criteria	MUAC $\geq$ 115mm to less than 125mm or WH $\geq$ -3 to less than -2Z and OTP follow up. Pregnant and Lactating women with MUAC $<$ 210mm and discharges from the SC under Supplementary Suckling Technique (re-lactation) See MCHN protocol for other categories of PLW follow for SAM cured PLW	MUAC $<$ 115mm or WH $<$ -3Z or Bilateral oedema PLW who are less than 180mm MUAC should be included in OTP/SC management
Registration	Give a registration number	SAM number and registration number
Tools required	Same Table WH – scale – length board	
Appetite test	Not required	Yes
Treatment of the Complications	Refer to the IMCI treatment protocol at the health centre level	Refer to SAM Protocol, Complication Section at the SC level – do not treat according to IMCI protocols
Products	Different products: Fortified Blended Foods, Ready-to-Use Supplementary Food, etc.	Different products: F75 – F100 - RUTF
Discharge Criteria	Z score $\geq$ -1.5 on two consecutive visits MUAC equal or greater than 125mm on two consecutive visits OTP follow up for 2 months	MUAC equal or greater than 125mm on two visits or WH Z score $\geq$ -1.5 on two consecutive visits No oedema on two visits

2. TRIAGE ACTIVITIES

1. On arrival, give sugar-water immediately to obviously sick children and those that will clearly need in-patient or other medical treatment: approximately 10% sugar solution (10g of sugar per 100ml of water).
2. Take the anthropometric measurements (MUAC, W/H and check for oedema for all patients, including those referred from the Community [see annex 1]).
3. In Health centres, check the weight-for-height table.
4. Examine for oedema and its severity and take the temperature.
5. According to the criteria of admission (see page 41), decide if the child should be admitted or not. If a patient that has been referred from the community with a diagnosis of SAM but does not meet the criteria of admission to the OTP, do not reject her but:
 - o Admit him/her to the Targeted Supplementary Feeding Program (if it is operational)
 - o If there is no TSFP, give a “protection ration” or some other benefit⁹

It is important that they receive some tangible benefit from attending the TSFP/OTP/triage site and not sent

home without anything. Such refusal will undermine the authority and moral of those screening in the community and bring the program into disrepute within the community.

6. If the patient has been referred from the community to the TSFP with a diagnosis of MAM, but does not meet the criteria for admission to the TSFP:
 - o If the patient is actually a SAM child admit/refer the patient to the closest OTP/SC for assessment and admission.
 - o If the patient is not acutely malnourished, do not reject her. The mother/patient should be referred to MCHN or BSFP. Where there is no MCHN or BSFP, give two weeks' rations of fortified food.

If a large number of inappropriate referrals attend, then the screening teams must be retrained and the OTP/TSFP Triage staff's ability checked. This should be discussed during the regular co-ordination meetings between the OTP staff and the screening teams.¹⁰

3. TRIAGE'S TOOLS

Tools:

1. MUAC tapes;
2. Scale;
3. Length/height board;
4. Weight-for-height table;
5. Registration book;
6. Patient cards/charts;
7. Pencils and pens;
8. Thermometer; and
9. Job aid (admission criteria, IMCI criteria, and difference between MAM and SAM table)

⁹ If a child has been diagnosed as severely malnourished by MUAC in the community, but not in the OTP, it is reasonable to assume that the child is “borderline” SAM. Under these circumstances it is reasonable to give one week supply of RUTF to the patient as the “benefit” – this give the best support to the community worker as the caretaker does not perceive that the treatment is substantially different from that given to those children that are admitted to the program. It should be explained that the case is “borderline” and that is why longer treatment is not required. Other benefits include micronutrient powders, etc.

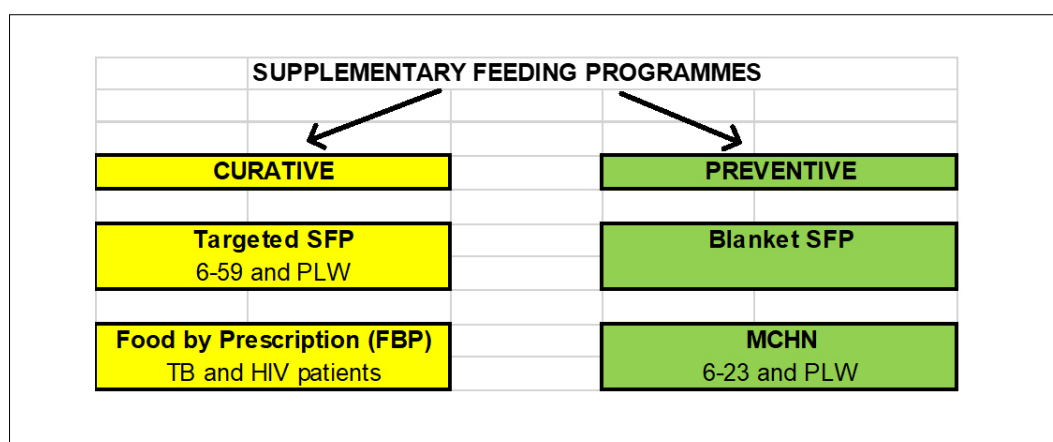
¹⁰ There is only a 10mm difference between the diagnosis of SAM (<115mm) and normal (>125mm). Tests during training show that about 1/3 of measurers have a difference of 10mm or more, when the same 10 children are measured twice. MUAC is not an easy measurement to take accurately and training should be emphasised; note that the error may be with the staff in the OTP as well as the community screening team. If there is repetition of this kind of error, This should be investigated and retraining should be planned for both the team in the community as well as the team of the OTP.

MAM TREATMENT

1. OVERVIEW

This section provides practical guidelines for the identification and management of patients with Acute Moderate Malnutrition. Moderately malnourished individuals may be treated as outpatients through TSFP (Targeted Supplementary Feeding Program). The children are at risk of death in the medium and long term, but, unlike the severely malnourished, do not need immediate emergency treatment.

Establishing short- and long-term nutrition programs such as BSFP, MCHN along with income generation support, family micro-credit, cash transfer, home-gardening support, and Hearth program (positive deviance) are complementary to MAM treatment. This intervention will increase the outcome of TSFP. There are two types of Supplementary Feeding Programmes implemented in Somalia: curative and preventive.



1.1. Curative programme (INCLUDE age category for BSFP (6-23 MONTHS) and PLW).

1.1.2. Targeted Supplementary Feeding Program (TSFP):

The objectives of a TSFP are to treat moderate acute malnourished children and pregnant and lactating women to prevent them from developing SAM and to reduce morbidity and mortality.

1.1.3. Food by Prescription programme (FBP):

It is an essential component of the comprehensive care and treatment package for TB and HIV patients. This is a short-term intervention that prescribes individual nutrition supplements in the form of specialized commodities for the recovery of malnourished ART clients and malnourished people on Direct observation treatment (DOTS) treatment. It is complemented by nutrition assessment, education, and counselling. It aims to ensure nutritional recovery of malnourished TB patients and or HIV clients and further mitigate the impact of AIDS. Each

malnourished TB/HIV beneficiary receives 250 gm of Corn Soya Blend (CSB+) and 25 gm of vegetable oil per day for 30 days per month (7.5 kg of CSB+ and 0.75 kg of oil per month per person). Total/Maximum length of stay for TB is nine months and for HIV clients is six months.¹¹

1.2. Preventive

- Blanket Supplementary Feeding Program (BSFP): This is the standard intervention to prevent acute malnutrition in an emergency, particularly in one where high Moderate Acute Malnutrition (MAM) in population, high food insecurity (availability and/or access) or high prevalence of chronic malnutrition and micronutrient deficiencies (MNDs) exists prior to the emergency. BSFP targets all members of a particular group, like children below two years and pregnant and lactating women, and is independent of their nutritional status. BSFP food distributions are typically done once a month, but other frequencies are possible. BSFP is usually seasonal during the lean period of the year or coinciding with the expected peaks in malnutrition and

¹¹ For detailed supplementary feeding management, refer to Somalia protocol for HIV/TB.

implemented for a maximum of six months (one or two cycles as needed). Each child receives 50 gm of RUSF per day for 30 days a month (1.5 kg of RUSF per month). Each PLW under BSFP receives 250 gm of Corn Soya Blend (CSB+) and 25 gm of vegetable oil per day for 30 days a month (7.5 kg of CSB+ and 0.75 kg of oil per month per person).

- **Maternal and Child Health Clinics Nutrition Support (MCHN):** This aims to promote growth during infancy and early childhood in order to prevent acute and chronic malnutrition and break the intergenerational cycle of malnutrition. The programme targets 1,000 days (PLWs and children from 6-23 months) to promote growth of infant and young children, prevent acute and chronic malnutrition, and promote healthier pregnancies and safer deliveries through the provision of essential health services and supplementary food. Each child receives 50 gm of RUSF per day for 30 days a month

(1.5 kg of RUSF per month). Each PLW under BSFP receives 250 gm of Corn Soya Blend (CSB+) and 25 gm of vegetable oil per day for 30 days a month (7.5 kg of CSB+ and 0.75 kg of oil per month per person).

In some chronic emergencies and in stable situations that are in a development context or when moving from emergency to development, other programs are in place to address the nutritional needs of the most vulnerable in the society. These include cash subsidies, vouchers and other income generating family support mechanisms, and other safety net programmes. These programs are not mutually exclusive. If such programs are established and there is still sufficient MAM to overwhelm the health and social services a TSFP program should be established within a development context. The TSFP should only be closed when the numbers of MAM children fall to levels that can be managed by other programs and the normal health/social services.

2. TARGETED SUPPLEMENTARY FEEDING PROGRAMME (TSFP) – TREATMENT OF MODERATE ACUTE MALNUTRITION

This section covers the TSFP programme as an IMAM component. The main objective of the program is to rehabilitate moderately malnourished children and women and to prevent them from deteriorating into severe malnutrition.

TSFP programme targets:

- Moderate Acute Malnourished children aged 6 - 59 months
- Moderate Acute Malnourished pregnant women (from the second trimester until delivery)
- Moderate Acute Malnourished lactating women (from delivery until the child is <6 months)
- Children discharged from OTP (OTP referrals) (ex-SAM cured)
- Ex -SAM PLW cured

Secondary or indirect objectives include:

- To screen, identify and refer children 6-59 months and pregnant/lactating women requiring treatment for severe and moderate acute malnutrition and/or breastfeeding problems.

- To increase knowledge and skills among communities on nutrition practices, particularly on infant and young child feeding practices.

The TSFP is part of the IMAM integrated programme and it is closely linked with:

- **Community mobilisation:** Patients with MAM are identified at the community level and referred to the health facility. Patients that are already following treatment in the TSFP and that are absent for one or two visits can be followed up at their homes by the community workers to ensure that they return to the programme before they become defaulters.
- **OTP/SC:** Patients that do not recover or deteriorate while in treatment in TSFP are referred to OTP for evaluation and treatment. Patients measured during the TSFP visit that present SAM criteria are sent directly to the OTP. When a child recovers in OTP/SC s/he is sent to TSFP in order to consolidate his/her nutritional status and prevent relapses.

2.1. Admission criteria to Targeted SFP

2.1.1. Admission criteria - Children 6 to 59 months

Refer to Annex 1 “How to Diagnose Severe Acute Malnutrition.” The table below indicates the admission criteria to TSFP (in yellow in the far-right column). The criteria for OTP/SC are also presented in order to properly refer children presenting with SAM (See triage SAM/MAM chapter).

Table 2: Criteria for SAM and MAM

	Admission criteria - Children 6 to 59 months		
	SC	OTP	TSFP
	SAM with complications	SAM without complications	MAM
Oedema	Bilateral oedema +++ OR Wasted with any oedema	Bilateral oedema + OR ++	No bilateral oedema
MUAC (mm)	< 115	< 115	≥ 115 - <125
W/H (z-score)	< -3	< -3	≥ -3 - < -2
Appetite	No appetite	Pass appetite test	
	Intractable vomiting	No medical complications	For medical complications - Refer to IMCI
	Fever > 39C (axillary)		
	Hypothermia <35C (axillary)		
	Lower respiratory tract infections		
Medical complications	Severe anaemia		I
	Severe dehydration		
	Extensive skin infection		
	Very weak, apathetic		
	Unconscious, convulsions		
		Other admissions	
		2 nd Twin	2 nd Twin
			Ex-cured SAM

2.1.2. Admission criteria – Pregnant and Lactating Women (PLW)

PLW are admitted based on MUAC measurement. The mid-point of the upper arm can be estimated, but measurement is taken on LEFT arm.

Table 3: Admission criteria for PLW

Admission criteria : Pregnant and Lactating Women	
Pregnant women (from the second trimester)	MUAC < 210mm
Lactating women whose child is <6 months	

2.2. Nutrition support: Diet and frequency

The following products are used in TSFP and are distributed as take-home rations. The amount of supplementary food given to each beneficiary is THE SAME. Weight of the patient is not taken into consideration for TSFP distributions.

For TSFP children, no matter what product is given, ALWAYS recommended that the child breast-feeds before taking it, if the child is still breastfeeding.

Table 4: Food commodities for Targeted Supplementary Feeding Programme

Beneficiary	Food Commodity	Quantity/person/day	Comments
Recommended food commodities for TSFP:			
Children 6-59 months	RUSF 	100 g (1 sachet)	Key ingredients: Peanuts, sugar, whey, vegetable oil, milk, soy protein, cocoa, Vitamins & Minerals
			Nutrient profile: 540 kcal, 13g protein (10.5%), 31g fat (55%) Contains EFA Meets RNI and PDCAAS
Pregnant and Lactating Women	Super Cereal (CSB+) 	250 g	Key ingredients: Corn/wheat/rice, soya, Vitamins and Minerals Nutrient profile: 939 kcal, 31-38g protein (16%), 16-20g fat (19%) Meets RNI and PDCAAS
	Oil	25 g	222 kcal Total: CSB+ and Oil = 1,161kcal

Note: At discharge, 7 sachets of RUSF are provided to facilitate a smoother return to the family food.

2.2.1. Storage and handling of food items

Food items must be stored and handled following strict guidelines.

- Record any food item entering or leaving the store with stock control cards and report monthly
- Maintain store security (lock, guards)

- Follow first in and first out system
- Check for damaged or expired food items and separate them
- Use of pallets
- Proper ventilation
- Ensure proper hygiene during storage and distribution

Table 5: How to prepare CSB+ at home

Preparation of Corn Soya Blend Plus (CSB+)

1. Corn Soya Blend Plus (CSB+) is a fortified blended food made of maize and soya flour, vitamins, and minerals that is given to pregnant and lactating women. It is pre-cooked but is not an instant product. It should be cooked for 10 minutes, but not longer.
2. Before starting to cook CSB+, wash your hands thoroughly and ensure the water used to prepare the porridge is safe.
3. **The ratio of water to CSB+ is 4:1.** For example 4 cups of water should be added to 1 cup of CSB+ flour. First mix a small amount of CSB+ with some cold water to make a paste, then add the rest of the water and bring to a boil for 10 minutes.
4. To increase the energy density and taste of CSB+ porridge, seasonal fruits and vegetables, milk powder, sugar, oil, and/or nuts can be added.

Storage of CSB at home

- Keep CSB+ covered to prevent flies and other dirt getting into it
- Keep CSB+ in the coolest part of the house
- Once the bag is opened it should be transferred and stored in an airtight container if one is available. Otherwise, the bag should be properly tied up after every use.

2.3. Routine medication

In the TSFP, a nurse should check medical conditions, immunization status, anaemia, and common infections then record the information on the beneficiary card and in the register. If necessary, refer the child to the appropriate service.

Table 6: Routine Medicine for MAM children TSFP

Name of Product	When	Age/ Weight	Prescription	Dose
VITAMIN A*	AT ADMISSION if NOT using RUSF and if NOT taken in the last 3 months	6 months to	100 000 IU	Single dose on admission
		< 1 year		
		≥ 1 year	200 000 IU	
MEASLES VACCINATION	AT ADMISSION	From 9 months	(standard)	Single dose on admission
ALBENDAZOLE	AT ADMISSION	< 1 year	DO NOT GIVE	NONE
		12 - 23 months	200 mg (1/2 tablet)	Single dose on
		≥ 2 years	400 mg (1 tablet)	Second visit

***VITAMIN A:** Children showing clinical signs of Vitamin A deficiency (eye signs) or active measles should be given Vitamin A start without delay. Based on the severity of the condition, the nurse will decide if the child also needs to be referred to the nearest health facility for treatment according to WHO guidelines.

Note: IRON FOLATE: Do not give unless signs of/or diagnosed with anaemia.

No routine medication for EX SAM follow up.

2.3.1. Special medication:

Treatment of sick, moderately malnourished patients should be in line with the WHO/IMCI protocols. There are common illnesses that can be treated in a supplementary feeding site. These include diarrhoea, vomiting, malaria, and other common infections such as ear, eye, and skin infections.

In the absence of a nurse/clinician, all beneficiaries with common ailments should be referred to the nearest health facility.

2.3.2. Routine medication for Pregnant and Lactating Women

Pregnant and Lactating Women generally receive preventive medicines in the MCH clinic; no additional supplements are distributed during treatment in TSFP.

2.4. Surveillance / Follow up of patients

In the integrated setting of the IMAM programme, the usual cycle of the TSFP is fortnightly or monthly. In urban areas,

2.4.1. At each visit:

1. Measurement of oedema
2. Measurement of MUAC
3. Measurement of weight
4. Take the height and calculate the WHZ
5. Calculate the target weight for the WHZ > or = -1.5Z
6. Medical checks and treatment if necessary
7. Give routine medicines if necessary
8. Assess evolution of the patient: organise home visit or refer if no evolution
9. Distribute food items
10. Update TSFP ration card and register
11. Give health education

2.4.2. Every fourth Month

1. Measure height/length
2. Recalculate W/HZ-scores
3. Recalculate the target weight for WHZ > or = -1.5Z

2.4.3. When necessary

1. Refer to medical facility for health problems that cannot be treated at the TSFP.

2.5. Diagnostic of Failure to respond to treatment in TSFP

It is essential to strictly apply the failure-to-respond criteria: children must not languish in the TSFP for weeks or months without being identified and the cause of failure investigated and managed. It is for this reason that

on admission, not only the discharge weight should be calculated but also the weight at which a criterion for SAM is reached and action needs to be taken urgently.

2.5.1. Criteria for failure to respond to treatment

These are maximum time limits for labelling the patient as failure to respond to treatment - in most circumstances action should be taken before these limits are reached.

1. No, or trivial, weight gain at the 3rd visit
2. Any weight loss at the 2nd visit
3. Weight loss exceeding 5% of body weight at any time (the same scale must be used)
4. Failure to reach discharge criteria after four months in the program
5. Abandonment of the program (defaulting)
6. Deteriorating to SAM

2.5.2. Reasons for failure to respond

1. Problems with the application of the protocol: this should be addressed first
2. Nutritional deficiencies that are not being corrected by the diet supplied in the TSFP
3. Home/ Social circumstances of the patient
4. An underlying physical condition/ illness
5. Other causes

2.5.3. Step by step procedure to address failure to respond

Protocol problems

Where a substantial proportion of children fail to respond to treatment (or abandon the program) the proper application of the protocol and the training of the staff at field level should be systematically reviewed, if possible by external evaluation. Any deficiencies should be corrected. Failure to treat the caretakers with due respect (rudeness, etc.) is, in most situations, the most common cause of defaulting. If it is suspected that "short rations" are being given or that there is diversion of food, unannounced post-distribution monitoring should be implemented by re-weighing the food of recipients exiting the TSFP or visiting a random selection of beneficiaries at home and examining/weighing the food they have recently received.

Uncorrected nutritional deficiencies

The old diets used for supplementary feeding of moderately malnourished children (CSB, UNIMIX,) are neither designed to promote rapid catch-up weight gain nor to return children to physiological normality. Even if taken exclusively, the nutrient density does not compensate for the very low levels of some essential nutrients in the remainder of the diet. They often have low concentrations

of several essential nutrients (e.g. potassium, magnesium, available phosphorus or zinc, etc.), the availability of these nutrients is very low from some of the diets, and there are high concentrations of anti-nutrients. As demonstrated by the calculation in the footnote on page 36 such unbalanced supplements can even exacerbate the malnutrition. Further, some contain very high concentrations of iron, which destroy other essential nutrients, such as vitamin C, during food preparation.

Particularly, when cereal based fortified blended foods are used (first strategy), the next step is to test whether the children have an uncorrected nutritional deficiency. This is achieved by changing the ration given to a nutrient dense diet with few anti-nutrients usually by giving RUSF or, in extreme circumstances, RUTF designed for the severely malnourished to promote rapid weight gain. It is important to emphasise that the recovery of the child is slower than expected, that the diet should be given exclusively to the child and not shared, and that it should be taken at least one hour before, or two hours after, family meals and not mixed with the family food taken by the child.

Social problems

Where RUSF is being used and the correct instructions as to its use have been given (and the caretaker confirms that they have been followed), the most likely cause of failure is social problems within the household. These include:

- The father or mother-in-law, who rarely attend the TSFP with the child, countermanding the mother and insisting that the child should have “traditional weaning foods.”
- Excessive sharing of the ration with other siblings, family members, neighbours, or sale of the ration.
- Sibling rivalry, particularly in cultures where family members share a plate - the MAM child is usually slow to eat, smaller and less able to obtain his/her share of the food, and the siblings “steal” the RUSF from the MAM child without the mother’s knowledge.
- Parental psychopathology, particularly where the family has been traumatized by violence or fear of violence and displacement. Also in this category is parental mental illness (schizophrenia, Munchausen syndrome by proxy, mental deficiency, etc.).
- Child abuse.
- A family member (usually adult) is consuming all the family’s resources through alcohol, khat or other drug purchase, gambling, or smoking. Where a family member is chronically ill (e.g. with HIV) and economically inactive as the cause of poverty, the family resources may be consumed by medical costs for that adult.

- Occasionally rejection of a child, often because of a family dispute or suspicion about parenthood.
- Extreme poverty such that the family as a whole is malnourished without access to food and the “program” only “targets” young children (this is particularly common where absolute MUAC is the only criterion used as the admission criterion as older malnourished children and starving adults will not be eligible for admission to the TSFP).
- The use of the child’s state to access food and services for the whole family. It is unacceptable to have a family that has to choose which child they will sacrifice for the family to survive. Do not chastise the family for having to make this terrible decision - a full ration of food MUST be given to the whole family.
- Discrimination by the community against the family (ethnic minority) or loss of the social network which allows borrowing and lending between neighbours.
- These are the more common causes, but there are many other causes of social disruption that lead to malnutrition in a young child and failing to respond to treatment.

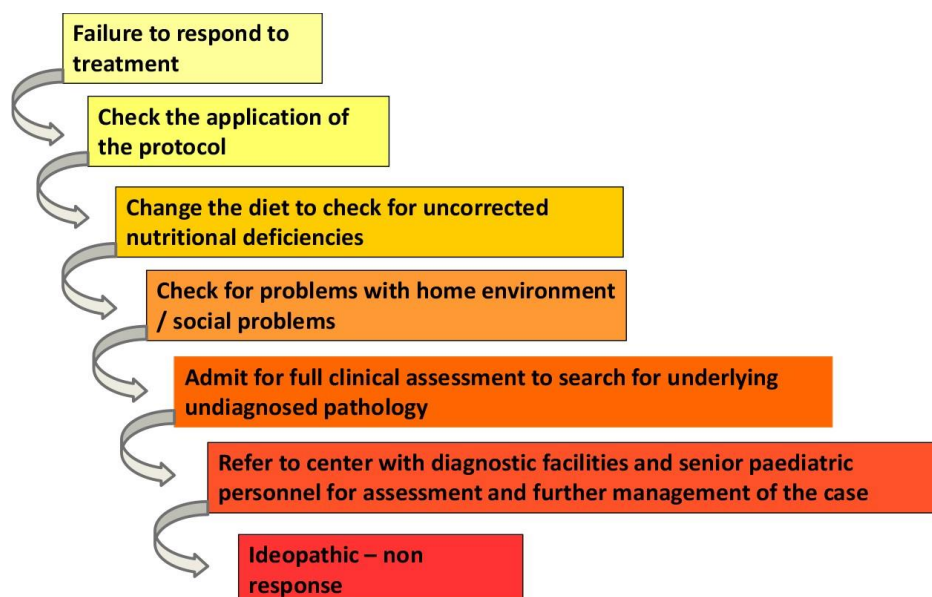
To test whether any of these are the cause, first an appetite test can be conducted. If the child is eating well or is hungry and yet fails to gain weight at home then a major social problem is confirmed. This is then investigated with an in-depth interview with the head/main decision maker in the household (father, mother-in-law) and a home visit is performed. If the child does not take the test meal and appears not to have an appetite, this may be because of shyness, unfamiliarity with or dislike of the RUSF/RUTF, then one strategy is to admit the child to day-care and feed the child under direct supervision for a day or so.

Underlying medical conditions

If the child has no appetite then there may be an underlying medical problem. A careful history and examination should be performed and a search made for the common underlying conditions, in particular: TB, HIV, cerebral palsy, schistosomiasis, other infections, cirrhosis, inborn errors of metabolism, Down’s syndrome, post-meningitis neurological damage, etc.

Other conditions

If an underlying condition is not found then the child should be referred to a paediatric facility with special expertise and diagnostic facilities.



2.5.4. Treatment of the failure to respond to treatment

One at a time in the sequence shown - and not in another sequence or omitting any step - after making the diagnosis to this patient of failure to respond to treatment, the next step is to treat the patient.

For this, in addition to your main supplementary diet such as CSB++ or another blended fortified diet, you need a different supplementary diet.

For example:

1. CSB++/other blend fortified food
2. RUSF, which is a higher quality ready to eat supplementary product fortified with all the nutrients.

1st step: Give lipid based "RUSF", 1000kcal per day for 15 days (2 bags per day)

This diet will correct all known nutritional deficiencies and, in addition, give the additional lacking nutrients. There is no question of switching the diet from CSB to another inadequate diet (such as BP5) because if the child still fails to respond, you will not have effectively excluded an undiagnosed/untreated nutritional deficiency as the cause of the failure. It **MUST** be the best diet available for recovery of a malnourished child.

This does not exclude a social reason as RUSF does not need to be prepared - if the mother cannot prepare the blended food for social reasons she may be able to give RUSF because it is ready to eat.

2nd step: After 15 days, next visit,

1. If he/she now responds to treatment, this means that it was a nutritional (or social) problem
=> Continue the treatment with 2 sachets of RUSF plus the SFC ration for a further month.
2. If he/she does not respond to treatment, this means that the dominant problem is **NOT A NUTRITIONAL** problem and that we now have to investigate if it is a social problem.

3rd step: Investigate the home social circumstances; the home visit will pick up some social problems

It is very important to realise that many/most social problems will **NOT** be found during a home visit (such as discrimination against the child, neglect, parental manipulation, career illness, siblings' rivalry, etc.). This is because parents' and children's behaviour changes during a visit by an outsider.

1. During the home visit, if a problem is identified that can be alleviated or solved,
=> Then deal with the problem and leave the child at home for follow up and further visits can be made the next weeks.
2. During the home visit, if they identified a problem that cannot be alleviated or solved at home,
=> Take any steps necessary to alleviate the problem - such as 1) admission of the child to a facility, 2) putting more resources into the home, 3) arranging for a different caretaker (relative), 4) getting treatment for the caretaker (e.g. psychiatric, HIV etc.).
3. During the home visit, if no problem is identified to account for the failure to respond to treatment, then it is still likely that there is a social problem that has not been identified during the home visit.
=> Then admit the child for a trial of feeding for 3 days with feeds under supervision¹². This can be in an SC, in a day-care centre, or with "wet feeding" where the child is taken to a health centre daily to receive food under supervision.

Many of these facilities do not have full medical diagnostic capability - but they certainly can supervise feeding and care and ensure that the child gets the food that is prescribed.

4th step: If still the child is not responding to treatment, then he needs to be sent to a facility (hospital) where there are clinicians/paediatricians that are skilled in

¹² This is standard paediatric practice in Europe for children who are "failing to grow" at home normally - they are admitted first for trials of normal care/feeding in a supervised

diagnostics and have the facilities to investigate the child.

If this facility does not find the cause, then the child should be referred to a national centre/University for full investigation of unusual causes.

If the cause of the malnutrition has not been found, such children should perhaps be entered into a register, have specimens stored, and be seen whenever there is a senior paediatrician with skill in severe malnutrition and in other diseases.

2.6. Discharge criteria from TSFP

2.6.1. For MAM children

Table 7: Type of exit and criteria of discharge

Cured	MUAC $\geq$ 12.5 cm for 2 consecutive visits
(discharge according to the same criteria used for admission)	W/H $\geq$ -1.5 Z-score for 2 consecutive visits
Defaulter	Absent for 2 consecutive visits
Dead	Died during time registered in TSFP
Non-cured/refused to be referred to hospital or OTP	Has not reached the discharge criteria within 4 months
Referral to OTP	Has reached the SAM criteria
Transfer to another TSFP	Move to another TSFP near his/her home

Note: A child that is sent to a different TSFP to continue treatment is not discharged from the programme. A transfer slip should be given to the mother and the same ration card will be used.

Table 8: Type of exit and criteria of discharge for Ex-cured SAM

End of follow up	MUAC $\geq$ 12.5 cm for 2 consecutive visits
(discharge according to the same criteria used for admission)	W/H $\geq$ -1.5 Z-score for 2 consecutive visits
Default	Absent for 2 consecutive visits
Dead	Died during time registered in TSFP
Non-cured/refused to be referred to hospital or MAM TSFP	Has not reached the discharge criteria within 4 months
Referral to TSFP as MAM	Has reached the SAM criteria
Transfer to another TSFP for follow up	Move to another TSFP near his/her home

2.6.2. For PLW

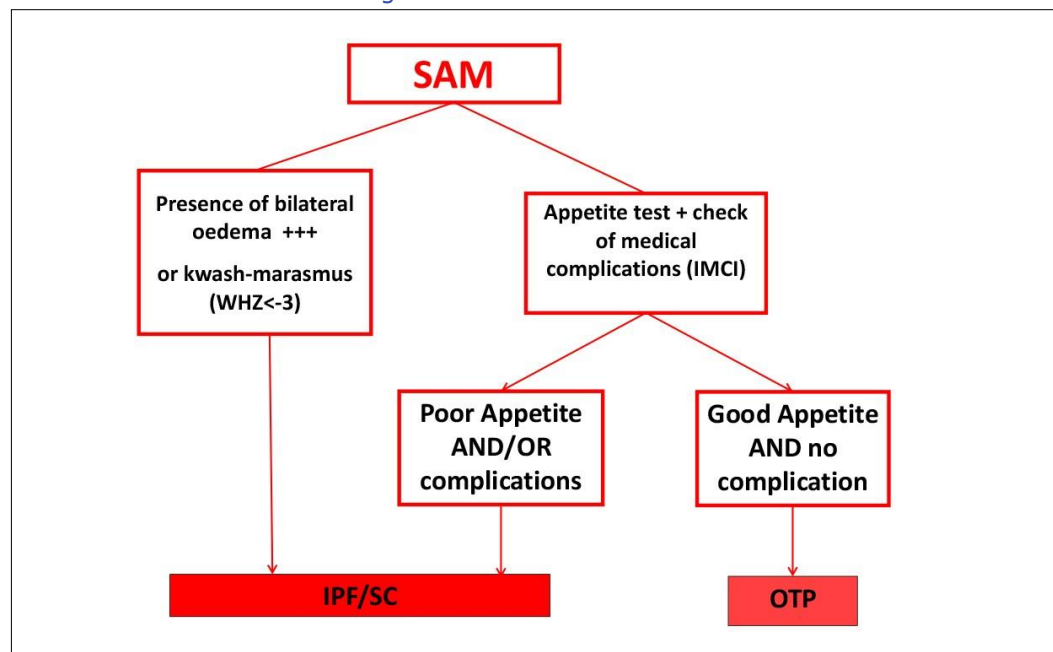
PLW are admitted based on MUAC measurement. The mid-point of the upper arm can be estimated, but measurement is taken on LEFT arm.

Discharge criteria : Pregnant and Lactating Women	
Pregnant women (from the second trimester)	MUAC $>$ 210mm
Lactating women whose child is $<$ 6 months	For 2 consecutive visits

OTP/SC TRIAGE OF THE SAM PATIENTS

The triage should be made in the OPD of an SC and in the OTP. Schema 1 shows the flow of patients for decision-making.

Flow chart 3: Decision making for SC or OTP



1. ACTIVITIES

1. The nurse, assistant nurse, or nutritionist

The nurse, assistant nurse, or nutritionist:

1. Enters all the children eligible for admission to the program in the registration book, fills in the patient's chart, and gives a SAM number;
2. "Fast tracks" those obviously severely ill to in-patient treatment and does not keep them waiting. The triage person should regularly look at any waiting area and refer such patients directly to the nurse-in-charge for her to send directly to the SC or to start treatment if the distance is excessive and/or suitable transport is not available.
3. Perform the appetite test whilst the patients are waiting to see the nurse (see paragraph 4, p.27);

1.2. The nurse

The nurse then sees the patient with the anthropometry and the result of the appetite test. The nurse:

1. Examines the patient to determine if s/he has a complication using IMCI criteria (see paragraph 5: complications);
2. Explains to the caretaker the options for treatment and decides with the caretaker whether the child should be treated as an out-patient or in-patient;
3. Transfers those that need in-patient treatment for

admission to an SC and those that can be treated as out-patients to the OTP site nearest to their home;

- If the triage is made within the OTP and the patient requires SC treatment, the nurse gives a SAM-Number, registers the patient, fills out a transfer form, and arranges the transfer.
- 4. For sick children whose mother initially refuses in-patient care, repeat the appetite test:
 - If appetite test is now passed, explain home care to the mother and give IMCI treatment for the accompanying illness. Passing the appetite test is the main criterion for out-patient management.
 - If appetite test is again failed, explain the dangers of taking the child home to the mother and try to persuade her to accept in-patient care for at least a few days. However, the mother's decision must be respected and she should not be coerced.
 - If the child fails because s/he seems to be afraid but is otherwise alert and without complications,
 - o Still refer the child to SC for at least a short time (if transport is convenient);
 - o Explain carefully the benefits of SC, the risks of OTP and that the caretaker can change her mind at any time after admission with the agreement of the staff; and

- o Accept the final decision of the caretaker and arrange appropriate care at home.

5. Start the treatment appropriate for outpatients, ie: for all children who meet the criteria (see below).

1.3. Community mobilisation:

- As with all programmes, the key for success lies in a good community mobilisation component that will both ensure early diagnosis of cases before the children develop the complications requiring treatment at the SC and increase coverage.
- Community mobilisation activities help to identify and

2. TOOLS

For the assistant nurse:

- MUAC tapes
- Scale, length board, weight-for-height table
- Registration book, patient charts
- RUTF, sugar, safe drinking water, medical measuring cup or scale (5g precision)
- Water and soap to wash hands

refer patients to the OTP for assessment of their status and the need for treatment (early case finding).

- The patients that do not progress correctly in the OTP, or who default from treatment are visited at their homes by the community workers, Community Health Worker (CHW), or Female Health Worker (FHW) (see section 4). The first visit should be done as soon as the child is absent but no later than following two consecutive absences, in order to prevent the child being declared as a defaulter (which is done after 3 absences).

- Thermometer

For the nurse:

- Examination tools (stethoscope, otoscope, ...)
- Transfer forms
- Drugs

The details are described in the next section.

3. ADMISSION CRITERIA (SEE ANNEX 1)

Flow chart 3: Decision making for SC or OTP

Admission criteria – Children 6 to 59 months		
	SC	OTP
	SAM with complications	SAM without complications
Oedema	Bilateral oedema +++ OR Wasted with any oedema	Bilateral oedema + OR ++
MUAC (mm)	< 115	< 115
W/H (z-score)	< -3	< -3
Appetite	No appetite	Pass appetite test
Medical complications	Intractable vomiting	No medical complications
	Fever > 39°C (axillary)	
	Hypothermia <35°C (axillary)	
	Lower respiratory tract infections	
	Severe anaemia	
	Severe dehydration	
	Extensive skin infection	
	Very weak, apathetic	
	Unconscious, convulsions	
Other admissions		
2 nd Twin		

4. THE APPETITE TEST AND FLOW OF PATIENT

Why do the appetite test?

- A reasonably accurate assessment of the appetite is often the only way to differentiate a complicated from an uncomplicated case of SAM. Other signs (IMCI) of severe illness are less reliable in the severely malnourished child.
- A reduction in appetite is by far the best sign of severe metabolic-malnutrition and the appetite test is the most important criterion to decide if a patient should be sent for in- or out- patient management.
- A poor appetite means that the child has a significant infection or a major metabolic abnormality such as liver dysfunction, electrolyte imbalance, cell membrane damage, or damaged biochemical pathways. These are the patients at immediate risk of death. Furthermore, a child with a poor appetite will not take sufficient amounts of the therapeutic diet at home to prevent deterioration.

How to do the appetite test:

The assistant

- All children who will have an appetite test are normally tested together in the same area (at the same time). This should be a separate, quiet area. Children that have travelled a long distance should be allowed to rest first and given water to drink.
- Sometimes a child will not eat the RUTF because he is frightened, distressed, or fearful of the environment or staff. This is particularly likely if there is a crowd, a lot of noise, other distressed children, or intimidating health professionals (white coats, awe-inspiring tone). If a quiet area is not available, then the appetite can be tested outside under shade. Watching other children take the RUTF gives confidence.
- Explain to the caretakers the purpose of the appetite test and how it will be carried out and wash the hands of both the caretaker and the child. Allow the caretaker to sit comfortably with the child on her lap and offer the RUTF to the child.
- Give the RUTF from medicine-cups or the packet itself and water to drink in a cup.

Pre-Prepare graduated 20 to 25 ml medicine cups before the start of the appetite test. The packet of RUTF normally

holds almost 100g of the paste. One sachet of RUTF can be used for about 4 tests and it is much easier to judge the amount taken from a graduated medicine cup than from the packet itself.

The mother

- Initially allows her child to play with an RUTF packet or pot and become familiar with the environment. This sometimes helps the child become confident.
- Either gives the RUTF directly or puts a small amount on her finger and gives it to the child. The mother/other children/siblings must not consume any of the RUTF. It often helps if she pretends to take some and like it - seeing the mother eat the RUTF herself is the best way to encourage the child.
- If the child refuses, then continue to quietly encourage the child and take time over the test. Do not force the child to take the RUTF.
- The test usually takes a short time, about fifteen minutes, but can take up to one hour with a shy or upset child, or one with a marginal appetite.
- The child **MUST** be offered water to drink from a cup during the test.

The assistant nurse should evaluate the result of the appetite test:

Pass

A child that takes at least the amount shown in the moderate column of the table below passes the appetite test.

Fail

A child that does not take at least the “moderate” amount of RUTF fails the test - the nurse will examine the child and probably refer him/her to the SC.

Even if the child is not taking the RUTF because s/he does not like the taste or is frightened, the child did not pass the appetite test.

The following table gives the MINIMUM amount that should be taken.

Table 10: Amount of RUTF to assess the appetite of severely malnourished children

APPETITE TEST						
“Moderate” is the <u>minimum</u> amount that malnourished patients should take to pass the appetite test						
BODY WEIGHT	PASTE IN SACHETS (PROPORTION OF WHOLE SACHET 92G)			PASTE IN CONTAINERS (ML OR GRAMS)		
	poor	Moderate	Good	poor	moderate	good
Less than 4 kg	<1/8	1/8 – 1/4	>1/4	<15	15 – 25	>25
4 – 6.9	<1/4	1/4 – 1/3	>1/3	<25	25 – 30	>35
7 – 9.9	<1/3	1/3 – ½	>1/2	<35	35 – 50	>50
10 – 14.9	<1/2	1/2 – 3/4	>3/4	<50	50 – 75	>75
15 – 29	<3/4	3/4 – 1	>1	<100	100 – 150	>150
Over 30 kg	<1	>1		<150	>150	

Note: if different size small medicine cups are used then a new table should be constructed, depending on the size of the cup. The table should be in the number of medicine-cups the child should take for his/her category of weight. The majority of children will be from 4 to 6.9kg so the minimum test to differentiate a poor appetite would then be one level medicine-cup of 25ml.

When to do the appetite test

- During initial triage
- When there is poor weight gain at any visit to OTP. The appetite test should be carried out when out-patients are not gaining weight steadily. The test can also be carried out routinely on all children at each visit if the supervisor thinks it is appropriate

Failure of an appetite test at any time is an indication of the need for a full evaluation and probable transfer for in-patient assessment and treatment.

During the second and subsequent visits the intake should be in the “good” range of the table if the patient is to recover reasonably quickly.

If the appetite is “good” during the appetite test and

the rate of weight gain at home is poor then a home visit should be arranged because this indicates a social problem at the household level or extensive sharing of the RUTF. If a home visit is not possible, it may be necessary to bring a child into residential care to do a simple “trial of feeding”, where the intake of the child is directly observed by the staff to differentiate:

- a difficulty with the home environment from
- a metabolic problem with the patient.

Such a trial-of-feeding in a structured environment (e.g. day-care, SC) is used to investigate failure to respond to treatment but also can be undertaken if the staff suspects a problem at home.

4. MEDICAL COMPLICATIONS (IMCI)

After anthropometry and conducting the appetite test, the nurse has to examine the patients to look for complications that need to have treatment started before transfer to the in-patient facility.

If there is a serious medical complication, then transfer the patient for in-patient treatment. Transfer if the patient has any of the following conditions:

- Diarrhea and dehydration based on history and change in appearance (clinical signs are unreliable in the malnourished and should NOT be used to diagnose dehydration)
- Severe vomiting
- Pneumonia:
 - >60 breaths/ minute for under 2 months
 - >50 breaths/minute from 2 to 12 months
 - >40 breaths/minute from 1 to 5 years
 - >30 breaths/minute for over 5 year-olds or
 - Any chest in-drawing

Respiratory rate can be judged with a small home-made

pendulum made from string and a small weight. Knots should be tied at 43 and 66 centimetres; the pendulum will then swing 50 and 40 times per min respectively. The appropriate knot is held and the pendulum swung in front of the child - if the child is breathing faster than the pendulum then a diagnosis of respiratory distress should be made.

- Open skin lesions
- Hypothermia < 35.5°C (rectal) or <35°C (axilla)
- Fever > 39.5°C (rectal) or >39°C (axilla)
- Very pale (severe anaemia)
- Weak, apathetic, or unconscious
- Convulsions
- Clinical vitamin A deficiency
- Any condition that requires an infusion or NG tube feeding
- Any other general signs or symptoms which the nurse/clinician thinks requires investigation or treatment in an in-patient facility.

Table 11: Summary of second triage criteria for admission to in-patient or out-patient care

If ANY of these indicate that the patient needs in-patient treatment, the child should be referred to the SC with the agreement of the caretaker.¹³

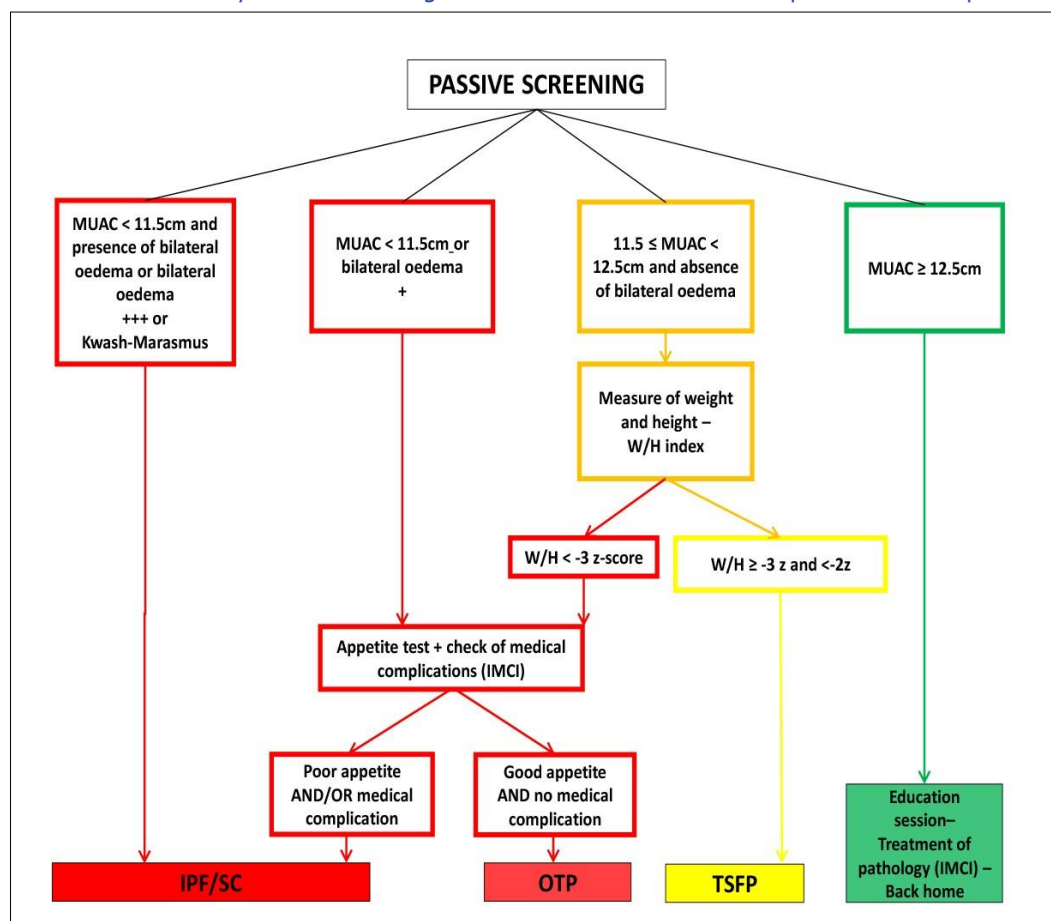
FACTOR	IN-PATIENT CARE	OUT-PATIENT CARE
CHOICE OF CARETAKER (AT ANY STAGE OF MANAGEMENT)	Caretaker chooses to start, continue, or transfer to SC The caretaker's wishes must be respected	Caretaker chooses to start, continue, or transfer to OTP The caretaker's wishes must be respected
APPETITE	Failed or equivocal Appetite Test	Passes Appetite Test
BILATERAL OEDEMA	Bilateral pitting oedema Grade 3 (+++) Both Marasmus and Kwashiorkor (W/H < -3Z score and bilateral oedema)	In most countries: Kwashiorkor with bilateral pitting oedema Grade 1 to 2 (+ and ++) ¹⁴
SKIN	Open skin lesions	No open skin lesions
MEDICAL COMPLICATIONS	Any severe illness, using the IMCI criteria – respiratory tract infection, severe anaemia, clinical vitamin-A deficiency, dehydration, fever, lethargy, measles rash, etc.	Alert with no medical complications
CANDIDIASIS	Presence of severe candidiasis or other signs of severe immune-incompetence	Absence of candidiasis
CARETAKER	No suitable or willing caretaker	Reasonable home circumstances and a willing caretaker

Remarks: If the appetite test is properly and accurately conducted, it should differentiate those oedematous children who should and those who should not be treated as out- or in-patients.

¹³ The mother is the primary caretaker. If she is forced or persuaded against her will to be admitted to the IPF, then she is very likely to default and her child will be denied treatment, her other children will not attend if they become malnourished and she will complain about the program within her community. If the staff take the mother's wishes as paramount (after explaining the reasons and prognosis), then this child may not get the best treatment acutely but will get treated for the whole of his/her illness, is unlikely to default, the mother may decide to be transferred at the next visit, and she will praise the service in her community as being « mother friendly » and caring.

¹⁴ In some countries, oedema appears to carry a much higher risk of death than in other countries. This provision should be varied by local experience. In general, there is a lower risk from mild oedema where oedema is common and a higher risk where oedema is rare.

Table 11: Summary of second triage criteria for admission to in-patient or out-patient care



TRANSPORT OF SICK PATIENTS

Very ill, malnourished children may be brought to an OTP distribution site or health centre and the protocol requires them to be “transferred” to an SC.

However, it is commonly found that malnourished children who are relatively well before transport, deteriorate and die soon after arrival after a long or difficult journey. This is “transport trauma”.

Public transport is not recommended.

It is recommended that sick patients, where possible, be stabilised at the OTP or nearest health centre before transport. The provisions in this protocol for the management of severe malnutrition for In-Patients and its complications should be followed as far as feasible in the health centre¹⁵.

SC

The SC should be contacted by telephone and take responsibility for and “cover” the nurse in the field, reassure the nurse that it is the correct course of action not to transport the child, and give advice and support for the management of the patient. The telephone call, advice given, and the name of the doctor and SC contacted should be recorded on the patient’s chart.

OTP

The nurse must explain to the caretaker that the patient is critically ill and may die, but that the danger of transporting the patient to the hospital is greater than trying to stabilise him/her at the health centre. Again, the mother’s choice should be followed.

District Nutrition Officer (focal point)

- Mobilise the community about the problem of transport of sick patients from one centre to the other;
- Explore solutions: 1) use a national or international NGO, 2) establish a community fund, 3) have an ambulance, 4) establish a phone consultation to treat patients without transport, 5) establish a local SC to manage/stabilise complicated malnutrition close to an epicentre of malnutrition;
- Organise the transport of the critically ill transfer-patients:
 - o Payment for transport (lend money, subsidise, or pay for transport),

- o Essential medical transport (with verification) from the village to the SC,
- o Train staff about care during the transport:
 - the vehicle must drive slowly
 - the vehicle must not be crowded
 - the vehicle must stop for 5 min every 20-30 min during the drive to lessen the effects of motion sickness on the sick patient
 - water must be available
 - children should be nursed by the mother
 - Do not give drugs to sedate or prevent motion sickness (vomiting) to malnourished patients (this is particularly important).
- Anticipate vehicle break-down and seasonally impassable roads (flooding, etc. during the rainy season);
- Preposition stocks if seasonally impassable roads are anticipated (stocks of RUTF, training of village volunteers if team cannot travel);
- Consider having an “emergency kit” for SC-style stabilisation of children prior to transport if transport is difficult/impossible or if the mother refuses to travel;
- Regularly evaluate the outcome of patients that have been transported under difficult circumstances. Detailed analysis of death during and for 48h after transport should be undertaken by the District Nutrition Officer and actions taken (such as opening a satellite SC). The time of leaving and the time of arrival at the destination facility should be noted on the transfer form and analysed periodically to determine if this is a major problem within the district; and
- Establish regular meetings between the SC doctors and the OTP staff in order to facilitate communication between the different teams and give confidence to the SC about the judgement of the OTP/community staff.

Monthly reports should be checked and updated for deaths occurring during transport. Transfer times reported on the transfer form should be examined and if they are excessive, ways of resolving the problem should then be explored. Establish regular meetings between the SC doctors and the OTP staff in order to facilitate communication between the different teams and give confidence to the SC about the judgement of the OTP/community staff.

¹⁵ Transport trauma is one of the main reasons why IPFs should be established as close to the patient’s village as possible. In addition, many of the advantages of having OTPs close to the patient’s home apply equally to IPFs.

OUT-PATIENT MANAGEMENT (OTP)

Patients with severe acute malnutrition (SAM) who present with an appetite and no medical complications can be treated as outpatients in the community, through the OTP service at the health facility level, and at mobile clinics. The patient attends the OTP once a week to assess treatment evolution and receive therapeutic foods and drugs until the next visit. The carer provides the treatment to the child every day at home, following indications from OTP staff.

The objective of outpatient management of severe acute malnutrition is to increase access to treatment, establishing the appropriate facilities within or closer to more communities. The community component is organised in order to identify, refer, and follow-up malnourished children in the community. Good community mobilization will help to identify children at an early stage in their progression towards malnutrition and will reduce the number requiring transfer to SC.

The OTP is a curative service aimed at treating SAM children. Prescription of RUTF depends on the weight of the child, routine treatment is given to each child and supplementary drugs are prescribed according to the needs identified during treatment. However, the OTP service is not limited to treating children, and preventive

activities are also undertaken including education of the carer on how to follow the treatment at home. During the OTP visits, mothers will receive nutrition education, particularly on IYCF, and a counsellor is available to individually meet with mothers with specific problems with breastfeeding/feeding. Counselling is important to ensure that the child will receive appropriate complementary feeding at home once he/ she is discharged from OTP. According to the specific needs of each mother and family, OTP staff will link the mother/ family to various interventions existing in the area (WASH, food security, maternal health, family planning, etc.)

In addition to treating SAM children and ensuring proper follow up, duties of the OTP staff include monitoring the number of admissions and their evolution, keeping and sending statistics, keeping the stores of foods and drugs, and preparing requests for foods and drugs, etc.

The integration strategy advocates for all IMAM components to be implemented under one umbrella. This means that TSFP and OTP services will be provided in the health facility. However, mobile services should be provided in villages situated more than 5 km from the health facility. In addition, it is mandatory that all services are related to the community component.

1. ORGANISATION

1.1. Structure

1.1.1. Health Centre and its organisation

Location

- Out-patient care, in the community, should be organised from health centres, health posts or even non-clinical facilities that are as close to the patients' homes as possible.
- The SC normally runs an OTP from its own facilities. Patients that have been admitted to the SC should not be transferred to the associated OTP if there is another OTP closer to the patient's home.
- The distance and time the patients have to travel is a major determinant of coverage, defaulting rate and reputation of the whole program.
- There should be many satellite OTP sites close to or within the community - they should be within walking distance (5km is the normal catchment area - at most 10 km) of places where malnutrition is commonly found (from screening results).

Structure

- The OTP site requires a physical structure (the health centre) with 1) a sheltered waiting area, 2) a place to receive the patients and do anthropometry and the appetite test, 3) a place for the nurse to see and examine the patients, and 4) a secure store for the therapeutic products and a pharmacy;
- There must be water available. The OTP is normally in a health structure and run one or two days per week. However, it can also be established in a school, community centre, or private house. Where there is no suitable structure, OTP can be run from tables set up under shade in the open, but each function must have its own space.
- Communication facilities. It is important that each structure is able to get in touch with the SC, the other OTP teams in the district, the focal points at village level, and the District Nutrition Officer/Focal Point (up-to-date lists of names, addresses and phone numbers need to be maintained at the district level and

distributed to each OTP supervisor and the Outreach workers and village focal points).

Organisation of the consultation

During the OTP days, the Outreach Workers or village volunteers/focal points (at least two) come from their communities, in rotation, to help the Nutrition Supervisor of the centre to take measurements, perform the appetite tests, register the patients, and update their training.

For new referrals (see triage procedure): after the anthropometry and appetite test, the nurse does the medical check-up, discusses with the caretaker the mode of treatment, explains the procedures, and prescribes the RUTF and routine medicines.

Frequency of the consultation

There has to be an updated list for each OTP site that gives the day(s) of the week, the hours when the OTP site is open and functioning, and the name & phone number of the person responsible for that OTP.

- 1) If there are several staff members, then the OTP can be run each day. However, it is important for the OTP supervisor to have time to visit each village periodically, liaise with the Outreach workers and volunteers, and to run meetings where all the village focal point personnel attend.
- 2) Normally the OTP is run on one or two days per week when children that have been screened in the community are seen at the OTP site, have their MUAC and oedema checked, and their appetite test performed, after which they are registered and either started on out-patient treatment or transferred for in-patient treatment (after stabilisation if there is a danger of transport trauma).
- 3) For remote villages, fortnightly outreach activities can be arranged. This maintains contact between the community and the health team and greatly increases compliance with the treatment. This service is limited by transport and logistics constraints that need to be resolved at the national and district levels. It is often only possible for NGOs.

The worst cases of malnutrition are usually found in the most remote villages, mainly because the community has difficulty accessing health services which leads to delayed diagnosis. These villages should be a priority to be mapped and screened and there should be regular contact with the community volunteers. Provision of petrol (and help with acquiring motorbikes) to ensure regular contact is important.

1.1.2. Mobile teams

Where and When

- Where mobile health clinics are operating, especially in an emergency situation and where the population is widely dispersed with a relatively low population density or a nomadic population, the management of severe acute malnutrition should be by mobile team. A vehicle is equipped for an OTP site as well as with vaccines and IMCI medicines and other essential services.
- Mobile teams are normally comprised of staff trained in Integrated Management of Childhood Illnesses (IMCI)/ Maternal and child Health (MCH) and immunisation (EPI) and carry out these activities as well as IMAM management and follow up of HIV and TB programs.

Frequency of the consultation

- The Team visits pre-arranged sites on a weekly basis (the day and time have to be widely known within the community and should not change). If for any reason the visit is not possible, the village focal point must be telephoned.
- Screening is done using the MUAC tape and checking for oedema only (height is not taken). Patients fulfilling the admission criteria are assessed and given a weekly RUTF ration (if they pass appetite test and medical check). As height is not taken, their weight is taken until they reach their target MUAC. A proper referral system and transport is important for the patients that need in-patient care (see section on transport).

1.2. Activities

A nurse or assistant nurse is responsible for supervision of the program at the OTP site and the communities within its catchment area.

Prerequisite

- Nurse or assistant nurse
- If not possible, an assistant nurse or nutritionist (provided that person is properly trained in the clinical aspects of malnutrition, can diagnose the medical complications competently and refer patients appropriately and that national legislation allows them to dispense routine drugs).

Assistant nurses or nutritionists should only be in charge of OPTs where clinical expertise is readily available (e.g. urban areas). OPTs in more remote sites must be run by a trained nurse qualified to make clinical decisions (some of these patients will need stabilisation before transport).

The nurse or assistant nurse has to

- Admit the patient according to the criteria of admission with no medical complications and who pass the appetite test, fill the charts and register (see section below and triage). and give a SAM number;
- Give the routine drugs;
- Give the RUTF and inform the caretaker as to its proper use;
- Follow the patients every week:
 - o examine the weight changes,
 - o fill in the routine follow up sections of the OTP chart,
 - o decide if any further action is needed;
- Diagnose the patients who have failure-to-respond and take the appropriate decisions: home visit, repeat appetite test, supervised feeding trial, and transfer for in-patient treatment;
- Be supervised by the District Nutrition Officer and assist to the monthly coordination meeting at the district level. At this time, the monthly report of the OTP is given to the District, the therapeutic products needed for the following month are collected if needed, and other problems should be discussed to ensure quality of care is maintained and to undertake in-service training and supervision;
- Organise a meeting with all her/his outreach workers each month to learn about and deal with any problems, collect screening data and to give refresher training; and,

- Handle the procurements, storage and distribution of commodities.

1.3. Tools¹⁶

For the assistant nurse

- MUAC tapes
- Scale, length board, Weight-for-Height table, 5% weight loss table, weight gain table to reach discharge criteria, weight gain over 14 days table
- Registration book, OTP charts, box for the OTP charts and for archive, stock cards
- Look-up table for RUTF and key messages
- RUTF, sugar, safe drinking water, medical measuring cups or scale (5g precision) for the appetite test
- Water and soap to wash hands
- Thermometer, calculator, pencils, pens, rubber, etc.

For the nurse

- Examination tools (stethoscope, otoscope, etc.)
- Drugs: Amoxicillin; Anti-malarial; Vitamin A; Anti-helminths; Measles vaccination.
- Transfer forms, stock cards, monthly reports
- Communication tools (phone, etc.), Poster on transport recommendations, list of the OTPs and SC

¹⁶ Refer to UNICEF manual to calculate the input in terms of therapeutic products; refer also to USAID CMAM costing tool to calculate the inputs and financial resources required to establish, maintain, or expand CMAM services. <http://www.fantaproject.org/publications/CMAM_costing_tool.shtml>

1. ADMISSION

The procedures of admission are explained in the triage section.

There are two kinds of admission to the OTP:

New admissions

- New admission from active and passive screening or self-referral. Most admissions to OTP will be of this (new) sort.
- Relapse (after more than 2 months of absence or after previously being discharged as cured). This is considered to be a new episode of malnutrition.

Admissions of patients already under treatment for SAM

- Internal Transfer from another OTP (treatment already started with a SAM N°)
- Internal Transfer from an SC (transfer form with a SAM N° and the treatment given)
- Return from an SC back to the OTP (transfer form with a SAM N°, chart and already registered)
- Readmission after defaulting with less than 2 months of absence

There needs to be a functioning communication and referral system between the OTP site and SC so that patients can be quickly and easily transferred from the SC to the OTP as they enter the recovery phase (phase 2) and those OTP patients who fail to respond appropriately or who develop a complication can be transferred (temporarily) to SC. *Such transfers are not "discharges" from the program.*

A patient should always be treated at home where there is:

1. a capable caretaker;
2. the caretaker agrees to out-patient treatment;
3. there are reasonable home circumstances;
4. there is a supply of RUTF;
5. an OTP program is in operation in the area close to the patient's home; and
6. the Triage criteria for home treatment are met.

A patient being treated as an out-patient that deteriorates or develops a complication should be transferred to SC for a few days before continuing their treatment again in OTP (see section on transport).

The two arms (In and Out-patient) of the program should always be integrated, with regular meetings, so that there is a smooth transfer of patients from one to the other mode of treatment.

The same registration number is retained throughout the movements (the SAM-NUMBER). A patient transferring from one to another mode of treatment is still under the care of the program for this episode of severe malnutrition. For example, this is not a "discharge" from the in-patient facility but an "internal" transfer to another part of the same program.

3. DIET

- Sensitize the mother to the importance of breast-feeding and that the child should always get breast-milk before they are given RUTF and also breastfeeding on demand.
- Explain to the caretaker how to give the RUTF at home
- For breast-fed children, always give breast milk before the RUTF.
- RUTF is a food and a medicine for malnourished patients only. It should not be shared with the other family members even if the patient does not consume all the diet offered. Opened packets of RUTF can be

kept safely and eaten at a later time - the other family members should not eat any that is left over at a particular meal.

- Wash the patient's hands and face with soap before feeding.
- These patients often only have moderate appetites during the first few weeks and eat slowly. They must be fed separately from any other children in the household. The patient can keep the RUTF with him/her to eat it steadily throughout the day - it is not necessary to have set meal times if the food is with the patient

all the time. However, with children, the caretaker should attend to the child every 3-4 hours at least and encourage the child, or give small regular meals of RUTF at these times. Tell the mother how much her child should eat each day (this is given in the look-up table).

- Explain that for the first week or two the patient will probably not finish all the RUTF given. The mother should not be upset by this as excess has been given, but as the child recovers his/her appetite will improve so that all the diet will be taken later on in recovery. Uneaten RUTF should not be taken by other members of the family but returned to the OTP - as the child improves s/he will start to consume nearly all the food.
- Explain that RUTF is the only food the patient needs to recover during her/his time in the programme. It contains all the ingredients that the patient needs to recover and is really like a special medicine. It is not necessary to give other foods.
- Tell the caretaker that there are special medical nutrients and milk powder inside the RUTF, and that it is not just peanut butter. Tell her that all the nutrients are needed by the child to recover and that if the child does not take sufficient RUTF then they will not get

enough of these medical nutrients. Normal food does not contain the right amounts and balance of these nutrients.

- Explain that the illness has damaged the child's intestine so that the normal family food is not sufficient for the child and may even cause some diarrhoea. Tell the mother that some common foods will delay the recovery of her child. If the child asks for other foods small amounts can be given but she should always give the RUTF before other foods and at a different time from regular family meals.
- Never mix the RUTF with other foods. Most cereals and beans contain anti-nutrients and inhibitors of absorption that make the special nutrients in the RUTF that the child needs to recover unavailable for the child. If other foods are given they should be given at a separate time from the RUTF.
- Explain that the child must NEVER be force fed and should always be offered plenty of clean water to drink while eating RUTF.
- Explain that the carer should have an attentive, caring attitude while feeding the baby - talk, sing, and play with the child to stimulate appetite and development.

Note: For OTP programs, if there is a problem with food security or in an emergency situation, a "protection" ration (usually fortified blended foods such as CSB or UNIMIX or a family ration with cereals, pulse, and oil) should be given to the family both to assist this family of a malnourished child and to prevent sharing of the RUTF with other family members. The caretaker must be told that this ration is not for the patient but for the rest of the family only.

Table 12: Look up table of Out-patients of the amounts of RUTF to give per day and week

CLASS OF WEIGHT (KG)	RUTF PASTE		RUTF SACHETS (92G)		BP100®	
	GRAMS PER DAY	GRAMS PER WEEK	SACHET PER DAY	SACHET PER WEEK	BARS PER DAY	BARS PER WEEK
3.0 – 3.4	105	750	1 ¼	8	2	14
3.5 – 4.9	130	900	1 ½	10	2 ½	17 ½
5.0 – 6.9	200	1400	2	15	4	28
7.0 – 9.9	260	1800	3	20	5	35
10.0 – 14.9	400	2800	4	30	7	49
15.0 – 19.9	450	3200	5	35	9	63
20.0 – 29.9	500	3500	6	40	10	70
≥ 30.0	650	4500	7	50	12	84

Note 1: The amount given during the first two weeks can be reduced by about 15%-20%.

Although this can complicate the OTP protocol it lessens the likelihood of a few children developing complications during the early phase of treatment (see sections on refeeding diarrhoea and “refeeding syndrome” as a potential hazard if a patient who has been taking far less than the requirement suddenly takes large amounts of the diet, or the mother forces the RUTF that has been dispensed into her child at the start of treatment. Sudden large increases in intake at the start of treatment are dangerous and may account for some of the deaths in the OTP program).

Note 2: This is equivalent to about 170kcal/kg/d. On this amount the child has sufficient RUTF to gain weight at up to 14 g/kg/d. This is never achieved in outpatient programs where the rate of weight gain varies from about 2 to 10g/kg/d, indicating a total energy intake by the child of between 110 and 150kcal/kg/d and extensive sharing within the family. Giving more RUTF encourages sharing within the family as the other members become habituated to consuming the “left-overs”; it also increases the cost of the program considerably. If stocks of RUTF are short then the amount given could safely be reduced by about 15%-20%. It is better to give all children adequate amounts of RUTF, than excess to some and none to others. The amount dispensed should never fall below that required to maintain modest amounts of weight – a table is given in annex 9.

4. ROUTINE MEDICINES

4.1. No Other Nutrients Should Be Given

The RUTF already contains all the nutrients required to treat the malnourished child (provided that the caretaker gives sufficient RUTF to the child - the need to give sufficient to the child and not to share the RUTF needs to be emphasised to the caretaker at admission to the program¹⁹).

- Additional potassium, magnesium, or zinc should not be given to the patients. Such a “double dose,” one coming from the diet and the other prescribed, is potentially toxic. In particular, additional potassium should never be given with these diets.
- For children with diarrhoea on RUTF or other therapeutic food containing zinc it is not advisable to give additional zinc as this can increase the mortality rate²⁰.

4.2. Systematic Antibiotics

- Give systematic antibiotics to severely malnourished patients, even if they do not have clinical signs of systemic infection. Despite the absence of clinical signs, they nearly all have small bowel bacterial overgrowth and have at least minor infections

Note 1: The amount given during the first two weeks can be reduced by about 15%-20%.

Although this can complicate the OTP protocol it lessens the likelihood of a few children developing complications during the early phase of treatment (see sections on refeeding diarrhoea and “refeeding syndrome” as a potential hazard if a patient who has been taking far less than the requirement suddenly takes large amounts of the diet, or the mother forces the RUTF that has been dispensed into her child at the start of treatment. Sudden large increases in intake at the start of treatment are dangerous and may account for some of the deaths in the OTP program).

OTP treatment should only be with oral Amoxicillin in areas where there is not widespread resistance to amoxicillin.²¹ Where resistance is common, a short course of metronidazole should be given at a lower dose than is normally prescribed (see annex 28). Alternatively, Amoxicillin/Clavulanic acid combination could be used (the level of resistance is lower than with amoxicillin alone at the moment) - this recommendation should be reviewed periodically in light of the prevailing resistance patterns in the population being treated.

Table 13: Dosage of Amoxicillin

WEIGHT RANGE Kg	AMOXICILLIN (50 – 100 MG/KG/D) DOSAGE – TWICE PER DAY	
	IN MG	CAP/TAB (250MG)
<5kg	125 mg * 2	½ cap * 2
5 – 10	250 mg * 2	1 cap * 2
10 – 20	500 mg * 2	2 caps * 2
20 - 35	750 mg * 2	3 caps * 2
> 35	1000 mg * 2	4 caps * 2

Note: Syrup can be given but check the strength per 5ml FIRST: there are syrups of 125mg OR 250mg per 5ml. Ampicillin is given in the same dose as amoxicillin.

¹⁹ Large doses of vitamin A and folic acid supplements are omitted on admission and additional zinc is not given because the RUTF contains generous amounts of these nutrients. This simplifies the procedure at the OTP site. It is therefore very important that the patient is actually given adequate amounts of RUTF at home and that the instructions on use are both carefully explained to the caretaker and understood by the outreach workers and community volunteers.

²⁰ The increase in mortality is probably due to induced copper deficiency with high doses of zinc. This is not a danger with RUTF as the RUTF contains copper. The zinc tablets given for diarrhoea, however, do not contain additional copper.

²¹ Co-trimoxazole is not active against small bowel bacterial overgrowth and the levels of resistance reported from most countries are very high. It is inadequate for the severely malnourished child. If it is being given for prophylaxis against pneumocystis pneumonia in HIV positive patients, the other antibiotics should be given in addition to prophylactic (not curative) doses of co-trimoxazole.

- Do not give chloramphenicol to babies of less than 2 months of age and with caution in infants less than 4kg or 6 months of age²². Because of the danger of OTP staff giving chloramphenicol to these categories of patients, it should not be used as routine treatment in OTP programs.
- Do not give systematic antibiotics to children transferred to the OTP from SC or who have been transferred from another OTP after having already received a course of antibiotics.
- Do not give second line antibiotics. Children who require second-line antibiotic treatment or have significant infections should be treated in SC. Therefore, there are no recommendations for “second-line” antibiotics for use in out-patient treatment programs.
- Give the first dose under supervision and tell the mother that the treatment should continue for a total of 7 days. For OTP, antibiotic syrup is preferred. If it is not available, the tablets should be used and cut in half by the staff before being given to the caretakers (for children <5kg).

4.3. Malaria²³

Uncomplicated cases of malaria treated in OTP:

- First-line treatment: artemether+lumefantrine (see dosage). The absorption and bioavailability of several anti-malarial drugs can be significantly impaired in patients with severe malnutrition. Increasing anti-malarial drug bioavailability may reduce the risk of treatment failure due to poor drug absorption. All oral anti-malarial drugs should be administered together with food, as this helps to increase absorption.
- Second-line treatment: dihydroartemisinin+piperaquine. This should only be given following parasitological confirmation of malaria treatment failure. If the facility does not have the capacity for confirming malaria, the patients with suspected treatment failure should be referred to such facilities with parasitological confirmatory capacity.
- Refer to national guidelines for asymptomatic malaria or malaria prophylaxis (except that quinine tablets should not be used in the severely malnourished).
- Give insecticide impregnated bed nets in malaria endemic regions.

A six-dose regimen of artemether+lumefantrine is administered twice a day for 3 days.

Table 14: Artemether+lumefantrine (@coartem)

Each tablet contains a combination of 20mg artemether/120mg lumefantrine

Body weight (kg)	Number of tablets of artemether+lumefantrine					
	Day 0		Day 1		Day 2	
	1st dose	2nd dose	3rd dose	4th dose	5th dose	6th dose
5 - <15	1	1	1	1	1	1
15 - <25	2	2	2	2	2	2
25 - <35	3	3	3	3	3	3
≥ 35	4	4	4	4	4	4

²² In these children, chloramphenicol causes “grey-baby” syndrome which is a dose-dependent toxicity. It is thought to occur in this age group because of immaturity of the liver’s enzyme systems. There is insufficient data on the young malnourished child to determine if their liver abnormalities also make dose-dependent chloramphenicol toxicity a danger.

²³ UNICEF, WHO (Somali Country Office, WHO Global Malaria Programme, WHO Regional Office for the Eastern Mediterranean). Guidelines for the diagnosis and treatment of malaria in the Somali context. 2016

Each tablet contains a combination of 20mg artemether/120mg lumefantrine

Body weight (kg)	Number of tablets of artemether+lumefantrine					
	Day 0		Day 1		Day 2	
	1st dose	2nd dose	3rd dose	4th dose	5th dose	6th dose
5 - <15	½	½	½	½	½	½
15 - <25	1	1	1	1	1	1
25 - <35	1½	1½	1½	1½	1½	1½
≥ 35	2	2	2	2	2	2

Table 15: Dihydroartemisinin (40mg) and piperazine (320mg)

Body weight (kg)	Dihydroartemisinin+ Piperazine dose (mg)	Day 0 Tablets	Day 1 Tablets	Day 2 Tablets
5 to < 8	20 + 160	½	½	½
8 to < 11	30 + 240	¾	¾	¾
11 to < 17	40 + 320	1	1	1
17 to < 25	60 + 480	1½	1½	1½
25 to < 36	80 + 640	2	2	2
36 to < 60	120 + 960	3	3	3
60 to < 80	160 + 1280	4	4	4

4.4. De-worming

- Give de-worming both to those transferred from SC to OTP and to those admitted directly to OTP at the 4th outpatient visit at the same time as the measles vaccination. Worm medicine is only given to children that can walk.

Table 16: De-worming treatment

AGE	<1 YEAR	1 TO 2 YEARS	>= 2 YEARS
Albendazole 400mg	Not given	½ tablet	1 tablet
Mebendazole 500mg	Not given	½ tablet	1 tablet

4.5. Measles

- Give a measles vaccine to children over the age of 4,²⁴ months if allowed by the National protocol, or from 9 months if this is the current National strategy, who do not have a vaccination card during their 4th visit. Give a second dose to those who have been given a measles vaccine as in-patients when severely malnourished.
- Do not give a measles vaccine on admission to patients directly admitted to OTP, they are unlikely to be incubating measles²⁵ and will not be exposed to nosocomial infection.

Note: Measles vaccine on admission to OTP is thus omitted except in the presence of a measles epidemic, because the antibody response is diminished or absent in the severely malnourished. The measles vaccine is given at a time when there should be sufficient recovery for the vaccine to produce protective antibodies.

4.6. Vitamin A

- Give vitamin A once on the 4th visit to all children.
- At this time there should be sufficient recovery to store the massive dose of vitamin A in the liver. There is sufficient vitamin A in the RUTF to treat sub-clinical vitamin A deficiency²⁶. Do not give high doses of vitamin A routinely on admission to OTP.
- Do not keep any child with clinical signs of vitamin A deficiency as an outpatient; the condition of their eyes can deteriorate very rapidly and they should always be transferred for in-patient management.
 - If an epidemic outbreak of measles is in progress, give vitamin A to all children.

Table 17: Vitamin A systematic treatment

AGE	VITAMIN A IU ORALLY
6 to 11 months	One blue capsule (100,000IU = 30,000µg)
12 months and more	Two blue capsules or 1 red capsule (200,000IU = 60,000µg)

4.7. Summary of the systematic treatment

Table 18: Summary table of systematic treatment

DRUGS	ROUTINE MEDICINES
Amoxicillin	1 dose at admission + treatment for 7 days at home for new admissions only
Albendazole/Mebendazole	1 dose on the 4 th week (4 th visit) – all patients
Measles vaccine (from 9 months old)	1 vaccine on the 4 th week (4 th visit) – all patients
Vitamin A	1 dose on the 4 th week (4 th visit) – all patients

Medicines for specific groups of SAM children in OTP

One dose of Folic acid (5mg) can be given to children with clinical anaemia. There is sufficient folic acid in the RUTF to treat mild folate deficiency²⁷. High dose folic acid should not be given where sulfadoxine (©Fansidar (SP)) is used to treat malaria.

²⁴ This has not yet been adopted by WHO and recommended to National Governments. Nevertheless, there is compelling evidence (see papers by P Aaby et al.) that measles vaccine from 4.5 months reduces the risk of death from all infectious disease including respiratory tract infections, septicaemia, and diarrhoea as well as measles. The protection is improved if there are still circulating maternal antibodies, and is particularly important for girls.

²⁵ If they are incubating measles, they are likely to fail the appetite test.

²⁶ Do not give vitamin A routinely to the severely malnourished on admission to the program. Studies in Senegal and DRC show that there is an increased mortality in those with oedema and increased respiratory tract infections in both oedematous and wasted children [who receive vitamin A? this thought is not complete].

²⁷ This assumes that the patients are receiving the RUTF at home and that the extent of sharing within the family is very small. If there is doubt whether the child will receive sufficient RUTF then a dose of folic acid can be given.

Table 19: Additional medicines

Name of Product	When to Give	Prescription	Special Instructions
Second line antibiotic	DO NOT USE & TRANSFER TO INPATIENT.		
Tetracycline eye ointment	For treatment of eye infection. Systematic treatment for malnourished children with measles	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 has gone
Nystatin Drop	For treatment of candida	100,000 units (1 ml) 4 times a day after food (use dropper and show the carer how to use it)	Continue for 7 days

Always combine with natural methods to reduce fever (damp clothes, tepid sponge) and start antibiotics or antimalarials as soon as possible. Refer the child to SC if necessary. Monitor the child carefully.

5. SURVEILLANCE

At each weekly visit,

- Measure MUAC, weight and check for oedema;
- Check whether the patient meets the criteria for Failure-to-respond to treatment;
- Take body temperature;
- Do the appetite test either routinely for all children or whenever there has been a poor weight gain;
- Ask about IMCI symptoms and examine the child; and
- Give systematic treatment at the appropriate visits (if a visit is missed give at the next visit).
- DO NOT give excessive drugs to SAM patients, particularly drugs that could decrease appetite:
 - o Zinc should not be given to patients taking RUTF
 - o Anti-emetics should not be used in OTP (they all depress the nervous system)
- o Do not give cough suppressants
- o Paracetamol should only be given for documented fever and not simply with a history of fever (fever >39°C)
- o Aminophylline should not be used in OTP. The severely malnourished child does not get asthma because of the inhibition of the immune system.
- o Normal/high dosage metronidazole should not be given and ivermectin must be avoided in any oedematous child.
- Complete the surveillance part of the OTP card .

Table 20: Summary of surveillance in OPT

OUT-PATIENT	FREQUENCY
MUAC is taken	Every week
Weight and oedema	Every week
Appetite test is done	Routinely or whenever there is poor weight gain
Body temperature is measured	Every week
The IMCI clinical signs (stool, vomiting, etc.)	Every week
Height/Length is measured	At admission and if child substitution is suspected
W/H z score can be calculated	As required -Day of admission and discharge

There is sometimes “child substitution” in order for the family to continue to access services when the index child has recovered, moved away, or died. Height should be measured if there is an unexpected change in weight (large increase or decrease) to check if the same child has attended the OTP site. If there has been child substitution then the “new” individual should be fully assessed.

6. FAILURE TO RESPOND TO TREATMENT IN OTP

It is usually only when children fulfil the criteria for “failure to respond” that they need to have a full history and examination or laboratory investigation conducted. Most patients are managed entirely by less highly trained staff (adequately supervised) on a routine basis. Skilled staff (senior nurses and doctors) time and resources should be mainly directed to 1) those few children who either fail to respond to the standard treatment or are seriously sick and complicated and 2) training, evaluation, and supervision.

6.1. Diagnosis of failure-to-respond

Failure to respond to standard treatment can be due to social, nutritional, psychiatric, or medical problems. An attempt to diagnose the difficulty should first be made by OTP staff. In particular, the SC has less capacity to investigate social problems than OTP staff. Transfer to the SC should not be the first response when a patient fails to respond. If inadequate social circumstances are suspected as the main cause of failure in OTP, do an appetite test and then a home visit or supervised trial of feeding at the health centre (attending daily for 3 days) before transfer to the SC.

Table 21: Failure to respond for Out-Patients

CRITERIA FOR FAILURE TO RESPOND	TIME AFTER ADMISSION
Failure to gain any weight (non-oedematous children)	21 days
Weight loss since admission to program (non-oedematous children)	14 days
Failure to start to lose oedema	14 days
Oedema still present	21 days
Failure of Appetite test	At any visit
Weight loss of 5% of body weight (non-oedematous children) ²⁸	At any visit
Weight loss for two successive visits	At any visit
Failure to start to gain weight satisfactorily after loss of oedema (kwashiorkor) or from day 14 (marasmus) onwards.	At any visit

The usual causes of failure to respond are:

PROBLEMS WITH THE OTP:

- Inappropriate selection of patients to go directly to OTP
- Poorly conducted appetite test or appetite “judged” by inexperienced personnel and not measured
- Inadequate instructions given to caretakers (especially with respect to sharing within the family)
- Wrong amounts of RUTF dispensed to children
- Excessive time between OTP distributions (e.g. two weekly gives significantly worse results than weekly visits)

PROBLEMS OF INDIVIDUAL CHILDREN – SOCIAL:

- Mother refused to go to SC when the child required SC investigation and treatment
- Insufficient RUTF given by caretaker
- RUTF taken by siblings or caretaker
- Sibling rivalry (food as well as RUTF taken by older children)
- All eating from the same plate (the malnourished child should always have his/her own portion of food)
- Excessive intake of other foods of poor quality from family pot or traditional weaning foods/paps

²⁸ See annex 10: Weight loss 5% table

- Unwilling caretaker
- Caretaker or head of family has depression, another psychiatric condition or is sick (e.g. HIV)
- Caretaker overwhelmed with other work and responsibilities or their priorities are set by an oppressive head of household (husband, mother-in-law, etc.)
- Death of caretaker or major change in family circumstances
- Purposeful discrimination against the patient
- Use of the child's illness to access relief or other services for the whole family with attempts to ensure the child remains within the program

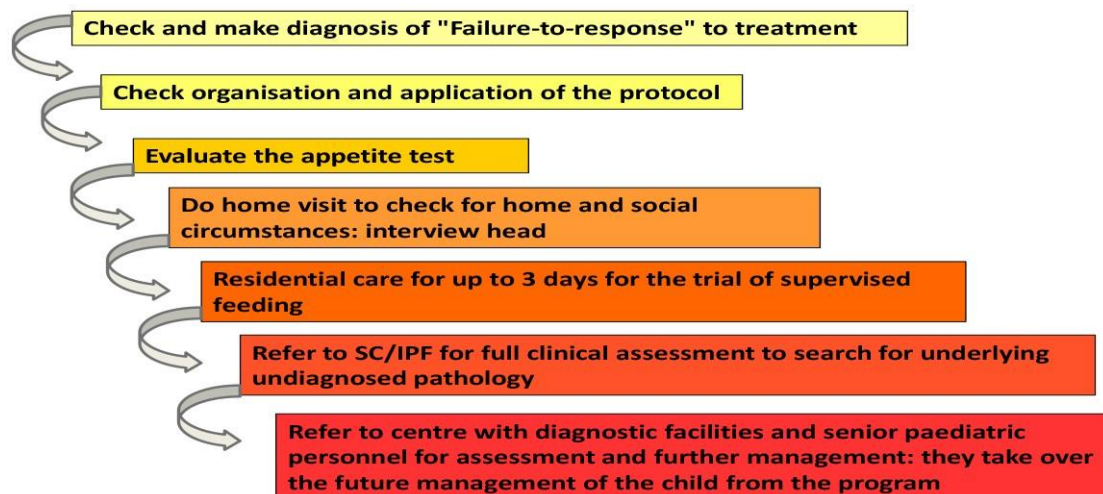
PROBLEMS OF INDIVIDUAL CHILDREN – PSYCHOLOGICAL:

- Psychological trauma (witnessing violence or death, particularly in refugee situations and families living with HIV/AIDS)
- Psycho-social deprivation, neglect
- Rumination

PROBLEMS OF INDIVIDUAL CHILDREN – MEDICAL:

- Initial refusal to go to SC despite having a medical complication or an inadequate appetite
- Undiagnosed vitamin or mineral deficiency (particularly if RUTF shared excessively)
- Malabsorption, small bowel bacterial overgrowth
- Traditional medicines/ herbs being given that are toxic or affect appetite
- Inappropriately prescribed drugs
- Bacterial resistance to routine antibiotics
- Infection, especially: diarrhoea; dysentery; pneumonia; tuberculosis; urinary infection; otitis media; malaria; HIV/AIDS; schistosomiasis; leishmaniasis; or hepatitis/ cirrhosis
- Other serious underlying disease, for example: congenital abnormalities (e.g. Down's syndrome, congenital heart disease); neurological damage (e.g. cerebral palsy); inborn errors of metabolism; surgical problems (pyloric stenosis, Hirschsprung's disease, etc.)

6.2 Management of failure to respond to treatment



If there are no children reported to fail-to-respond:

There are always some children who fail-to-respond because of one or more of the many reasons given above. If the centre reports that there are no failures-to-respond an evaluation visit must be made to the OTP and the charts individually reviewed by the District Nutrition Officer with the supervisor to ensure that such cases are being properly identified. These cases are the most likely

to default or die. They must not be kept for long periods in OTP (until they default, die, or the staff "give up") without being identified and managed appropriately.

If there are a large number of children failing to respond:

The District Nutrition Officer reviews the OTP with the staff to ensure proper organisation of the OTP, staff attitudes, treatment given, and the protocol followed correctly.

If there are some children failing to respond:

Evaluate the appetite test and carefully re-examine the child.

If the child has a good appetite when tested, but is failing to gain weight at home then it is likely that this is a social problem. The hungry child is not getting the RUTF at home that he will eat willingly at the OTP site. The mother often sees this demonstrated and realises for the first time that there is a problem.

- Ask the outreach worker and/or the volunteer to make a home visit and see if she can identify any problem at home. It is very important that this be done in private, out of earshot of other families, and that the mother is not made to feel guilty - she often does not realise that there is a problem within the household because of her workload or with the other children taking the RUTF. The instructions need to be repeated carefully and slowly.
- Interview the head of the household (who is normally the husband, grandparent, mother-in-law etc. - this person does not normally attend the OTP) who has not directly received the advice and instructions given to the immediate caretaker who attends the OTP.
- Investigate if there are problems with intra-family distribution, plate sharing, and sibling rivalry of which the mother may be quite unaware, or rejection of a child, parental psychopathology, or use of the child's state to access food and services for the whole family. These problems are usually not determined from either an interview with the mother at the distribution point or even during a home visit.

For social problems, management may take the form of counselling, family support, or support from the neighbourhood, the village elders, or volunteers or a local NGO. Pairing the mother with another "successful mother" (positive deviance program) can also be very successful. As a last resort, finding an alternative caretaker for the child where there are intractable social problems.

If the problem is still not determined:

- Refer the child to the SC or residential/day care at the health centre for up to 3 days and feed under careful supervision²⁹.

If the child gains weight well with supervised feeding and yet fails to gain weight at home, then there is a major social problem that was not determined during the home visit.

A further interview with the whole family including the head of the household should be undertaken and the results of the "trial of feeding" discussed with the household head as well as the primary caretaker.

Psychological trauma (of the caretaker as well as the patient) is particularly hard to deal with and normally requires a change to a totally supportive safe environment, often with others that have undergone similar experiences. Frequently treatment of the mother is as important for a child's welfare as treatment of the child itself, particularly in conflict situations. Dramatic improvement is sometimes seen when mothers are given treatment such as anti-depressants. Traditional practitioners are usually skilled at dealing with psychological problems and the staff should not avoid referral to traditional practitioners in such circumstances.

If child still fails to respond with a trial of supervised feeding

- Refer to an SC for full medical and psychological evaluation and a search for underlying pathology. Where nothing is found the patient should be further referred to a tertiary centre where there are more sophisticated diagnostic facilities and senior paediatric/medical staff.

Where an underlying medical problem is identified for failure-to-respond to treatment, the further management of the child should be in the hands of the service/facility making the diagnosis. The further management of the patient is usually under the control of the specialist and is recorded in the report as a "medical referral".

It is important that children do not languish in OTP for several months, not responding, and then simply be discharged as "non-responders". Such a category of outcome should not exist in an OTP program.

Note: Each step in the investigation of failure-to-respond in OTP will involve fewer and fewer children as the problems are identified and addressed. There should be very few who require referral to senior paediatricians. Clinically, senior doctors should concentrate on these failure-to-respond children where their training and skills are best used, rather than on routine management of the malnourished who respond well to the standard protocols and can be managed by nurses and their assistants. Medical students should not be excessively exposed to such "unusual" cases during their training.

²⁹ When tested with the appetite test at the OTP site the child may not take the food eagerly for various reasons (often such children are overawed, intimidated, or frightened). The child can take several days to relax and become sufficiently familiar with the staff to take the food readily.

7. CRITERIA TO MOVE FROM OTP TO SC: “INTERNAL TRANSFER TO IN-PATIENT CARE”

7.1. Criteria of transfer from OTP to SC

Outpatients who develop signs of a serious medical complication (pneumonia, dehydration, etc. - see table 2 in section on triage) are transferred to the SC for management of their condition until they are fit to return to OTP.

Transfer any patient being treated in the OTP to the SC if they develop any of the followings:

- o Failure of the appetite test (see failure-to-respond procedure)
- o Increase/development of oedema
- o Development of refeeding diarrhoea sufficient to lead to weight loss
- o Fulfilling any of the criteria of “failure to respond to treatment”
 - Weight loss for 2 consecutive weightings
 - Weight loss of more than 5% of body weight at any visit (see annex 10)
 - Static weight for 3 consecutive weightings
- o Major illness or death of the main caretaker so that the substitute caretaker is incapable or unwilling to look after the malnourished patient or requests transfer to in-patient care.

Remarks:

At admission or during treatment, a SAM child can present medical conditions requiring transfer to the SC; for such cases, the nurse should already start the treatment while the transport is organized. The same applies when transfer is delayed or the parents refuse the transfer to SC - in such cases the nurse should try to stabilize the medical conditions while waiting for the transfer or convincing the parents to go to the hospital. Initial treatment for “hypoglycaemia”, “hypothermia” and “dehydration” are described below.

Hypoglycaemia in the OTP

If a child presents with signs of hypoglycaemia in the OTP, you can implement the treatment protocol as indicated here:

Always try to transfer the child to SC – AFTER starting treatment with sugared water and antibiotics.

If transfer is possible, give sugared water to the carer to administer during the transfer.

If transfer is not possible, provide sugared water

at the centre and give small amounts of RUTF as soon as the patient is able to eat. Instruct the mother/carer to do the same when they return home, and to continue to give small meals during the night for the first three nights to avoid relapse. Return immediately to the clinic if the child loses consciousness or is unable to eat or drink.

Hypothermia in the OTP

If a child presents with signs of hypothermia in the OTP follow treatment as indicated here. Protect the child from air currents and cover its head and body. If it is not too windy, encourage carer and child to sit outside – but not directly under the sun. Demonstrate the Kangaroo care technique (see section 9) and explain to the mother/carer that she/he needs to do the same when home, particularly at night.

Always consider transferring the child to inpatient care and ensure that the child eats – even if small amounts at the beginning, as this will be the main source of energy and heat.

Ensure that antibiotic treatment is started and followed up correctly.

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Always consider transferring the child to inpatient care and ensure that the child eats – even if small amounts at the beginning, as this will be the main source of energy and heat.

Ensure that antibiotic treatment is started and followed up correctly.

Dehydration in the OTP

At the OTP, giving the RUTF and plenty of clean safe water to drink can treat mild and moderate dehydration. RUTF contains zinc and with the antibiotic treatment should be enough in most cases to treat any diarrhoea or illnesses causing the dehydration. It is not necessary to give the child additional ReSoMal.

If the dehydration is severe or the child is unconscious, then transfer the patient as an emergency. Mobilise local resources (transport, etc.) to get to the SC as quickly as possible. OTPs cannot be equipped with the material for the treatment of rehydration - due to the complexities of its treatment and the risks of complications of treatment that can only be managed at a hospital.

7.2. Procedure for transfer

When transferred to the SC, standard in-patient treatment should be applied; however, the routine drugs are individually prescribed depending upon whether the child has been directly transferred or has already been given treatment, the cause of the transfer and the nature of the complication.

- Write on the chart of the patient the reason for transfer
- Complete the transfer form which should contain the summary of the treatment given and the SAM-Number (See section on Monitoring and evaluation)

- Complete the transfer form with a carbon copy. Give the top copy to the patient to take to the SC and keep a copy in the OTP with the chart
- Phone the SC nutrition supervisor, if possible, to inform the SC about the transfer and record it on the patient's chart: the SC supervisor should arrange for the patient to be directly admitted to the ward and not processed through casualty or the emergency department. Such direct admission to the ward should be understood in the SC's casualty department whenever a patient arrives with a transfer form from an OTP.

Note: When the patient returns to the OTP similar contact should be made to avoid losing the patient during the transfer.

7.3. SC transfer refusal

All cases of complicated severe acute malnutrition should be treated as inpatients in Stabilisation Centres (SC). However, in some cases, parents may refuse to take the child to the hospital/SC; several reasons may be given: long distance to the SC, the mother has other children and nobody to take care of them, the husband is absent and she cannot take this decision, the father/family refuse, opportunistic costs, cultural beliefs, etc.

What to do?

- Try to treat the child in OTP is not a suitable option and can put the life of the child at risk. Indeed, there is little that can be done to adapt the protocols for these patients: the types of drugs that are used in the field cannot be adapted to this circumstance, as this would generate problems. In particular, most facilities where OTP is implemented cannot use IV medication.
- It is important to understand the reason why the mother refuses the transfer to SC and adapt the discussion/solution accordingly. Explain to the mother that her child has medical complications and needs more advanced care. Explore with her the possibility of transfer. If the mother still refuses, meet with the husband or a close relative; it can also be useful to involve key figures in the village such as the chief, imam, etc.

- If all discussions fail, explain to the mother that you will start the treatment in outpatient, provided that the child has appetite, but explain the risks involved. The refusal of transfer has to be noted in the OTP card. Spend extra time with her to explain all the details of the treatment at home and be sure that she understands the treatment.
- Ask the community workers (CHW and FHW) to prioritize this family for home visits, and visit them several times during the week if possible. Ask them to report the progress of the child to the OTP nurse and reconsider transfer to SC if that is an option. Ensure that the antibiotic treatment is being taken correctly. If necessary and possible, ask the mother to come every day (only for those that do not live far from the centre), to observe the feeding and to take antibiotics.
- Rehydration should always be done with safe clean water. Do not use ReSoMal or ORS in the OTP, as the diagnosis of dehydration must be done by an expert and there is an important risk of complications. These children usually have an excess of sodium in their body, which makes it more medically advisable to give them plain water, particularly if there are no means to supervise intake or signs of potential fluid overload.
- Arrange day care facility. An emergency box to be available.
- Constant communication with the nurse/doctor in charge of the SC and get them to provide advise and supervision in remote
- Contact DNO

8. DISCHARGE PROCEDURE

8.1. Criteria for discharge

Discharge the patients when they reach the discharge criteria shown in the following table.

AGE	DISCHARGE CRITERIA
6 MONTHS TO 12 YEARS Standard OTP	➤ W/H or W/L $\geq -1.5z$ score on more than one occasion if adequate arrangements for follow up have been made³⁰ (Two days for inpatients, two weeks for outpatients). Or ➤ MUAC > 125 mm for children³¹ And ➤ No oedema for 14 days
Mobile team: this criterion is NOT used in health centres or other fixed OTP sites.	➤ Target weight gain reached³² And ➤ No oedema for 14 days
12 to 18 years	➤ W/H $\geq 85\%$ NCHS And ➤ No oedema for 14 days

³⁰ It is acceptable to discharge the patient if s/he reaches this criterion on one occasion if the weight gain has been steady and the weight is rechecked before discharge.

³¹ It is complicated if children have to achieve multiple anthropometric criteria before discharge (X" and "Y, rather than X" or "Y). The choice of > 125 mm MUAC is based upon the criteria for "normality" – the children should be returned to this range during treatment and not discharged having just reached the most severe range of MAM. This leaves the difficulty with the short (< 67 cm) children who do not readily reach that discharge criterion – for these children analysis of MUAC-for-Age (WHO standards) indicates that a MUAC of > 115 mm is above the criteria for MAM.

³² See annex 12: Weight gain to reach cured criteria. ANNEX 12 IS HOW TO PREPARE F75 & F100, PLEASE ADJUST. THIS ANNEX IS NOT IN THE DOCUMENT (WEIGHT GAIN TO CURE)

- The “target” weight should be calculated at admission and this weight used as the discharge weight-for-height criterion. When height is re-measured repeatedly and a new “target” weight calculated, the child may not attain the discharge criteria because s/he is gaining height quite rapidly. Rapid height gain is a sign of nutritional well-being and keeping such children in the program is unnecessary and can overburden the staff and consume resources that are better spent elsewhere.
- Do not tell the mother that her child has reached the discharge weight and will be discharged after the next visit. Some children lose weight before discharge when a family wants the child to remain in the program to obtain RUTF or other benefits for the family.

All the patients should be discharged to supplementary feeding program (SFP) for follow up where this is available. Where this is not available the criteria for discharge should be conservative³³.

8.2. Recording the outcome of treatment

Register the patients discharged in the registration book and chart according to the following possibilities:

- o **Cured:** the patient has reached the criteria for discharge.
- o **Dead:** if the patient died during treatment in the OTP or in transit to the SC.
- o **Defaulter Confirmed:** if the patient has not returned

for 2 consecutive visits and a home visit, neighbour, village volunteer, or other reliable source confirms that the patient is not dead.

- o **Defaulter Unconfirmed:** if the patient has not returned for 2 consecutive visits and there is no information (yet) about the outcome of the patients.
- o **Transfer-OUT:** Transfer-out to SC (they are expected to return).
- o **Transfer-OUT:** Transfer-out to another OTP distribution site (will not return but are still in the program).

When a new OTP distribution site is opened closer to the patient’s home, transfer the patients to that OTP (internal transfer) but the patient retains their SAM-NUMBER and is recorded in the new OTP as an internal transfer (in) and not as a new admission.

- o **Non-responders.** Non-response at discharge should very rarely occur in OTP, although this may arise when a family/caretaker refuses to go to the IPF for diagnosis and treatment, where there are intractable social problems, or where there is an underlying condition for which there is no treatment available in the SC (e.g. many cases of cerebral palsy). Where available, further management of these patients should be transferred to other agencies with expertise in the care of such cases (medical referral).
- o **Wrong admission:** these admissions are not counted in the statistical returns.

9. FOLLOW-UP AFTER DISCHARGE

- Ensure the follow up of patients that have been discharged from the programme by the outreach workers and village focal point/ volunteers.
- If there is a TSFP, forward the patients to the TSFP where nutritional support will be given for another 2 months.

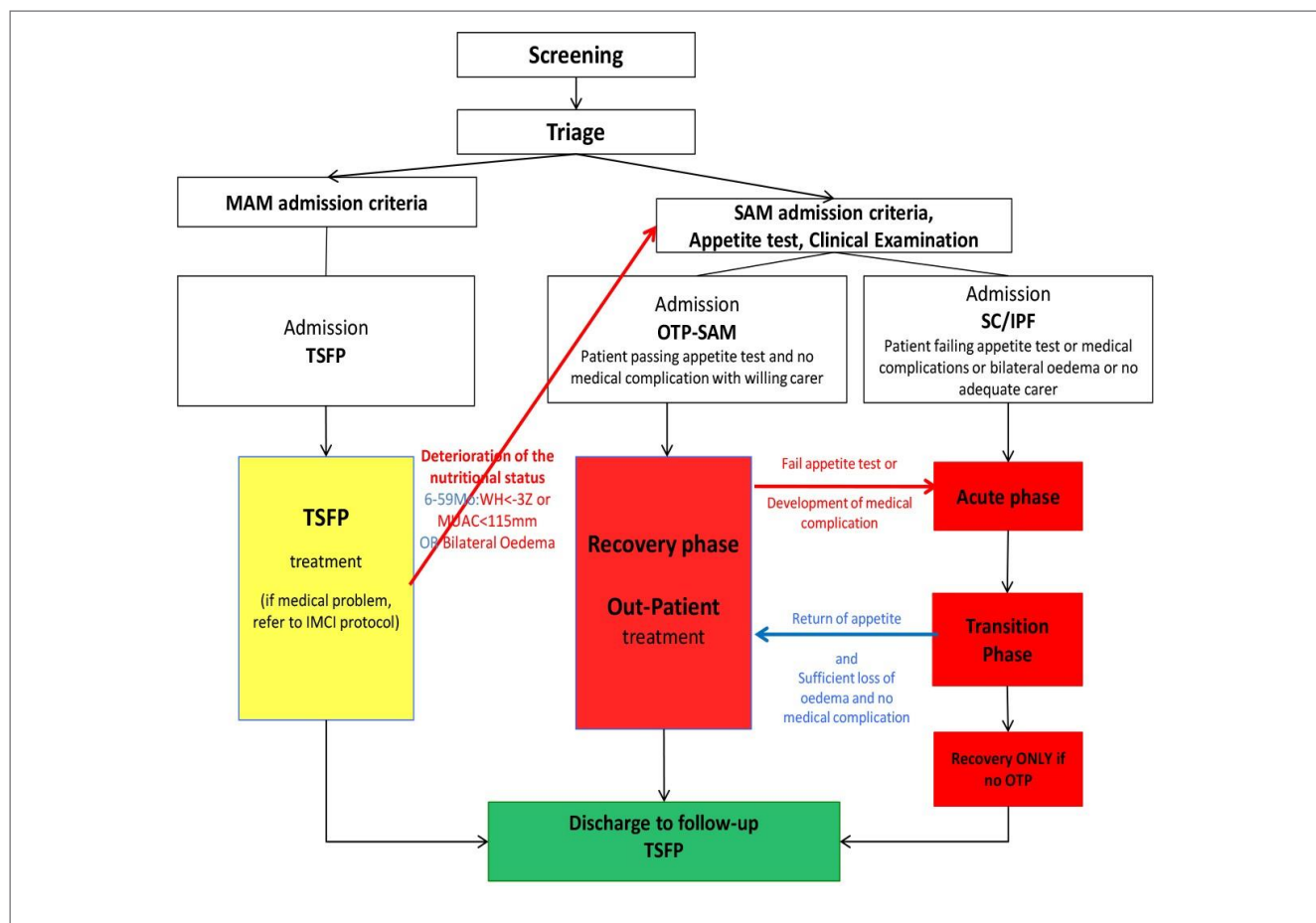
The ration should be the same as the standard TSFP ration. There should be a separate category in the TSFP

registration book for these patients for their follow up. The registration book should always record the SAM N° of the patients that have been severely malnourished.

- If there are no outreach workers or village volunteers, and no TSFP near to the beneficiaries’ home, organise the follow-up at the nearest MCH or health centre.

33 Some OTPs discharge at -2Z weight-for-height when there is a well-functioning and effective SFP at the same site as the OTP (the mothers should not have to travel farther). If such excellent facilities do not exist, then the tables given in this protocol should always be used.

Flow chart 4: Nutritional Strategy for Screening, Triage, and Treatment for Acute Malnutrition



EMOTIONAL AND PHYSICAL STIMULATION

1. IMPORTANCE OF STIMULATION

As children become malnourished they gradually reduce their activity. When fully malnourished they do not play, cry, smile, complain, or show normal emotions - they become lethargic and feeble. Because they do not cry when they are hungry, thirsty, or distressed a busy mother thinks that her child does not need more attention than she is giving to the child and the child is unintentionally neglected. Nurses also neglect children in hospital for the same reason. Adults respond to the demands of children - if the child does not demand then it is ignored. This is one of the main reasons why these children should be treated together and separately from children with other conditions.

Because they do not play, they do not learn. With time this leads to delayed mental and behavioural development. If this is not treated, it is the most serious long-term result of malnutrition. Emotional and physical stimulation through play programmes that start during rehabilitation and continue after discharge can substantially reduce the risk of permanent mental and emotional damage.

Many children have witnessed events that are very traumatic emotionally. Children of parents with HIV/AIDS for example may have seen their mother and father become ill and die in most distressing ways. Orphans are particularly vulnerable. With serious famine they may have been discriminated against within the family by siblings and relatives. Occasionally a head-of-household may deliberately discriminate against a "junior wife" and her children or be "uncertain" about her fidelity. In emergency situations they may have witnessed extreme violence to loved ones. Such psychological trauma frequently leads to post-traumatic stress disorder and, particularly in older children, can be a major impediment to recovery. The same problems occur in the caretakers - in these circumstances they frequently need psychological or psychiatric support or medication.

2. CARE IN THE SC AND OTP

- Create a friendly, supportive atmosphere. Remember that the caretaker is the primary health provider for the child and you are simply there to provide services to her and her child - to assist and guide her in giving the best care available.
- Do not chastise the caretakers, order them about, demean them, or adopt an officious attitude. Never

shout or become angry. Do not wear imposing uniforms (white coats).

- Pick up the unsmiling children, talk or sing to them, and cuddle them. It is the child that does not make eye contact or seek attention that needs it most.
- In the OTP and the SC, organise an educational session that teaches the mothers the importance of play and exploration as part of the emotional, physical, and mental stimulation that the children need. This is an integral part of treatment.
- Organise sessions where the mothers learn to make toys suitable for their children from cheap or discarded material.
- In the SC, keep the mother with the child and encourage her to feed, hold, comfort, and play with her/him as much as possible.

Toys should be available in the child's bed and room, as well as in the play area. Inexpensive and safe toys can be made from cardboard boxes, plastic bottles, tin cans, old clothes, blocks of wood, and similar materials. They are much better than purchased toys because mothers learn to make them themselves and can continue to make toys for their children after discharge.

2.1. Emotional stimulation and play

To avoid sensory deprivation

- Do not cover the child's face. The child must be able to see and hear what is happening around him or her.
- Do not wrap or tie the child. The malnourished child needs interaction with other children during rehabilitation.
- After the first few days of treatment as the children recover, put them all on large play mats for one or two hours each day with the mothers or a play guide. There is no evidence that this increases nosocomial infections. Have the mothers tell stories, sing, and play with their children.
- Teach the mothers how to make simple toys and emphasise the importance of regular play sessions at home.

Note: Most nosocomial infection comes from the staff moving from patient to patient without washing their hands, from the caretakers, from contamination of the diets and storage of feeds before they are given to the child, and from inadequate facilities for washing and the disposal of excreta. Putting children together to play does not represent an important additional danger and is often vital to their recovery.

Note: Most faecal contamination in a facility comes from the young malnourished children themselves. That is, by the handling of stools by mothers and caretakers. There is a reflex which empties the bowels about 20 minutes after eating. At this time children should be automatically put onto potties. This can also be a communal activity.

2.2. Physical activity

Physical activity promotes the development of essential motor skills and may also enhance growth during rehabilitation.

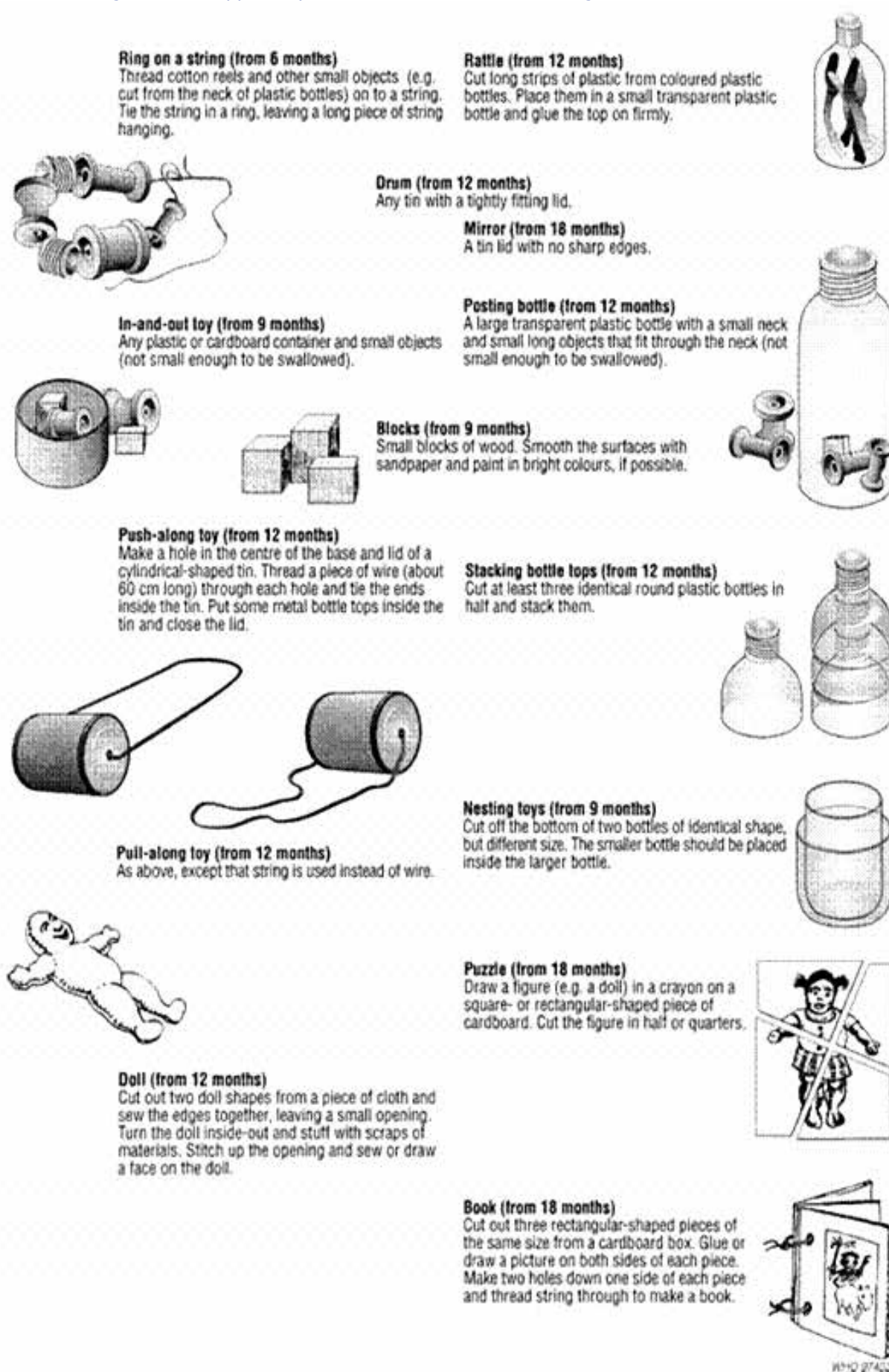
- For immobile children, encourage the mother to do passive limb movements and splashing in a warm bath.
- For mobile children, encourage the mother to do some activities such as rolling or tumbling on a mattress,

kicking and tossing a ball, climbing stairs, and walking uphill and down.

The duration and intensity of physical activities should increase as the child's condition improves. There should be a member of staff nominated who has overall responsibility for all these aspects of care of the malnourished.

The toys shown in the diagram below should be made and used in both the in-patient units and the homes of the malnourished children.

Figure 1: This diagram was supplied by Professor S. Grantham-McGregor



STABILISATION CENTRE (SC)

1. THE PRINCIPLES OF THE MANAGEMENT OF IN-PATIENTS

- **Acute-phase or Phase 1.** Patients with an inadequate appetite and/or an acute major medical complication are initially admitted to an SC for acute-phase treatment. The formula used during this phase (F75) promotes repair of physiological and metabolic functions and electrolyte imbalance. Rapid weight gain at this stage can be dangerous, that is why F75 is formulated so that patients do not gain weight.
- **Transition Phase.** A transition phase is then introduced because a sudden change to large amounts of diet before physiological functions are fully restored can be dangerous and lead to electrolyte disequilibrium and “refeeding syndrome”. During this phase the patients start to gain weight. The diet is changed to RUTF or

F100 and the amount given increases the energy intake by about 30%. The increase in energy intake should give a weight gain of around 6g/kg/d; this is less than the quantity given and rate of weight gain expected in the recovery phase.

- **Transfer/return to OTP for the recovery phase or phase 2.** Whenever patients have a good appetite and no acute major medical complication, they are given RUTF and transferred to OTP. These formulae are designed for patients to rapidly gain weight (more than 8 g/ kg/ day). The look-up tables are scaled so that the same tables can be used to treat patients of all weights and ages.

2. STRUCTURE USED FOR IN PATIENT CARE

2.1. The structures

The in-patients are those that have an insufficient appetite, which indicates severe metabolic malnutrition or an overt clinical complication. They require residential care. This is normally in a District hospital. In-patient care for SAM patients with complications is normally needed by around 5% to 20% of the SAM patients identified by community screening - but a higher proportion of those first coming to hospital with another illness.

In an emergency, when there are large numbers of patients requiring in-patient care, a special structure can be erected (similar to a local style house, tent, school classroom, etc.) to accommodate the additional case-load. This should be close to or within the grounds of the local hospital whenever possible.

It is highly desirable to decentralise acute-phase management (SC) to be close to the patient’s home. This decreases the problems of transport trauma, visiting, defaulting, and subsequent transfer to OTP. However, such satellite SCs should only be implemented when there is close supervision from the District Nutrition Officer/ District Medical Officer of Health, complete and satisfactory in-job training in another functioning SC, no problem of staff turnover resulting in untrained staff in charge, and close follow up.

There are different possibilities:

- SC on a **24/24 hour** basis.

Actual treatment at night is only required for 1) very ill children; 2) those that get “refeeding diarrhoea;” and 3) those that have not taken food during the day. There are then in effect three options: 1) patients receive round-the-clock care; 2) patients are treated only during the day but in a facility with 24-hour capabilities; 3) patients are treated only during the day with no potential for 24-hour care.

SC in a **24/24 hour** facility, but the patients are only actively treated during the day with no treatment being offered at night when there is a shortage of trained staff 34they are given 5 or 6 feeds during the day.

- SC on a **Day Care** system (receiving 5 or 6 meals during the day).

Those from far away sleep in the facility in a separate room or a separate local structure, on beds or (preferably) mattresses on the floor.

Such treatment is called “residential day care”. There is no provision of staff, surveillance or treatment during the night. Because of the absence of staff at night such residential-day-care can be used in health centres (and

hospitals). 24h care is not required for many in-patients. This can be implemented in health centres (particularly those that also offer obstetric services) provided that the staff is properly trained.

Patients who live or are hosted by family or friends in the immediate neighbourhood of the facility can come each morning and remain in the facility during the day and then return home at night (non-residential day-care).

For all in-patients, as soon as they regain their appetites they should continue treatment as out-patients whenever the caretaker agrees and an out-patient program is in place. In exceptional circumstances, patients can remain in the SC for the recovery phase. This applies to children that are abandoned by their families, where the home circumstances are impossible, where there is no caretaker or the caretaker is incapable of managing the patient, and there is no alternative caretaker. These patients do not need to occupy acute hospital beds, they can be accommodated in a local structure attached to the SC. They remain until a “place of safety” (other relative found, foster care, orphanage etc.) is arranged. As soon as a placement is arranged the fostering family or orphanage

applies OTP treatment. Children less than 6 months have a separate protocol.

2.2. Organisation of the SC

The Nutrition ward in the SC only needs:

- A space to take the anthropometric measurements, examine the patients, prepare the therapeutic milk (F75), the drugs to deliver to the patients, toilet and washing facilities, provision for the caretakers to cook (and where possible food given to the caretakers), and storage facility for drugs and F75/F100/RUTF.
- The patients should always be treated together in a separate room or dedicated section of the ward and NOT mixed with other patients.
- There should be an impregnated mosquito net for each bed. Adult beds or even mattresses on the floor are preferred to cots. Mothers should sleep with their children to avoid hypothermia, emotional stress, and interruption of breast feeding, and so that the mothers themselves do not get exhausted, are able to make rational decisions, and are less likely to default.

3. ACTIVITIES

Prerequisite

All the human resources should be trained before managing SAM patients: doctors, nurses, assistant nurses, etc. The personnel of the SC, the OPD, and the emergency ward should regularly be re-trained and supervised.

Staff turnover should be minimised and only one staff member should be rotated at any one point in time. The assistants should not be redeployed.

At present, the management of SAM patients is not taught in medical or nursing school. The diagnosis and treatment of complications and management of these patients are totally different from that of other patients. Thus, any new staff must be specifically trained in the management of SAM and work for a period under supervision before they are allowed to take charge, work alone, or at night with these patients. Heavy rotation of staff induces higher mortality, due to the lack of understanding.

3.1. The doctor

The doctor's main duty is to support the nurse and to concentrate on any patients that fail-to-respond to treatment or present diagnostic difficulty and to the management of the complications.

In nearly all SCs the limiting factor is staff time, particularly at night. Any simplification of the protocol that saves staff time will improve the quality of care. Doctors must be aware that each and every order that they give for special treatment to individual patients (e.g. frequent feeds, night feeds, frequent monitoring, excessive record keeping, IV infusions, IV drugs, etc.) commits staff time and makes it more likely that the overall quality of care given in the service will deteriorate.

The doctor/nurse in charge of the SAM in-patients should attend the monthly co-ordination meetings convened by the District Nutrition Officer/Focal Point of the District Health Team. There has to be trust and easy communication between those running the SC and the OTPs.

3.2. The nurse

For a new admission

- Applies the procedure of triage and admits the SAM patients with complications to the SC and transfers those with a good appetite and without medical complications directly to the OTP.

For an internal transfer

From OTP

- Register the patient using his/her SAM N° given by the OTP (if the SAM patient is referred by other health facilities or the Emergency Room, the SAM-number is given by the facility). The details are entered into the registration book and Multi-chart (see annex 7) and the transfer form should be attached to the Multi-chart (see section on admission, evaluation and monitoring).
- Ask the doctor in charge to examine the patient when s/he is available but do not wait before starting treatment according to the protocol.
- Give a phone call to the OTP transferring the patient to inform them of arrival and discuss any details that are not recorded on the transfer form.
- Start treatment of the acute-phase and treat the complications according to the protocol.

To OTP

- As soon as possible, move to Transition phase and prepare for transfer to the OTP.

In general,

- Teach and supervise the assistants to ensure that they are performing their functions correctly and accurately.

- The nurse also needs to give or supervise any intravenous or unusual treatment and monitor all critical care patients.

3.3. Assistant Nurses

The assistants do most of the actual “nursing”. They have to:

- Weigh and measure patients according to the protocol;
- Mix and dispense feed, and give the oral drugs; and
- Assess the clinical signs and record the results of all the routine information on the Multi-chart (the caretakers must never be given the task of reconstituting the F75).

3.4. District Nutrition Focal Point (DNPF)/ District Nutrition Officer (DNO)

- The supervision of the SC/IPF must include a visit to the emergency department and an assessment of the procedures used in the emergency department to identify, treat, and transfer SAM patients to the staff of the IPF area specifically designated to treat SAM patients.
- With the doctor in charge of the nutrition ward in the SC/IPF, the DNO should regularly assess the management of the SAM patients with complications.

4. TOOLS AND MATERIALS

4.1. Records

- **The registration book** (annex 6). A separate register is kept for malnourished patients. It contains all the information necessary to complete the monthly and other reports.
- **The Multi-chart** (annex 13) is the primary tool used for in-patient treatment of malnourished patients. Other charts should not be used. All the staff use the same multi-chart to record all the information needed to manage the malnourished patient - separate charts are not used by different categories of staff. All records should be taken in the language of the assistant and not in the language of the senior staff or an international language to avoid any misunderstanding of instructions.
- **The Critical-Care chart** (annex 14), is used for patients with complications who require more intensive monitoring during the acute treatment of the complication (shock, dehydration, hypothermia, etc.)

4.2. Diet

F75, F100 and RUTF, cups, mixer, drinking water, sugar, ReSoMal, measuring jugs

F75 and F100 are now pre-packaged in 400g canisters: black canister for F75 and blue canister for F100. If they are not available, alternative recipes for making these diets are given in annex 26. The pre-packaged commercial F75 is preferred because it has a lower osmolarity and passes through an NG tube³⁴. Once the canisters are opened the shelf-life would only be 4 weeks-time.

Each canister comes with a specifically developed scoop: F-75 comes with a white branded scoop and F-100 comes with a blue branded scoop.

4.3. Drugs

Routine medicine (amoxicillin, gentamicin, anti-helminthic, anti-malarial, measles vaccine) and specific drugs for the complications (vitamin A, folic acid, anti-fungal, second- and third-line antibiotics, frusemide, glucose, magnesium sulphate injection, etc. - see section on complications).

³⁴ The “home made” F75 contains cereal powder which makes the formula difficult to give by NG-tube, if the cereal is replaced by sugar then the formula becomes hyperosmolar and provokes diarrhoea. The commercial F75 has dextrin-maltose instead of sugar, has a lower osmolarity and is much less likely to cause refeeding osmotic diarrhoea.

4.4. Other materials

- MUAC tapes, length board, scale with 100g precision, a scale with 10g-20g precision for children and infants less than 8kg
- A second set of MUAC tapes, length board, scales and look-up charts for the OPD/Emergency ward
- Naso-gastric tube for children (Ch5-8)
- Laminated look-up charts for weight-for-height, BMI, feed volumes to dispense
- Wall charts for triage, standard treatment, and management of common complications to be placed in the IPF and the Emergency Wards³⁵
- Examination tools (stethoscope, otoscope etc.), thermometers, calculator
- Multi-charts, Critical care charts, transfer forms, registration book, monthly reports

- Clean water and soap
- Toys for the children
- A list of the OTP sites and the name and phone numbers of the persons in charge and the days and hours that the OTPs operate should be in the SC. The list should also have an indication of the travelling times and distance (and cost) for transport
- Copies of this protocol
- Flip charts and lesson plans for education sessions
- Adult beds, blankets, mosquito nets, maximum-minimum wall thermometer (to determine the environmental temperatures during the day and night), washing materials, shower, toilets, cleaning materials, and a place for mothers to cook and eat

5. ADMISSION

The nurse or assistant nurse **registers** the patients **directly** to the SC's Nutrition Ward. The patients should NOT be treated in an emergency ward for the first 24-48 hours. This is **ONLY to be allowed**, if the staff of the emergency ward has had specific training in the management of the complications seen in SAM patients and know that the clinical signs and treatment differ from that used for normally nourished children.

The rapid staff turnover, high workload, and relatively junior staff in emergency wards are such that this is the main place where misdiagnosis, mistreatment, and iatrogenic death take place. No treatment should normally be given in the emergency department.

There are several ways, in which patients with SAM can present for in-patient care:

New admissions

Patients who come spontaneously to the hospital/SC because of another illness (such as diarrhoea, pneumonia, malaria, etc.) and are found to be severely malnourished on screening or clinical examination (See the triage procedure).

Referral

- Patients referred by a non-OTP health centre or private practitioner because they fulfil the criteria of SAM.
- Malnourished Infants less than 6 months old (see section Infant less than 6 months with a caretaker).

- These children are NEW admissions they will be registered with a SAM-number (that they will keep throughout SAM treatment).

Transfer-IN from OTP

- These Patients have already been diagnosed, or are under treatment, in the OTP, but have failed their appetite test, have a complication, or failed-to-respond to treatment and fulfil the criteria to be transferred to SC. They already have a SAM-number and a transfer-form giving all the information on the treatment already given in OTP.
- These are NOT new admissions to the program but "Internal Transfers" within the IMAM program.
- A copy of the transfer form (and the phone number of the referring facility) should have been sent with the patient - the transfer form is attached to the multi-chart and the patient registered.
- Re-measure the weight, height, MUAC and check for oedema. Take a brief history concentrating on the complaints, symptoms, and signs. Examine the child clinically and assess any complications.
- All patients should have something to drink (F75, water, or sugar-water) and/or eat (RUTF for the appetite test) shortly after they come to the SC.
- Do NOT wash or bathe malnourished patients on admission.
- Refer to the nurse or doctor in charge of the SC.

³⁵ The "home made" F75 contains cereal powder which makes the formula difficult to give by NG-tube, if the cereal is replaced by sugar then the formula becomes hyperosmolar and provokes diarrhoea. The commercial F75 has dextrin-maltose instead of sugar, has a lower osmolarity and is much less likely to cause refeeding osmotic diarrhoea. It is insufficient to simply have a copy of the protocol in the IPF. With staff turnover, such documents "disappear", and it is rarely read completely, but acts as a "reference" document – wall charts give immediate aids to memory.

Table 22: Summary of Criteria for admission to in-patient care

FACTOR	IN-PATIENT CARE
CHOICE OF CARETAKER (AT ANY STAGE OF MANAGEMENT – THE CARETAKER IS OFTEN THE BEST JUDGE OF SEVERITY)	Caretaker chooses to start, continue, or transfer to in-patient treatment. The caretaker's wishes must be respected
APPETITE	Failed or equivocal Appetite test
OEDEMA	Bilateral pitting oedema (Grade 3 +++ – see triage section)
	Both Marasmus and kwashiorkor (W/H<-3z score and oedema)
MUAC	MUAC < 11.5 cm AND no appetite or WHZ < -3 AND no appetite for RUTF OR MUAC < 11.5 cm and WHZ < -3 and no appetite for RUTF
SKIN	Open skin lesions
MEDICAL COMPLICATIONS (SEE SECTION ON TRIAGE)	Any severe illness, using the IMCI criteria – respiratory tract infection, severe anaemia, dehydration, fever, lethargy, • intractable vomiting • Fever > 39 C • Severe respiratory tract infection • Severe anaemia • Very weak, apathetic • Unconscious • Convulsions • Extensive skin infection requiring IV antibiotics • Severe dehydration
CANDIDIASIS	Presence of candidiasis or other signs of severe immune-incompetence
CARETAKER	No suitable or willing caretaker
TRANSFER-IN	Any child referred from OTP due to: • Increasing oedema • Lack of weight gain or weight loss • Anorexia • Development of any medical complication Social Reasons determined on case by case basis

In some countries grade + and ++ should also be admitted to an in-patient facility. The risk of death and severity of malnutrition varies greatly from region to region by grade of oedema.

6. ACUTE PHASE (PHASE1)

Patients that require in-patient care generally have a poor appetite and usually have a complication such as diarrhoea, dehydration, sepsis, pneumonia, severe anaemia, etc. Thus, the patients will often require treatment for both the complication and the malnutrition.

The management of acute or life-threatening complications take precedence over routine care and may change the way in which the routine care is given. The

routine care and complications sections should be read in conjunction with each other.

6.1. Diet (F75)

The diet used in the acute-phase of treatment is F75. The F75 is NOT a dilute form of F100; it has a completely different nutrient composition and balance. It is designed for patients with severe complicated malnutrition who

have impaired liver and kidney function with infection. Patients should NOT gain weight on F75. The diet allows their biochemical, physiological, and immunological functions to start to recover before they have the additional stress of making new tissues.

6.1.1. Activities

- Half an hour before the scheduled time for giving the feed, ask the mothers to breast-feed their children;
- Calculate the total quantity of F75 to prepare according to the number of patients, their weight, and the number of feeds (refer to table 11);
- Prepare the quantity of water and F75 for the feeds (see paragraph “preparation”);
- Ask the mother to wash her own and her children’s hands; and
- Give five or six feeds per day for most children (make out a time schedule and post it on the wall).

Note: Experience in the centre will show whether the children tolerate the slightly larger volumes when 5 daily feeds are given. If refeeding diarrhoea is uncommon then 5 daily feeds should be used; if refeeding diarrhoea poses a problem then the SC should use 6 feeds per day. Only ONE routine schedule should be used in an in-patient facility.

- Give eight (or more) feeds per day over 24h (night as well as daytime) for the few children who cannot tolerate the increased volumes when 5 or 6 feeds, quite closely spaced during the day, are given. This includes those who:
 - o are very severely ill,
 - o develop re-feeding diarrhoea on the routine schedule,
 - o have had very little during the day (e.g. new arrivals),
 - o have vomited some or all of their feeds during the day,
 - o have had an episode of hypoglycaemia,
 - o have had hypothermia, and
 - o in places where there are sufficient staff to prepare and distribute the feeds at night (unusual).

6.1.2. Preparation

Add either one white scoop of levelled F75 to 25ml of water or one canister of 400g F75 to 2200ml to make 2480ml of F75. If F75 is not available use one of the recipes given in the annex 26 and accompanying videos.

6.1.3. Amounts to give

Give the amounts in the table below to each patient.

Table 23: Amounts of F75 to give during Acute-phase (or Phase 1)

CLASS OF WEIGHT (KG)	8 FEEDS PER DAY ML FOR EACH FEED	6 FEEDS PER DAY ML FOR EACH FEED	5 FEEDS PER DAY ML FOR EACH FEED (FOR DAY CARE)
2.0 to 2.1 kg	40 ml per feed	50 ml per feed	65 ml per feed
2.2 – 2.4	45	60	70
2.5 – 2.7	50	65	75
2.8 – 2.9	55	70	80
3.0 – 3.4	60	75	85
3.5 – 3.9	65	80	95
4.0 – 4.4	70	85	110
4.5 – 4.9	80	95	120
5.0 – 5.4	90	110	130
5.5 – 5.9	100	120	150
6.0 – 6.9	110	140	175
7.0 – 7.9	125	160	200
8.0 – 8.9	140	180	225
9.0 – 9.9	155	190	250
10 – 10.9	170	200	275
11 – 11.9	190	230	275
12 – 12.9	205	250	300
13 – 13.9	230	275	350
14 – 14.9	250	290	375
15 – 19.9	260	300	400
20 – 24.9	290	320	450
25 – 29.9	300	350	450
≥30	320	370	500

NOTE: Patients on F75 are NOT expected to gain weight.

6.1.4. Naso-gastric feeding³⁶

Naso-gastric tube (NGT) feeding is used when a patient is not taking sufficient diet by mouth. This is defined as an intake of less than 75% of the prescribed diet (for children about 75 Kcal/ kg/ day).

The reasons for use of an NG tube are:

- o Taking less than 75% of prescribed diet per 24 hours
- o Pneumonia with a rapid respiration rate
- o Painful lesions of the mouth
- o Cleft palate or other physical deformity
- o Disturbances of consciousness

Every day, try patiently to give the F75 by mouth before using the NGT. The use of the NGT should not normally exceed 3 days and should only be used in the Acute-phase.

6.1.5. Feeding technique



- The muscle weakness, slow swallowing, and poor peristalsis of these children makes aspiration pneumonia very common.

- Tell the mother to put the child on the mother's lap against her chest, with one arm behind her back. The mother's arm encircles the child and holds a saucer under the child's chin.

The child should be sitting straight (vertical).

- Give the F75 in a cup, any dribbles that fall into the saucer are returned to the cup.
- Tell the mother not to force feed the child and never to pinch his/her nose, squeeze the cheeks to force the mouth open, or lie back and have the milk poured into the mouth.
- If a child "splutters" or coughs during feeding, tell the mother that it is probably due to incorrect feeding-technique.

Re-train the mother. It is better for the child not to finish the feed and have an NGT inserted than to develop aspiration pneumonia.

- Meal times should be sociable.

- The mothers should sit together in a semi-circle around an assistant.
- Encourage the mothers, talk to them, correct any faulty feeding technique, and observe how the child takes the milk.

Remark: In many hospital wards the mothers feed the children on their beds individually. Often the F75 is "secreted" under the bed and "kept" by the mother for later feeding if the child does not finish the feed. This can lead to bacterial growth in the F75 and underestimation of the amount taken by the child. It is better to have a "feeding" area where all the children and mothers are brought together. The children can encourage each other.

The meals of the caretakers should never be taken beside the patient. It is almost impossible to stop the child demanding some of the mother's meal. Sharing the mother's meal with the child can be dangerous as the mother's meal usually has salt or condiment added in sufficient amounts to provoke fluid retention and heart failure in the malnourished child. Furthermore, the mother's diet does not contain the correct balance of nutrients to treat metabolic malnutrition and will disturb the child's appetite for the F75. The only food apart from F75 that the child should receive is breast milk.

6.2. Routine medicines

6.2.1. Systematic Antibiotics

Antibiotics should be given to every severely malnourished in-patient, even if they do not have clinical signs of systemic infection. Despite the absence of clinical signs, they are all infected. These infections are treated blindly. This is NOT prophylaxis.³⁷

The antibiotic regimen (see annex 28 for dosage information)

- First line treatment for patients without apparent signs of infection:

- o give oral Amoxicillin/ampicillin³⁸, if it is known that there is not a high level of amoxicillin resistance in the region

OR where there is amoxicillin resistance

- o give a daily IM injection of cefotaxime^{39, 40} for two days (50mg/kg)
- o or give amoxicillin-clavulanic acid combination
- o and/or suppress small-bowel overgrowth with metronidazole (10mg/kg/d)

³⁶ See annex 15: How to insert a Naso Gastric Tube (NGT)

³⁷ See note on antibiotics and small bowel overgrowth in the out-patients section

³⁸ Amoxicillin is active against small bowel bacterial overgrowth in most patients. Where this is used as the first line antibiotic, metronidazole need not to be given – if metronidazole is used it is important to give a dose of 10mg/kg/d and not the normal dose given to well-nourished children (which is 3 times higher).

³⁹ Ceftriaxone is an acceptable alternative. However, ceftriaxone must not be given through the same IV set as Ringer-lactate or any calcium containing compound. The diluent for Ceftriaxone for IM injection contains lidocaine. Once reconstituted with this diluent, the solution can only be used in IM < THIS IS NOT DEFINED, never use the IV route due to risk of a reaction to the lidocaine. If water for injection is used as diluent, ceftriaxone should be given slowly IV. Without lidocaine IM injection is extremely painful.

⁴⁰ There is quite rapid colonisation of the intestine with organisms resistant to cefotaxime/ceftriaxone. In order to reduce nosocomial spread of resistant organisms it is often recommended that oral ciprofloxacin should normally be given along with cefotaxime.

- Second line treatment^{41 42} for patients with any apparent signs of systemic infection:
 - o add gentamicin IM (do not stop first line antibiotics) during the acute phase
- OR
 - o change to cefotaxime (50mg/kg) IM injection plus ciprofloxacin orally (30 mg/kg/d in three doses per day) - continue as long as the patient has any signs of infection.
 - o If suspicion of Staphylococcus infection add cloxacillin⁴³ (100 - 200mg/kg/d Dosage 3 times daily)
- Third line: individual medical decision
- Anti-fungal treatment
 - o Nystatin 100,000 UI orally 4 times daily is added

for patients with oral candidiasis and routinely for all patients in areas with a high prevalence of candidiasis (>20%) or HIV.

- o Patients with signs of severe sepsis or systemic candidiasis should be treated with fluconazole (3mg/kg once daily) although it has been associated with mild hepatic damage.

Note: Co-trimoxazole is not active against small bowel bacterial overgrowth. It is inadequate for the severely malnourished patient. If it is being given for prophylaxis against pneumocystis pneumonia in HIV positive patients, the other antibiotics should be given in addition to prophylactic (not curative) doses of co-trimoxazole.

Table 24: Dosage of Gentamicin, Amoxicillin

Weight range	Gentamicin ⁴⁴ Dosage once per day	Amoxicillin (50 – 100 mg/kg/d) Dosage – twice per day	
		125mg/5ml syrup	250mg/tab/cap
Kg	mg		
<5kg	5 mg/kg give once daily IM	5ml * 2	½ cap.*2
5 – 10		10ml * 2	1 cap * 2
10 – 20		20ml * 2	2 caps * 2
20 - 35		30ml * 2	3 caps * 2
> 35		40ml * 2	4 caps * 2

The 20mg ampoule (10mg/ml) of gentamicin should be used. It is very difficult to measure small volumes with the adult (stronger) gentamicin solutions - you have to use a 1ml syringe.

When metronidazole is used for suppression of small bowel overgrowth in the severely malnourished complicated patient and in all patients with kwashiorkor, the dose must not exceed 10mg/kg/d.

Duration of antibiotic treatment

For in-patients, either give antibiotics continuously until transferred to OTP or every day during the Acute-phase + four more days.

Administration of antibiotics

- Wherever possible antibiotics should be given orally or by NG tube (see annex 16).
- In cases with complications due to very severe

41 There is increasing resistance to amoxicillin for ill children with suspected gram-negative septicaemia, so that for the child with severe sepsis cefotaxime and ciprofloxacin are more reliable (for example, sensitivity in Kenya is: Amoxicillin 28%, cefotaxime 95% and ciprofloxacin 99%) However, these latter drugs are substantially more expensive and should be reserved for children with obvious sepsis.

42 Chloramphenicol is occasionally used where there is no suitable alternative. Chloramphenicol dose must be reduced to half that used for normally nourished children 25mg/kg/d (twice daily) IS THIS THE NORMAL DOSE OR THE REDUCED DOSE? – see appendix 28 for doses. Chloramphenicol should never be used in babies less than 3 months of age and with extreme caution in infants less than 6 months of age or less than 4kg.

43 Cloxacillin can be substituted by another anti-staphylococcal antibiotic such as oxacillin, flucloxacillin, or dicloxacillin.

44 Gentamicin elimination is prolonged in malnutrition so that once daily administration of 5mg/kg gives adequate blood levels. In view of the renal toxicity of gentamicin it is suggested that this dose not be exceeded.

infection such as septic shock, parenteral antibiotics should be used.

- Infusions containing antibiotics should not be used because of the danger of inducing heart failure. Indwelling cannula should rarely be used - and only in very ill children, not routinely. Every effort should be taken to keep the cannula sterile.

6.2.2. Malaria

Although the National protocol should be followed for asymptomatic malaria in OTP, cases with symptomatic malaria are admitted to SC.

- For uncomplicated malaria, give artemether+lumefantrine (AL) as first line treatment using a 6-dose regimen (at 0 and 8 hours then twice daily on each of the following 2 days).
- For complicated malaria (e.g. cerebral malaria)
 - For children without diarrhoea, give high dose artemether or artesunate suppositories;
If the suppository is expelled within two hours, repeat the dose.

- For those with diarrhoea, disturbance of consciousness, or where suppositories are not available, give IM artesunate or IV artemether.
- Once responding, change to oral AL to complete the full course⁴⁵

NOTE: Some of the drugs used in treating malaria are potentially more toxic in the malnourished than in well-nourished patients and should be avoided if possible. Combinations containing amodiaquine should be avoided in the SAM children until their safety is confirmed in this group of children.

- Do NOT give oral or intravenous infusions of quinine to SAM patients for at least the first two weeks of treatment. In severely malnourished patients, quinine often induces prolonged and dangerous hypotension, hypoglycaemia, arrhythmia, and cardiac arrest. There is only a small difference between the therapeutic dose and the toxic dose.

1st Line: Give Artemether+Lumefantrine (PO) twice daily for 3 days

⁴⁵ Artemether or artesunate monotherapy should only be used to initiate treatment – it is important to continue with a full course of combination treatment to complete treatment and prevent resistance as soon as the patient can take drugs orally

Table 25: Artemether (20mg) + Lumefantrine 120 mg combination

Body weight (kg)	Number of tablets of artemether-lumefantrine					
	Day 0		Day 1		Day 2	
	1st dose	2nd dose	3rd dose	4th dose	5th dose	6th dose
5–<15	1	1	1	1	1	1
15–<25	2	2	2	2	2	2
25–<35	3	3	3	3	3	3
≥35	4	4	4	4	4	4

Table 26: Artemether (40 mg) – Lumefantrine (240 mg) combination

Body weight (kg)	Number of tablets of artemether-lumefantrine					
	Day 0		Day 1		Day 2	
	1st dose	2nd dose	3rd dose	4th dose	5th dose	6th dose
5–<15	½	½	½	½	½	½
15–<25	1	1	1	1	1	1
25–<35	1 ½	1 ½	1 ½	1 ½	1 ½	1 ½
≥35	2	2	2	2	2	2

Table 27: 2nd line: Dihydroartemisinin – Piperaquine (40 / 320)

Body weight (kg)	Dihydroartemisinin+ Piperaquine dose (mg)	Day 0 Tablets	Day 1 Tablets	Day 2 Tablets
5 to <8	20+160	½	½	½
8 to <11	30+240	¾	¾	¾
11 to <17	40+320	1	1	1
17 to <25	60+480	1 ½	1 ½	1 ½
25 to <36	80+640	2	2	2
36 - <60	120+960	3	3	3
60 to <80	160+1280	4	4	4

Mosquito-nets should be on all the beds in the SC.

6.2.3. Measles

Give all children from 6⁴⁶ months, without a vaccination card, measles vaccine on admission (and a second dose at week 4 as an outpatient in OTP. Young children should also get a further dose at 9 months according to the national protocol). Do not give DPT vaccine to these children, even if they have not been vaccinated with DPT before.

⁴⁶ There is compelling evidence (see papers by P Aaby et al.) that measles vaccine from 4.5 months reduces the risk of death from all infectious disease including respiratory tract infections, septicaemia, and diarrhoea as well as measles. The protection is improved if there are still circulating maternal antibodies, and is particularly important for girls. DPT < < THIS IS NOT DEFINED in this situation appears to increase all cause mortality and should wherever possible be followed by a live vaccine (measles, BCG etc.) as a non-specific stimulus of the immune system

6.3. Medicines given under specific circumstances only

• Vitamin A

There is sufficient vitamin A in F75, F100, and RUTF to correct mild vitamin A deficiency. High doses of vitamin A are not required in a child without clinical signs of deficiency and may be dangerous

Give high doses of vitamin A only under the following circumstances:

- o Where the child has any clinical sign of vitamin A deficiency (including any eye infection).
- o In children over 9 months, where there is an active measles epidemic and the child has not been vaccinated against measles.

Dosages of vitamin A for children with clinical vitamin A deficiency or measles

Age	Dose
Children aged 6-12 months	100, 000 IU
Children aged over 12 months	200, 000 IU

• Folic acid

There is sufficient folic acid in F75, F100, and RUTF to treat mild folate deficiency. If clinical anaemia, give a single dose of folic acid (5mg) on the day of admission.

• Other nutrients

The F75 (and F100, F100 diluted, and RUTF) already contains all the nutrients required to treat the SAM patient

Table 28: Summary table of systematic treatment of patients

SYSTEMATIC TREATMENT	DIRECT ADMISSION ONLY TO IN-PATIENT (ACUTE-PHASE- SC)
Antibiotics	Every day in Acute-phase + 4 more days in Transition or until transfer to OTP
Malaria	AL (artemether+lumefantrine)
Measles vaccine (from 9 months)	1 vaccine at admission if no card (second will be given in OTP)

6.4. Surveillance recorded on the SC/IPF multi-chart

- Weight (annex 1) is measured, entered and plotted on the multi-chart each day;
- The degree of oedema (0 to +++) is assessed each day;
- Body temperature is measured twice per day;
- The standard clinical signs (stool, vomiting, dehydration, cough, respiration, and liver size) are assessed and noted in multi-chart each day;
- MUAC is taken each week;
- A record is taken (on the intake part of the multi-chart) if the patient is absent, vomits, or refuses a feed, and whether the patient is fed by Naso-Gastric Tube (NGT) or is given an IV infusion or transfusion. There are appropriate places for these to be recorded each day.

- Every 21 days during admission and on discharge measure the length/height.

ALL these observations are normally taken by a trained assistant and not by the nurse herself. The nurse's job is to teach and supervise the assistants and to check the multi-charts to ensure that the clinical data are accurate. If she finds inaccuracies she should patiently retrain the assistants to be her "eyes and ears" within the facility. The assistants must not be chastised or humiliated because of previous shortcomings of the training or the supervision given by herself or her predecessor. Failure to take a record is usually due to shortage of staff time. It is better to have no record at all than for junior staff to insert data that has not actually been taken because they fear criticism. Assistants must be clear that they will not be criticised for failing to take a measurement on time when there is inadequate staff.

6.5. Criteria to Progress from Acute-Phase to Transition Phase

There is no “fixed” time that a child should remain in the acute phase - individual children differ. It is expected that the most severely ill children will remain in the acute phase for longer than average and the less severely complicated cases and those that respond readily to treatment will remain for a shorter time.

Transfer a patient from Acute-phase to Transition Phase when all the following are present:

- o Return of appetite
- and
- o Beginning of loss of oedema (Normally judged by an appropriate and proportionate weight loss as the oedema starts to subside)

- and
- o The patient appears to be clinically recovering.
- Patients with gross oedema (+++) should wait in Acute-phase at least until their oedema has reduced to moderate (++) oedema. These patients are particularly vulnerable.

7. TREATMENT OF COMPLICATIONS

When a patient develops a complication, **always** transfer him/her to Acute-phase for treatment (in-patients are transferred back to acute-phase if they are in transition phase, out-patients are referred to the IPF if suitable transport is available and the in-patient facility is within a reasonable distance of the OTP site. Otherwise, where feasible, attempts to start phase 1 and treat the complications should be started before transport in consultation by phone with the SC).

7.1. Dehydration

7.1.1. In the Marasmic patient

Misdiagnosis and inappropriate treatment for dehydration is the commonest cause of death in the malnourished patient. Rehydration fluids are never given “routinely” to malnourished patients.

With severe malnutrition 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. IV infusions are rarely used. In malnutrition (both marasmus and, to a greater extent, kwashiorkor) there is a particular renal problem that makes the children sensitive to salt (sodium) overload.

- Do NOT use the standard protocol for the well-

nourished, dehydrated child

- Do NOT make a bucket of ORS or ReSoMal freely available for the caretakers to give to their SAM children whenever they have a loose stool. This leads directly to heart failure, as well as failure to lose oedema, to re-feeding oedema, and failure to report and record significant problems.
- Do NOT treat if there is no dehydration. Diarrhoea is not treated with rehydration fluids to “prevent” the onset of dehydration in SAM children⁴⁷. This again leads to over-hydration and heart failure.

Once excess sodium has been given, it is very difficult to get the sodium back out of the child.

Diagnosis

- The diagnosis of dehydration in marasmus is not easy. Even very experienced paediatricians frequently make mistakes. For this reason, one should always be prepared to revise the diagnosis.
 - o Do NOT use the classical signs of dehydration, they are unreliable.
- Thus, marasmic skin normally lies in folds and is inelastic so that the “skin pinch” test is usually positive whether or not the child is dehydrated.
 - o Do NOT use the skin pinch test to diagnose dehydration in severely malnourished children.
- Marasmic eyes are normally sunken without there being any dehydration.
 - o Do NOT diagnose dehydration in malnourished patients because they have sunken eyes.
- Incorrect and over-diagnosis of dehydration is very common and treatment given inappropriately. The consequences of over-hydration are very much more serious than slight dehydration. On the other hand truly dehydrated children must be appropriately rehydrated if they are to survive.
 - o Do NOT 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.

The main diagnosis comes from the HISTORY rather than from the examination.

There needs to be:

- A definite history of significant recent fluid loss - usually diarrhoea which is clearly like water (not just soft or mucus) and frequent with a sudden onset 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 then the mother must say

⁴⁷ If there is diarrhoea 30ml (not more) of ReSoMal can be given for each watery stool.

that the eyes have changed to become sunken since the diarrhoea started.

- Absence of visible “full” superficial veins (look at the head, neck, and limbs).
- The child must not have anyoedema.

7.1.2. Diagnosis of shock from dehydration

The patient is in shock if:

- there is definite dehydration from both the history and examination; and
- a weak or absent radial or femoral pulse; and
- cool or cold hands and feet; and
- poor capillary refill in the nail beds (more than 3 seconds).

When, in addition to the above signs there is also:

- decrease in level of consciousness so that the patient is semi-conscious or cannot be roused

Then this is severe shock.

There are other causes of the signs of shock in the severely malnourished child.

In particular, 1) toxic shock, 2) septic shock, 3) liver failure and 4) cardiogenic shock.

Treatment of cardiogenic shock or liver failure as if the patient has shock due to dehydration is very dangerous and the treatment itself may then lead to death. On the other hand, failure to treat dehydration because the clinician thinks that the shock is due to some other cause also leads to death.

7.1.3. Treatment

Whenever possible, a dehydrated patient with severe malnutrition should be re-hydrated orally. Intra-venous infusions are dangerous and not recommended unless there is a) severe shock and b) diminution of consciousness from c) confirmed dehydration.

The management is based upon accurate measurements of weight - this is the best measurement of fluid balance. The weight should be taken on an infant scale or, for older children (more than 8 kg) on a hanging scale to which a basin is attached with ropes. The basin hangs close to the ground and is easily cleaned (see picture in annex 1). The patients should be weighed naked. Hanging pants, used for surveys should not be used to weigh sick children or those likely to soil the pants and pass infection to the next child.

BEFORE starting any rehydration treatment:

- 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;
- RECORD the pulse rate; and
- RECORD the capillary refill time (of the nail bed) in seconds.

In addition, the following can be recorded if the staff has the necessary skill

- RECORD the heart sounds (presence or absence of gallop rhythm).

The malnourished child is managed entirely by

- Weight changes; and
- Clinical signs of improvement such as alertness; and
- Clinical signs of over-hydration (engorged veins, rapid pulse, and respiratory distress).

FLUID BALANCE is measured at intervals by WEIGHING the patient.

- Give the re-hydration fluid “ReSoMal” until the weight deficit (measured or estimated) is corrected.
- Stop as soon as the child is “re-hydrated” to the target rehydrated-weight.
- Additional fluid is not given to the malnourished child with a normal circulatory volume to “prevent” recurrence of dehydration.
- Normally much less ReSoMal is sufficient to restore adequate hydration in malnourished than normally nourished children (e.g. a total of 50ml per kg body weight = 5% body weight). Therefore, 5% body weight of a 4kg child equals: $4000\text{g}/100 \times 5 = 200\text{g}$ which then equates to 200ml of re-hydration fluid.
- Start with 10ml/kg/h for the first two hours orally or by naso-gastric tube (2% body weight) and then adjust according to the weight changes observed. Weigh the child each hour and assess his/her liver size, respiration rate, capillary refill time, and pulse

After rehydration, no further treatment is usually given. The standard instructions to give 50-100ml for each stool should not be applied - it is dangerous. The objective is only to replace what is being lost and not to change the overall fluid balance of the patient.

Under no circumstances should further rehydration fluid be given with the sole purpose of “preventing” further dehydration or of “making sure” that sufficient has been given.

- Make a major reassessment at two hours

If there is continued weight loss then:

- Increase the rate of administration of ReSoMal by 10ml/kg/hour (to 20ml/kg/hr) and

- Formally reassess in one hour.

If there is no weight gain then:

- Increase the rate of administration of ReSoMal by 5ml/kg/hour (to 15ml/kg/hr) and
- Formally reassess in one hour.

If there is weight gain and:

- Deterioration of the child's condition with the re-hydration therapy,
 - o the diagnosis of dehydration was definitely **wrong**.
 - o Stop the rehabilitation therapy and start the child on F75 diet.
- No improvement in the mood and look of the child or reversal of the clinical signs,
 - o then the diagnosis of dehydration was probably wrong, therefore
 - o either change to F75 or alternate F75 and ReSoMal.
- Clinical improvement, but there are still signs of dehydration,
 - o continue cautiously with the treatment until the appropriate weight gain has been achieved and
 - o Either alternate F75 and ReSoMal or continue with ReSoMal alone.
- Resolution of the signs of dehydration,
 - o stop all re-hydration treatment and start the child on F75 diet.

Note: Do not give ReSoMal 10ml/kg/hr plus IV infusion 15ml/kg/hr.

Do not reconstitute ReSoMal use low osmolarity ORS instead

Target weight for rehydration with watery diarrhoea

1. If the child has been in under treatment for SAM and there is a pre-diarrhoeal weight that has been recorded before the diarrhoea starts and:
 - If there has been no weight loss with the diarrhoea, then the child is NOT dehydrated and no rehydration treatment should 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.
 - After admission diarrhoea is often "refeeding diarrhoea" (see section 7.15).
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 as all the clinical signs are unreliable. Because of the narrow therapeutic window and the danger of going from under-hydration to

over-hydration, the estimated weight deficit should be conservative. It is better and much less dangerous to slightly under-estimate the amount of weight deficit than to over-estimate the weight deficit in malnourished children.

- In practice, the weight loss is generally 1% to 3% of body weight in most children and in a few up to 5%.
- Do not attempt to increase body weight by more than 5% in conscious children.
- If there is weight gain of up to 5% of body weight with rehydration, the truly dehydrated child will show dramatic clinical improvement and should be out of immediate danger from death due to dehydration. Treatment can then be continued with F75 (see annex 10: table of 5% weight gain/5% weight loss).

During re-hydration breastfeeding should not be interrupted. Begin to give F75 as soon as possible, orally or by naso-gastric tube. ReSoMal and F75 can be given in alternate hours if there is still some dehydration and continuing diarrhoea. Introduction of F75 is usually achieved within 2-3 hours of starting re-hydration.

7.1.4. Treatment of shock from dehydration in the marasmic patient

Only IF there is definite dehydration (a history of fluid loss, a change in the appearance of the eyes) and the patient has several of the following:

- o Semi-conscious or unconscious and
- o Rapid weak pulse and
- o Cold hands & feet and
- o Poor capillary refill in the nailbeds

Then treat the patient with intravenous fluids.

The amounts given should be half that used in normally nourished children. Use one of the following solutions that are used in normally nourished children:

- o Half-strength Ringer-Lactate with 5% dextrose
- o Half-strength Saline with 5% dextrose
- Give 15 ml/kg IV over the first hour and then reassess the child
- If there is continued weight loss or the weight is stable, repeat the 15ml/kg IV over the next hour. Continue until there is weight gain with the infusion. (15mg/kg is 1.5% of body weight, so the expected weight gain after 2 hours is from 0% up to 3% of body weight.)
- 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 and the

pulse rate drops towards a normal level, then stop the drip and treat the child orally or by NG-Tube with 10ml/kg/hour of ReSoMal.

- Continue with the protocol (above) for re-hydration of the child orally. Continue to use weight change as the main indicator of progress.

NOTE: There should never be a drip present in a malnourished child who is able to drink or is absorbing fluid adequately from an NGT.

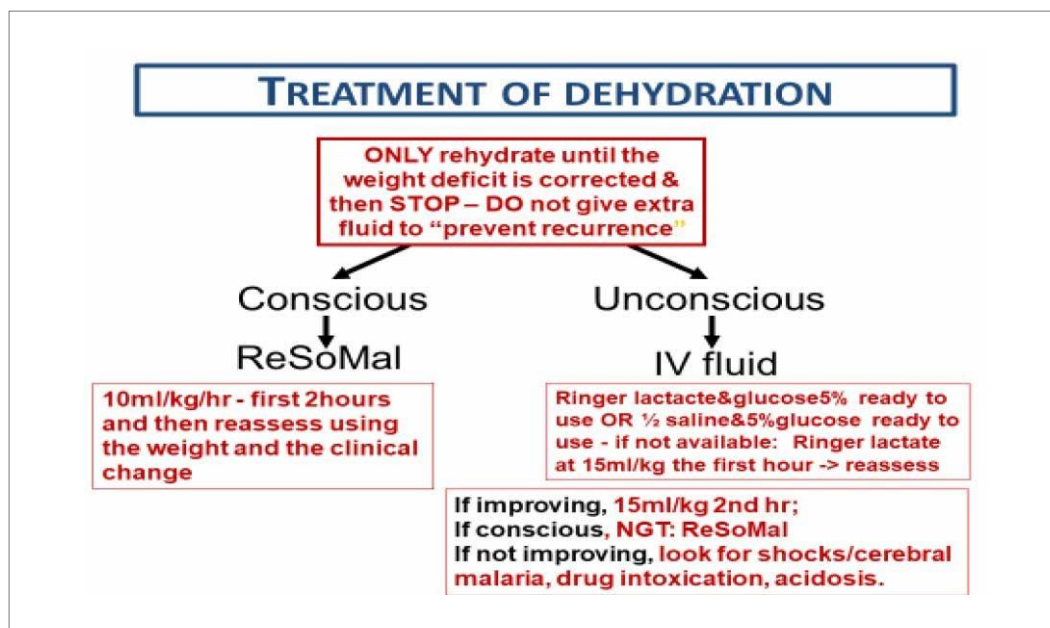
7.1.5. Monitoring of rehydration

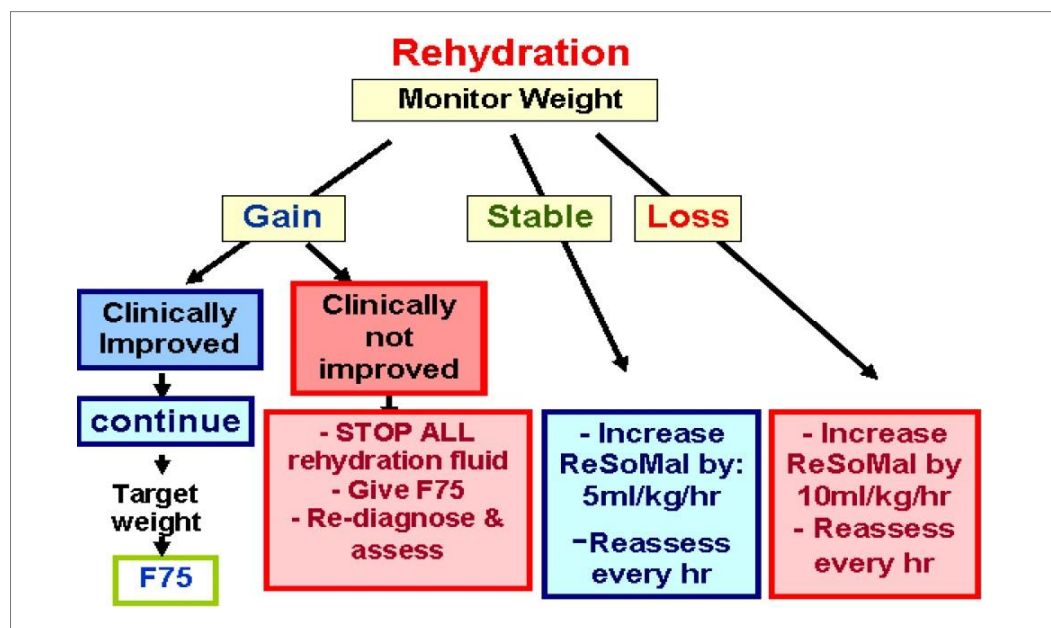
STOP all rehydration (oral or intravenous) therapy immediately if any of the following are observed:

- The target weight for rehydration has been achieved (go to F75)

- The visible veins become full (go to F75)
- The development of oedema (over-hydration - go 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*
- The development of tenderness over the liver*
- An increase in the respiration rate by 5 breaths per minute or more*
- The development of a “grunting” respiration (this is a noise on expiration NOT inspiration)*
- The development of râles or crepitations in the lungs*
- The development of a triple rhythm*

*If these signs develop, then the child has fluid overload, an over-expanded circulation, and is going into heart failure.





In the oedematous (kwashiorkor) patient:

ALL children with oedema have an increased total body water and sodium - they are over-hydrated. Oedematous patients CANNOT be “dehydrated” although they are frequently HYPOVOLÆMIC with the fluid in the “wrong place”. The hypovolemia (relatively low circulating blood volume) is due to a dilatation of the blood vessels and a low cardiac output.

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 30ml of ReSoMal per watery stool. This is not mandatory and the clinical state of the child after the oral ReSoMal should be carefully assessed.

The treatment of hypovolemia in kwashiorkor is the same as the treatment for septic shock

7.2. Persistent or chronic diarrhoea

Children with persistent or chronic diarrhoea (without an acute watery exacerbation) do not need acute rehydration therapy. They have adapted over the weeks to their altered hydration state and should not be rehydrated over a few hours. The appropriate treatment of persistent diarrhoea is nutritional;⁴⁸ it is most often due to nutrient deficiency and will resolve with F75 and suppression of small bowel bacterial overgrowth. Small bowel overgrowth is suppressed with most routine antibiotics used for severely malnourished children. If the diarrhoea persists, a course of metronidazole (10mg/kg/d) can be given (see annex 28).

7.3. Re-feeding diarrhoea after admission

The intestine of the malnourished child is atrophic and the capacity to absorb large amounts of carbohydrate is limited. There is also frequently pancreatic atrophy so that carbohydrate, fat, and protein digestion is compromised.

Diagnosis

- Increase in the stool output and loose stools when the diet is changed/increased
- No weight loss: the child is not dehydrated

Treatment

When the child starts on F75 there is often an increase in the stool output and it becomes less formed. There is not usually a loss of weight so that the child is not dehydrated and treatment should continue.

- Do NOT give ReSoMal for simple “re-feeding diarrhoea” without weight loss.

Usually, the diarrhoea can be ignored, as the Amoxicillin suppresses the small bowel overgrowth and the intestine repairs with the improved nutrition in F75 such that mild osmotic diarrhoea subsides after a few days.

Re-feeding diarrhoea appears to be more common in children with oedematous malnutrition. There are some (inappropriate) recipes for F75 that contain only dried skim milk, oil, Complex of Minerals Vitamins mix (CMV), and sugar. The high sugar content makes the diet made from these recipes hyperosmolar and the excess sugar can

48 Check for mucus and blood in the stool, amoebiasis, and shigella dysentery.

then cause osmotic diarrhoea. Often, the staff incorrectly treats this osmotic diarrhoea with ReSoMal, whereas the correct treatment is to change the diet.

Commercial F75 has much of the sugar replaced by dextrin-maltose so that it is much less likely to cause osmotic diarrhoea.

If F75 is to be prepared in the facility,

- then use the recipes containing starch (particularly rice starch) and, if possible, add some germinated grain flour to add amylase which reduces the viscosity.

If this does not suffice or there is weight loss,

- then divide the diet into many feeds (ie: splitting the meal into several meals tailored to the patient's appetite), each smaller so that they do not overwhelm the limited capacity for digestion and absorption.

For a few children this is insufficient as the intestine or pancreas is sufficiently damaged that even small amounts of F75 can provoke osmotic diarrhoea initially.

- Change the diet to one where the F75 is based upon yoghurt instead of unfermented milk.⁴⁹

7.4. Hypernatraemic Dehydration

Hypernatraemic dehydration is common in areas with a very dry atmosphere (deserts) particularly if there is also a high temperature.

It is most likely to occur in children that have been carried for long distances to the SC/OTP in the sun, without the mother stopping to rest or give the child something to drink. It is important that those arriving at clinics, OTP etc. are given water/sugared-water to drink on arrival and not kept without shade waiting to be seen. It also occurs when the feeds are over-concentrated.

Although hypernatraemia is difficult to treat safely, it is easy to prevent. Malnourished children, particularly those in dry and hot environments, should be given continuous access to sufficient plain water.

NOTE: in desert areas where the humidity is very low and the day-time temperature is very high ALL the children *must be offered water to drink at frequent intervals. If F100 is used in the transition phase and recovery phase, then it should be further diluted and the intake table adjusted for the additional volume required to be given at each feed.*

7.4.1. Diagnosis

- The first sign to appear is a change in the texture and feel of the skin.

- o The skin develops plasticity similar to the feel of dough (flour and water mixed for bread making).
- The eyes can sink somewhat.
- The abdomen frequently then becomes flat and may progress to become progressively sunken and wrinkled (so called "scaphoid abdomen" or "prune belly").
- The child may develop fever.
- The child becomes progressively drowsy and then unconscious.
- Convulsions follow and if treatment for hypernatremia is not instituted this leads to death. The convulsions are not responsive to the normal anti-convulsants (phenobarbitone, diazepam etc.).
 - o Failure to control convulsions with anti-convulsants may be the first indication of the underlying diagnosis of hypernatremia.

The diagnosis can be confirmed by finding an elevated serum sodium. Normally hypernatremia is diagnosed when the serum sodium is more than 150mmol/L.

7.4.2. Treatment

For insipient hypernatraemic dehydration - that is a conscious, alert child whose is only showing changes in the texture and feel of the skin:

- Breastfeed the child or give breast milk. This can be supplemented with up to about 10ml/kg/h of 10% sugared-water in sips (little by little) over several hours until the thirst of the child is satisfied. At this early stage treatment is relatively safe.
- Give water - but the child should not drink large amounts rapidly. Take several hours to correct the mild hypernatraemic dehydration.

For developed hypernatraemic dehydration, treatment must be slow.

If it is possible, measure serum sodium.

- then the aim is to reduce the serum sodium concentration by about 12mmol/24h. **To correct the hypernatraemia more quickly than this risks death from cerebral oedema.**

If it is not possible to measure the serum sodium

- then aim to take at least 48h to correct hypernatraemic dehydration. The treatment should start slowly and as the serum sodium approaches normality, the rate of repletion can be increased.

The text-book treatment of hypernatraemia is to give normal saline - slowly, either orally or intravenously. Sodium intake in the severely malnourished child should

⁴⁹ Add pancreatic enzymes directly to the feed just before it is given. These are available commercially and are normally used to manage cystic fibrosis of the pancreas (mucoviscidosis) or ferment the F75.

be restricted so that this treatment is NOT used in SAM.

Progress is assessed by serial weighting of the child.

- **First**, put the child in a relatively humid, thermos-neutral (28° to 32° C) environment (mist or spray water into the air in desert areas) - this is the most important step and must not be omitted.
- Weigh the child on an accurate balance and record the weight.

The objective of treatment is to put the child into positive water balance of about 60ml/kg/d over the course of treatment (assessed by weight gain) which is equivalent to 2.5ml/kg/h 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,

- Then, put down an NGT and start 2.5ml/kg/h of 10% sugar-water or breast milk. Do not give F75 at this stage. Never give F100 or infant formula. Expressed breast milk is the best “rehydrating” fluid available.
- Reweigh the child every 2 hours.
 - o If the weight is static or there is continuing weight loss, recheck the immediate environment to try to prevent on-going water losses. Then, increase the amount of sugar-water intake to compensate for the on-going weight loss (calculated as g/h and increase the intake by this amount).
 - o If the weight is increasing continue treatment until the child is awake and alert.

If there is accompanying diarrhoea,

- then give one fifth normal saline in 5% dextrose orally or by NG-tube.

If the child is unconscious,

- then the same volumes of fluid (5% dextrose if there is no diarrhoea and one fifth normal saline in 5% dextrose if there is diarrhoea) can be given by intravenous infusion. There should be a peristaltic pump or accurate paediatric burette in order to ensure that the rate of administration of fluid is not exceeded during treatment.

When the child is awake and alert and the skin quality returns to normal (or the serum sodium is normal if there are facilities to measure sodium),

- then recommence feeding with F75.

7.5. Septic (OR Toxic) Shock

Septic shock presents with some of the signs of true dehydration but also of cardiogenic shock and frequently of liver dysfunction. The differential diagnosis is often very difficult.

Children that appear “very ill” may have septic shock, ordinary dehydration, hypernatraemic dehydration, cardiogenic shock, liver failure, or toxic shock from poisoning with traditional medicines or overdose of therapeutic drugs, aspirin poisoning, 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.

7.5.1. Shock developing after admission

Children with septic shock normally present with very severe illness. If the condition develops **after** admission then it is more likely to be cardiogenic shock or an adverse reaction to the treatment that is being given.

If the child deteriorates **after** admission to the in-patient facility, then:

- Review the treatment given to the child to determine if the treatment is the cause of the clinical deterioration.
- Review the fluid (sodium) intake, particularly any treatment given in the emergency ward during admission (if this is excessive treat for cardiogenic shock/heart failure).⁵⁰
- Examine the daily weight changes as this may indicate cardiogenic shock. Do not diagnose septic shock in a very ill child if there has been weight gained during the preceding 24h. Treat for heart failure.
- Stop any drugs being given that are not included in the protocol.
- Check the dose of drugs given to ensure that they have been adjusted for the malnourished state.

7.5.2. Diagnosis of septic shock

To make a diagnosis of developed septic shock requires the signs of hypovolemic shock to be present:

- A fast, weak pulse with
- Cold peripheries
- Slow capillary refill in the nail beds (more than 3 seconds)
- Disturbed consciousness
- **Absence of signs of heart failure**

7.5.3. Treatment of septic shock

To all patients with septic shock,

1. Give broad-spectrum antibiotics (for doses see annex 28)

Cefotaxime by SLOW IV injection once per day (100mg/kg/d on the first day, followed by 50mg/kg/d on subsequent days)

AND ADD

Ciprofloxacin orally 30mg/kg/d in 3 doses (or Gentamicin 5

mg/kg/day once daily injection IM

AND

Metronidazole 10 mg/kg/d orally or rectally

Do not start metronidazole at the beginning of the treatment of the septic shock; if the patient continues to deteriorate, then you can add metronidazole.

If there are extensive open skin lesions or signs suggestive of pulmonary abscesses, add Cloxacillin IV: Children: 100-200 mg/kg/d divided into 3 injections, one every 8 hours

If there is no improvement in 24h, then

- Add Fluconazole: orally 3mg/kg/d once daily

In areas of high HIV prevalence, where there is oral candidiasis or where the prevalence of candidiasis is >20%, add fluconazole at the start of treatment for all very ill children.

- Keep warm to prevent or treat hypothermia.
- Give sugar-water by mouth or NGT as soon as the diagnosis is made to prevent hypoglycaemia.
- Physically disturb the patient as little as possible (no washing, excess examination, investigations in other departments, etc.).
- Do not transport to another facility unless there are proper facilities to safely transport the patient.

For Incipient septic shock:

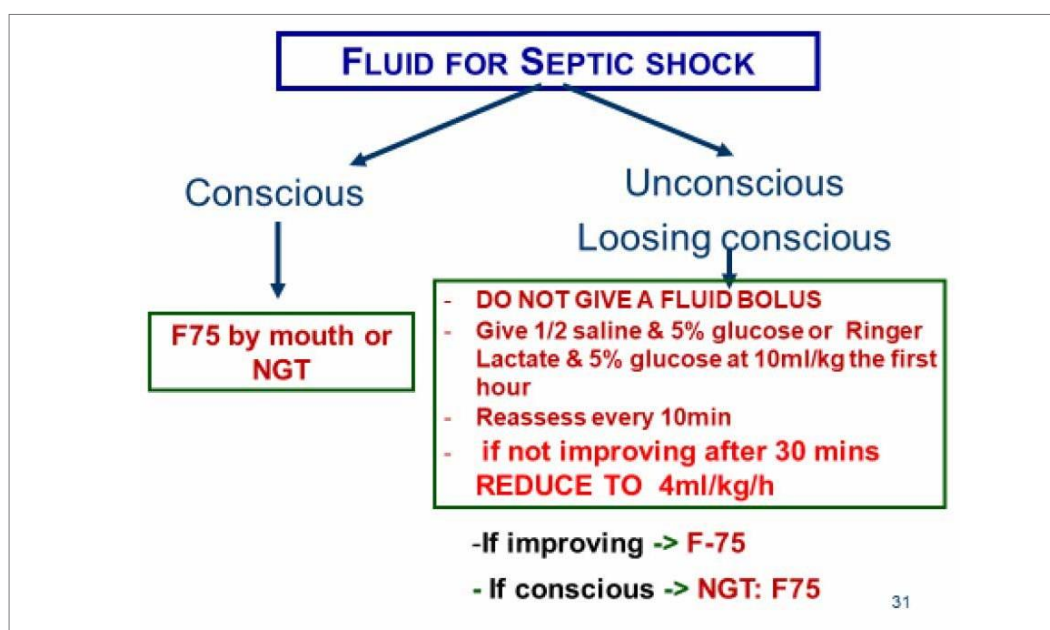
Give the standard F75 diet by NGT, if gastric residues are aspirated from the NG-tube, start with half the recommended quantity of F75 until there are no gastric aspirates.

For Developed septic shock: If the patient is semi-conscious or unconscious because of poor brain perfusion,

- then a **slow** IV infusion of one of the following can be given (do not give if there is a possibility of cardiogenic shock):
 - o Whole blood of 10ml/kg over at least 3 hours - nothing should be given orally during the blood transfusion or for 3 hours after the transfusion.
 - o Or 10ml/kg/h for 2 hours of one of the following:
 - Ringer's lactate solution with 5% glucose or Half-normal (0.45%) saline with 5% glucose
- Monitor every 10 minutes for signs of deterioration, especially over-hydration and heart failure.
 - o Increasing respiratory rate,
 - o Development of grunting respiration,
 - o Increasing liver size,
 - o Vein engorgement.

As soon as the patient improves (stronger radial pulse, regain of consciousness)

- **Stop** all IV intakes - continue with F75 diet by NG-tube.



7.6. Absent Bowel Sounds, Gastric Dilatation, and Intestinal Splash With Abdominal Distension

There is a functional ileus with bacterial overgrowth similar to that with intestinal obstruction. In this situation there has normally been gram-negative bacterial translocation across the intestine with septicaemia. The stomach is not emptying, there is no peristalsis, and fluid is gathering in the intestinal lumen. These are very grave signs. It is often accompanied by severe liver dysfunction and resembles the “grey baby syndrome” associated with Chloramphenicol intoxication. When the condition develops after admission, all drugs that have already been given during development of this situation and are potentially hepatotoxic must be stopped. Apart from drug toxicity, it is possible that some patients develop this syndrome from “super-infection” by emergence of organisms resistant to the antibiotic regime being used or to “bush medicines” given by traditional practitioners. Nothing will be absorbed orally as the stomach is not emptying.

- Warn the mother that the prognosis is not good.

The following measures should be taken:

- Give antibiotics intravenously as outlined for developed septic shock.
- STOP all other drugs that may be causing toxicity (including anti-retroviral).
- Give an IM injection of magnesium sulphate (2ml of 50% solution) and repeat twice daily until stool is passed and gastric aspirations drop.
- Pass an NGT and aspirate the contents of the stomach, then “irrigate” the stomach with isotonic clear fluid (5% dextrose or 10% sucrose - the solution does not need to be sterile). Do this by introducing 50ml 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% sucrose solution) into the stomach and leave it there for one hour. Then aspirate the stomach and measure the volume that is retrieved. If the volume is less than the amount that was introduced then return the aspirate to the stomach⁵¹ and make up the volume to 5ml/kg with more sugar-water.
- There is frequently gastric and oesophageal candidiasis, put oral nystatin suspension, or fluconazole down the NGT.
- Keep the child warm.
- Give intravenous glucose. These children are usually unconsciousness, semiconscious, or delirious (see

section on hypoglycaemia).

- Do not put up a drip at this stage but monitor the child carefully for 6 hours, without giving any other treatment.
- Use the critical care form.
- Monitor continuously to see if there is any improvement:
 - o First, by a change in intestinal function - decrease in the distension of the abdomen, visible peristalsis seen through the abdominal wall, return of bowel sounds, decreasing size of gastric aspirates
 - o Second, by improvement in the general condition of the child

If there is intestinal improvement,

- then start to give small amounts of F75 by NG tube (half the quantities given in the F75 - table). Aspirate the stomach before each feed.
 - o If the volume of residual feed remaining is large, then decrease the amount of F75.
 - o If the amount of aspirate is small then the amount can be gradually increased.

If there is no improvement after 6 hours then:

- Consider putting up an IV drip. It is very important that the fluid given contains adequate amounts of potassium. Sterile Potassium Chloride (20mmol/l) should be added to all solutions that do not contain potassium. If it is available use one-fifth normal saline in 5% dextrose, otherwise use Ringer-Lactate in 5% dextrose or half-strength saline in 5% dextrose. **The drip should be run VERY SLOWLY - the amount of fluid that is given should be NO MORE THAN 2 to 4 ml/kg/h** (a paediatric burette or peristaltic pump should be used).
- When the gastric aspirates decrease so that one half of the fluid given to the stomach is absorbed, discontinue the IV treatment and continue with oral treatment only.

7.7. Heart Failure

7.7.1. Signs and symptoms

Heart failure should be diagnosed when there is:

- Physical deterioration with a gain in weight
 - o This is the most common way of making the diagnosis and does not require any equipment or particular clinical skill.
- An increase in respiration rate with weight gain
 - o an acute increase in respiration rate of more than 5 breaths per minute (particularly during rehydration

⁵¹ Discarding the aspirate can lead to alkalosis and electrolyte disequilibrium. However, if there is any gastric bleeding (coffee grounds) the aspirate should always be discarded.

treatment)

- o > 50 breaths/minute in infants and
- o > 40 in children 1-5 years,
- A sudden increase in liver size (this is why the liver is marked before starting any infusion).
- Tenderness developing over the liver.
- 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 (difficult to assess in practice).
- An acute fall in haemoglobin concentration or haematocrit (needs laboratory, but measures quite accurately the degree of expansion of the intravascular volume).

As the heart failure progresses 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 cardiogenic shock, it usually occurs in the severely malnourished patient after treatment has started.

The cause is an excessive intake of sodium either from the diet, from rehydration fluids, or from drugs. Even with sodium restriction there may still be heart failure due to the residual sodium in the diet and the amount of sodium that comes out of the cells as the cells recover. Excess sodium given in an emergency department or during the initial treatment of dehydration at admission can give rise to heart failure several days later as the sodium inside the cells enters the vascular space.

There is usually also weight gain. As heart failure usually starts after (and is due to) treatment, there is nearly always a record of the weight of the patient that was taken before the onset of heart failure.

7.7.2. Differential diagnosis

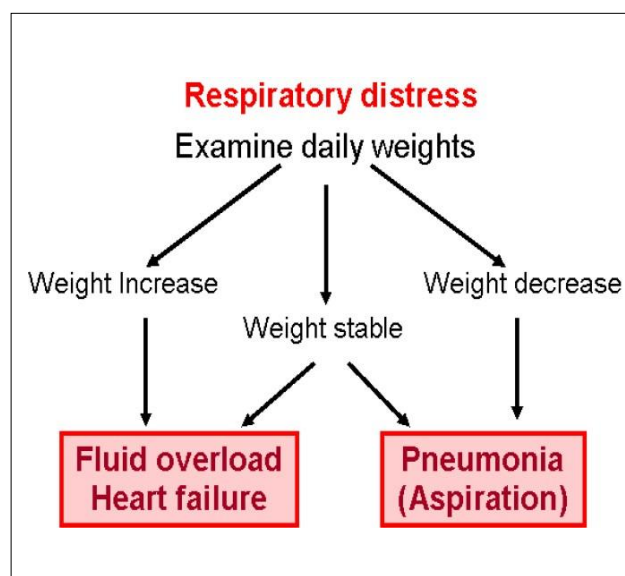
Heart failure and pneumonia are clinically similar and very difficult to distinguish.

- o If there is an increased respiratory rate AND any gain in weight, then heart failure should be the first diagnosis.
- o If there is an increased respiratory rate with a loss of weight, then pneumonia can be diagnosed.
- o If there is no change in weight (fluid balance), then the differentiation has to be made using the other signs of heart failure.
- o 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.

7.7.3. Treatment

As oedema fluid is mobilised (kwashiorkor) and the sodium is coming out of the cells (both kwashiorkor and marasmus), the plasma volume expands but the volume of red cells remains constant so that there is a FALL IN HÆMOGLOBIN concentration. This DILUTIONAL anaemia happens to some extent in nearly all children as they recover. A substantial fall in haemoglobin, as a sign of an expanding circulation, is also a sign of impending or actual volume overload with heart failure. These children should never be transfused. The heart failure is **not caused by the anaemia** - the increasing anaemia is a sign of the expanding blood volume causing the heart failure. This is a common error. Children with respiratory distress and anaemia should not be transfused.



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 even if this takes 24-48 hours. Small amounts of sugar-water can be given orally to prevent hypoglycaemia.
- Review drug regimen and reduce dose or stop those which are given as the sodium salt (see annex 28 for details of drugs that contain sodium).
- Give frusemide (1mg/kg) (generally it is not very effective and diuretic treatment should not be relied upon in the malnourished patient to manage heart failure).

7.8. Hypothermia

Severely malnourished patients are highly susceptible to hypothermia (rectal temperature below 35.5°C or underarm temperature below 35°C).

7.8.1. Prevention

- Keep the room warm, especially at night (the thermo-neutral temperature for malnourished is from 28°C and 32°C).
- Keep windows and doors closed at night.
- Monitor the temperature with a maximum-minimum thermometer on the wall.
- Use adult beds so the children sleep with their mothers. There should be adequate blankets.

7.8.2. Treatment

- Do not wash severely ill children!
- Use the “kangaroo technique”. The child is placed on the chest of the mother skin-to-skin and the mother’s clothes wrapped around the child.
- Put a hat on the child.

Kangaroo Care

Kangaroo care means keeping an infant in continuous skin-to-skin contact with the mother or adult caregiver. The infant is kept near the mother’s breast.

1. The mother removes inner clothing
2. The infant only wears a nappy and head covering
3. The infant is held close against the mother’s bare chest by wrapping a cloth around them
4. The mother wears enough outer clothing to keep warm, adjusting so that the infant’s face is exposed to the air and the mother can see the infant.

- Give hot drinks to the mother so her skin gets warmer (plain water, tea, or any other hot drink).
- Monitor body temperature during re-warming (every 30 minutes).
- Treat for hypoglycaemia and give second-line antibiotic treatment.

7.9. Fever

Severely malnourished children do not respond to antipyretics. Because they fail to work, caretakers and staff often repeat the dosage inappropriately, frequently leading to toxicity. Antipyretics are much more likely to be toxic in the malnourished than a normal child.

- Do not give aspirin or paracetamol to SAM children in SC.

For moderate fevers, up to 38.5°C rectal,

- Do not treat moderate fevers (up to 38.5°C rectal or 38.0°C underarm).
- Maintain routine treatment.
- Remove blankets, hat, and most clothes and keep in the shade in a well-ventilated area.
- Give water to drink.
- Check for malarial parasites and examine for infection.

Fevers of over 39°C rectal or 38.5°C underarm, where there is the possibility of hyperpyrexia developing,

In addition to the above, also:

- Place a damp/wet room-temperature cloth over the child’s scalp and re-dampen the cloth whenever it is dry.
- Monitor the rate of fall of body temperature.
- Give the child abundant water to drink.
- If the temperature does not decline, the damp/wet cloth can be extended to cover a larger area of the body.
- When the temperature falls below 38°C rectal, stop active cooling. There is a danger of inducing hypothermia with aggressive cooling.

7.10. Severe Anaemia

7.10.1. Diagnosis

Measure the haemoglobin on admission in any patient that is clinically anaemic⁵².

7.10.2. Treatment

If the haemoglobin is above 4g/100ml or the packed cell volume is above 12% OR if the patient has started treatment with F75 for more than 48 hours (preferably 24 hours) and less than 14 days,

⁵² Discarding the aspirate can lead to alkalosis and electrolyte disequilibrium. However, if there is any gastric bleeding (coffee grounds) the aspirate should always be discarded. “danger” period of electrolyte disequilibrium (day 2 to 14). << INCOMPLETE SENTENCE

- Then do NOT give any treatment, apart from a dose of folic acid on admission.

If the haemoglobin concentration is less than 4g/100ml or the packed-cell volume is less than 12% in the first 24 hours after admission, the patient has very severe anaemia that should be treated.

- Give 10ml per kg body weight of packed red cells or whole blood slowly over 3 hours.
- Fast the patient during, and for at least 3 hours after, a blood transfusion.
- Do not transfuse a patient between 48h after the start of treatment with F75 and 14 days later.
- Do not give iron during the acute-phase of treatment.
- If the facilities and expertise exist (neonatal units), it is preferable to give an exchange transfusion to severely malnourished patients with severe anaemia (refer neonatal protocols).

If a transfusion is necessary during the “danger” period of 48h to 14d after starting dietary treatment or if there is heart failure with very severe anaemia, then the patient cannot be given a straight transfusion and needs an exchange transfusion. If the expertise does not exist locally, then transfer the patient to a centre where there are the facilities and skill to do an exchange transfusion (neonatal unit).

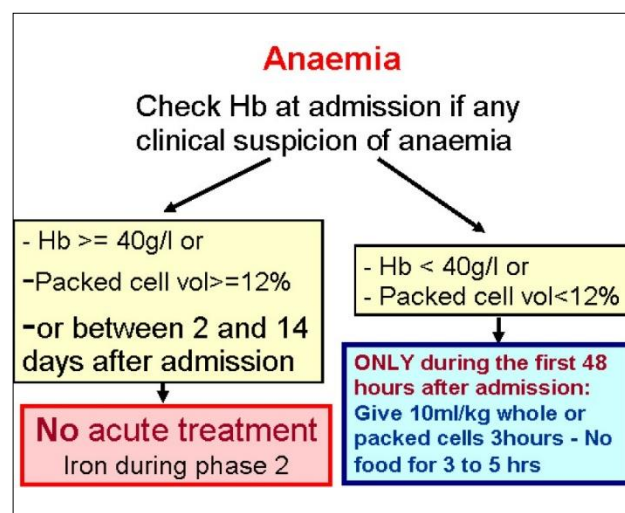
Heart failure due to anaemia is clinically different from “normal” heart failure. When the failure is due to anaemia alone, there is “high output” failure with an over-active circulation, easily felt pulse and heartbeat, and warm peripheries.

Anaemia, or a falling haemoglobin, and respiratory distress is a sign of fluid overload and an expanding plasma volume. The heart failure is not being “caused” by the anaemia, rather the apparent anaemia is “dilutional” and is caused by the fluid overload. Do not give a straight transfusion of blood or even packed cells to these patients

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⁵³ Some guidelines advocate transfusion of children with a haemoglobin higher than 4 if there is respiratory distress. This advice should not be followed: it is very dangerous in the severely malnourished patient as the respiratory distress is usually due to heart failure in this situation.

7.11. Hypoglycaemia

7.11.1. Prevention of hypoglycaemia

Severely malnourished patients can develop hypoglycaemia but this is uncommon.

- Give sugar-water to all children that have travelled for long distances as soon as they arrive at the centre. As it is normally unknown when a new admission last had food all new arrivals should be given sugar-water routinely while they are waiting to be measured and assessed.
- Give extra sugar to all children who get hypothermia or have septic shock, whether or not they have low blood glucose.
- The children who develop hypoglycaemia are those that have not taken food (carbohydrate) for at least 12 hours. Any child that has not taken food during the day needs at least one feed during the night. A child who has taken all the diet during the day will not develop hypoglycaemia overnight and does not need to be woken for night-time feeding because of the danger of hypoglycaemia.

7.11.2. Clinical signs

There are often no signs at all of hypoglycaemia. Most hypoglycaemic malnourished children do not sweat, have raised hair on their arms, or go pale. They simply become less responsive and slip into coma and often present with hypothermia. Their blood sugar $< 54\text{mg/dl}$ ($< 3\text{mmol/l}$).

One sign of the overactive sympathetic nervous system which starts before actual hypoglycaemia develops and is seen in the malnourished child, is eye-lid retraction. If a patient sleeps with his/her eyes slightly open, then s/he should be woken up and given sugar-water or F75 to drink. The mothers and staff should be taught to look for this sign during the night.

7.11.3. Treatment

- For Patients who are conscious and able to drink, give about 50 ml (approximately 5 to 10ml/kg) of sugar-water (about 10% ordinary sugar in water), or F75 by mouth. The actual amount given is not critical.
- For Patients losing consciousness, give 50 ml of sugar-water by NGT immediately. When consciousness is regained, give F75 feeds frequently.
- For semi-conscious and unconscious patients, give sugar-water by NGT immediately. They should then be given glucose as a single intravenous injection (approximately 5ml/kg of a sterile 10% glucose solution).
- Treat all malnourished patients with hypoglycaemia 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 it is urgent that another cause for the clinical condition is considered, found, and treated (e.g. cerebral malaria, meningitis, hypoxia, hypernatraemia, shock, etc.)

*Preparation of sugar water (10% dilution):

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

Notes:

- Use safe drinking water (slightly warm if possible to help dilution). Add required amount of sugar and shake or stir vigorously.
- Give immediately to all admissions if F75 cannot be given immediately

7.12. Skin lesions

7.12.1. Kwashiorkor dermatosis⁵⁴

In kwashiorkor there are often open skin lesions where the epidermis has stripped away to leave raw weeping wounds that resemble burns. The lesions can be treated in the same way as burns. Serum may be lost through the lesions. There is also an increased loss of heat by evaporation and hypothermia is common and must be prevented. The lesions usually become overgrown with bacteria and *Candida* under usual SC conditions. Normally these patients have not had an inflammatory reaction, pus formation, or fever due to their deficient inflammatory and immune function. An inflammatory reaction can occur during treatment as the nutritional status of the patient improves.

Treatment

- Put the patient onto second or third line systemic antibiotics, including fluconazole.
- Monitor body temperature; do not wash the child unless the environmental temperature is high.
- If possible, expose the lesions directly to the atmosphere during the heat of the day so that they dry (form a crust). Do not cover with occlusive dressings.
- If available dress with Silver Sulfadiazine impregnated tulle or cream (1%) once per day. If unavailable, dress with Zinc Oxide ointment (10%).
- At night and in cold conditions, dress with sterile paraffin gauze (preferably).
- Gently massage oil (e.g. mustard or soya oil) into the areas of unaffected skin to prevent further breakdown of the skin.
- If the patient has candidiasis, apply miconazole cream to the skin lesions until they are dry.

7.12.2. Perineal excoriation

This is normally a chemical dermatitis caused by bacterial decomposition of urine to ammonia. It is very common where plastic pants or bags are used by the mother to cover the perineal area to prevent soiling of her clothes, sheets, etc. With exposure to the atmosphere the child's bottom will dry and bacteria and yeasts will not flourish - they thrive in warm damp conditions such as under plastic

or occlusive dressings. Any ammonia generated will escape to the atmosphere and the mother can observe when the child is dirty and needs to be cleaned.

Prevention

- Ban the use of plastic pants/ polythene etc. to cover the child's bottom.
- Get the mothers to make or give them waterproof aprons to wear to protect their clothing when they are feeding/ nursing/ changing/ playing with the child.
- Leave young children naked as much as possible during the day.
- Regularly massage all the children's skin with oil (use whatever local custom dictates - mustard oil appears to be particularly effective).
- About 20 minutes after finishing a feed, put all the children onto the potty; the mother can support the child on her feet, facing her legs⁵⁵.

Treatment

- The most important measure is to wash and then expose the child's bottom to the atmosphere.
- If severe, it can be treated in the same way as kwashiorkor dermatosis.
- Otherwise, continue with second-line antibiotics, give nystatin orally.
- Apply miconazole⁵⁶ nitrate cream/ ointment until the lesions are dry.

7.12.3. Scabies/lice

Scabies is particularly common in warm wet areas where people sleep together. The mites are mostly found between the fingers and toes, the wrist, axilla, and groins. In SAM and immuno-compromised patients, they can spread to most of the body surface and become encrusted (so called "Norwegian scabies").

Treatment

- Apply permethrin⁵⁷ cream (5%) or lotion (1%) over the whole body and wash with soap after at least 12 hours. Ensure that the web spaces of the fingers and toes, wrists, axillae, groins, perineum, and buttocks are covered.
- Do not apply to mucus membranes or ulcerated skin.

⁵⁴ Some protocols recommend bathing/soaking in potassium permanganate solution. Potassium permanganate is a very strong oxidising agent that acts as an astringent (a substance that coagulates serum/blood/tissue proteins and stops bleeding that is mildly antiseptic because it also destroys bacterial and viral proteins) and after an application the raw skin dries quickly and the pink solution turns brown and stains the skin. It is poisonous if ingested and caustic if insufficiently diluted. It is not recommended because a) the danger of insufficient dilution and b) these children have deficient anti-oxidant defences. If used the solution should be very faint pink and not stronger. Other astringents include aluminium salts and silver nitrate. Burrow's solution (aluminium acetate) is a non-toxic astringent used to treat otitis externa (discharging ear). It has not been tested in kwashiorkor dermatosis, but would be a much safer alternative astringent to potassium permanganate. " < < is this a quotation? If yes, from where?

⁵⁵ There is physiologically a gastro-colic reflex - the hormones released during feeding encourage the bowels and bladder to evacuate. This should be used to regularly put the children onto the potty/ toilet after they have finished eating. Not only does this prevent perineal lesions, but also is important for the hygiene of the IPF (the children's faecal "accidents" are probably the source of much cross-infection).

⁵⁶ Miconazole can be used on mucus membranes and orally as a gel to treat oral candidiasis as well as perineal and genital candidiasis.

⁵⁷ This is the same product that is used to impregnate bed nets and has less toxicity than most other products. Although Benzyl benzoate is cheaper, it is less effective and leads to excoriation of the skin of malnourished patients and should be avoided unless there is no alternative.

- If the patient washes within 8 hours, then repeat the application and leave on for 12 hours.
- Treat anyone who sleeps with or has “close sweaty contact” with the patient at the same time.
- For head or body lice apply permethrin lotion to the infested hair - in children this is usually confined to the head, in adults the pubic area and axillae can also be infected.
- Change and boil all clothes and bedclothes.

7.12.4. Fungal infections or the skin

Ringworm, intertrigo (fungal infections of groins, axillae, and other “sweaty places”), athlete’s foot, and other local skin infections are common in many areas.

- Local fungal infections of the skin or nails are all treated with miconazole nitrate cream/ointment (2%).
- Apply cream directly to the lesions twice daily.
- Continue for at least 10 days after the lesion has resolved.

7.12.5. Impetigo (Bacterial skin infections)

Impetigo starts as small spots that quickly burst to appear as irregular yellow/honey coloured crusts that form from dried serum. It is common on the face around the mouth, nose, cheeks, arms, and legs. A second form presents as large painless fluid filled blisters (bullous impetigo) normally on the abdomen or limbs. It is caused by *Staphylococcus aureus* (and occasionally by *Streptococcus pyogenes*, group A). Areas of the skin that have been injured by insect bites and scrapes or where there is already skin damage (e.g. angular stomatitis, scabies) are particularly susceptible. Scratching mosquito bites is a common portal of entry. Initially, the lesions are superficial. The lesions are highly contagious for about 48 hrs after starting effective antibiotic treatment. Well-nourished patients can be treated topically with antibiotic ointments (fusidic acid or mupirocin ointments are equally effective). This is inadequate for the severely malnourished (and other causes of immuno-incompetence) and treatment requires systemic antibiotics.

Prevention

Prevention is related to hygiene. Wash frequently with soap and warm water and dry carefully. Do not share washcloths, towels, etc. Cut fingernails short with good quality scissors (most families do not have scissors and their children’s nails are long and dirty or, in older children, bitten and sharp and when they scratch mosquito bites they inoculate the dirt/organisms into their own skin).

Treatment

- Wash the area with warm soapy water or a mixture of vinegar and warm water. Dry carefully and cover the lesions, if this is possible, to prevent spread of the infection.
- If there are any microbiological facilities, take a swab for culture and sensitivity otherwise immediately start the patient on oral cloxacillin (see annex 28).
- If the lesions do not respond within 48 hr or continue to spread, change medication to erythromycin, clindamycin, or cefotaxime treatment.

7.12.6. Cancrum oris (Noma, gangrenous stomatitis)

This condition is not common and affects the most seriously deficient children. At the beginning it is easily confused with impetigo as it commonly begins as a small ulcer on the facial skin (or buccal mucosa). But it rapidly enlarges, deepens, and spreads to the lip and cheeks and progresses to a necrotic, foul-smelling deep penetrating ulcer. It may penetrate into the oral cavity and expose the jaw bone and teeth. It can follow measles or herpes infection. The primary cause is probably a synergistic infection with anaerobes and aerobes (e.g. haemolytic streptococcus, enterobacter, klebsiella, staphylococcus, candida, etc.).

Treatment

- Clean the lesions and attend to oral hygiene.
- Give a full course of second line antibiotics. If available give clindamycin (3-10 mg/kg four times daily. If body weight is under 10 kg, minimum dose 37.5 mg x 3 daily, maximum dose 450 mg x 4 daily).
- Add metronidazole 10mg/kg/d.
- Surgery should not be attempted until after full nutritional recovery.

7.13. Other conditions

Children with many other underlying illnesses can first present with severe malnutrition. Initially, they should all be treated according to the standard protocol for severe malnutrition.

Those that fail to respond to this treatment need further investigation for an underlying condition (see failure to respond to treatment). For HIV/AIDS, see separate section.

7.14. Drugs

Great care should be exercised in prescribing all drugs to severely malnourished patients. For most drugs, the

doses recommended for normal children is either toxic or ineffective in the malnourished child. Drugs which affect the central nervous system such as anti-emetics and those where the side effects include adverse effects on the liver, pancreas, kidney, heart, circulation, or intestine and those which cause loss of appetite should not be used, or only used under very special circumstances.

It is advised that:

- o For other conditions that are not rapidly fatal (e.g. HIV), the malnutrition is treated for at least one week (whilst the nutritional treatment returns the metabolism of the patient towards normal) before standard doses of drugs are given.
- o Many drugs should be avoided altogether until there is research to show that they are safe and how the dosage should be adjusted for the malnourished state. Common drugs such as paracetamol do not work in most malnourished children during the acute phase and can cause serious hepatic damage.
- o When it is absolutely necessary to give drugs that have not been adequately tested in SAM patients, the dose should be initially reduced.
- o Drugs can usually be given in standard doses to patients that are in the later stages of treatment in OTP or have lesser degrees of malnutrition.

7.15. Refeeding syndrome

“Refeeding syndrome” refers to malnourished patients (and those who have been fasting for more than one week⁵⁸) who develop any of the following shortly after they have a rapid, large increase in their food intake: acute weakness, “floppiness”, lethargy, delirium, neurological symptoms, acidosis, muscle necrosis, liver and pancreatic failure, cardiac failure, or sudden unexpected death. The syndrome is due to rapid consumption of key nutrients for metabolism particularly if the diet is unbalanced. There is frequently a large reduction in plasma phosphorus, potassium, and magnesium.

Other separate problems during early refeeding include refeeding-œdema and refeeding-diarrhoea (see separate section).

Prevention

It is necessary at the start of treatment not to have a sudden jump in the adapted malnourished state to a very high intake. On admission, malnourished patients should never be force-fed amounts of diet in excess of those prescribed in the protocol and particular care needs to be taken with those who are being fed by NG Tube.

Prevention of refeeding syndrome is the purpose of the transition phase of treatment. In the OTP protocol, very large amounts of RUTF are sometimes given at the start of treatment. If any mother forces her child to take all the diet then refeeding syndrome is a real possibility.

Treatment

For patients in the recovery phase

If there is deterioration during the recovery or transition phase of treatment,

- Then the child should be returned to the acute phase.

For patients that are in the acute phase,

- Reduce the diet to 50% of the recommended intake until all signs and symptoms disappear and then gradually increase the amount given.
- Check to make sure that there is sufficient potassium and magnesium in the diet. If the diet is not based on cow's milk (or the mother is also giving cereals/pulses etc.) additional phosphorus should be given to prevent refeeding syndrome.

7.16. Severe malnutrition and HIV/AIDS, Tuberculosis (TB)

7.16.1. Screening for HIV

Where there is an effective Voluntary Counselling and Testing (VCT) program and, at least, prophylaxis and treatment for opportunistic infections is available, VCT should be offered to all patients with severe malnutrition and their caretakers.

Where anti-retroviral treatment is available, there should always be VCT associated with the identification and management of SAM.

There is a need for there to be a willing and capable caretaker for the SAM patient.

Where the parent has HIV/AIDS, additional support needs to be available as the parent will have recurrent illness. During these illnesses, she may not be able to care for her children. Indeed, OTP may not be feasible.

Where one grandmother has to care for many grandchildren without obvious means of support, it may not be possible for the grandmother to give special care to the malnourished child. In others cases the household is headed by a child, normally an older sibling.

Community mobilisation and support as well as local NGOs, can be invaluable in these circumstances. Many of these children have to be treated in a facility initially (not necessarily a hospital) while some need to be cared for in special programs or facilities using the OTP protocol.

⁵⁸ The syndrome also occurs in obese patients who have been fasting as part of their treatment, They are not wasted but, like the malnourished patient, have metabolically adapted to a low intake of food.

Orphanages The staff of orphanages needs to be trained to screen and give basic care to the severely malnourished; they can function as an OTP.

The children should also be particularly screened for TB (and SAM) at the time of HIV testing, as co-infection is particularly common. TB, HIV and SAM are linked and frequently appear in the same patients.

In areas where there is a high prevalence of HIV there is a danger of patients being enrolled in both programs where either the nutrition team or the staff of other program is unaware of the potential drug interactions in the malnourished patient. For example, patients on ARVs, alternative anti-malarial and TB drugs may be indicated.

7.16.2. Treatment

The care and treatment centres that have been established for HIV should also be able to provide treatment for severe malnutrition and TB on an out-patient basis according to this protocol.

If treatment with anti-TB drugs or ARVs is started in **the severely malnourished** patient whilst they have physiological malnutrition, they are likely to develop very severe side effects from the drugs. Such side effects can lead to death or withdrawal of many of the patients from the ARV treatment programs. All ARV drugs have significant side effects, and their toxicity and pharmacokinetics have not been adequately assessed in the severely malnourished child.

Most children with HIV infection respond to the treatment of severe malnutrition in the same way as those without HIV infection. Those with a very low CD4 count have a higher (but not very high) mortality. Those with a reasonably high CD4 count appear to have the same mortality risk as non-infected children. The treatment of the malnutrition is the same whether the patient is HIV positive or negative (both in and out-patients).

- Start SAM treatment, at a minimum two weeks, before the introduction of ARV drugs to diminish the risk of serious side effects from the ARV drugs. In responding children, delay ARV treatment until the recovery phase is well established in OTP. For failure-to-respond children, start ARV after two weeks of SAM treatment with F75.
- Give co-trimoxazole prophylaxis against pneumocystis pneumonia for children with HIV. This is inadequate antibiotic cover for the severely malnourished patient
- Give the routine antibiotics as well as **prophylactic** doses of co-trimoxazole.
- Avoid amphotericin B in SAM patients with HIV.

Once the patient's SAM is being treated satisfactorily and s/he has had adequate amounts of the essential nutrients to resist the toxic effects of the drug treatment HIV and TB,

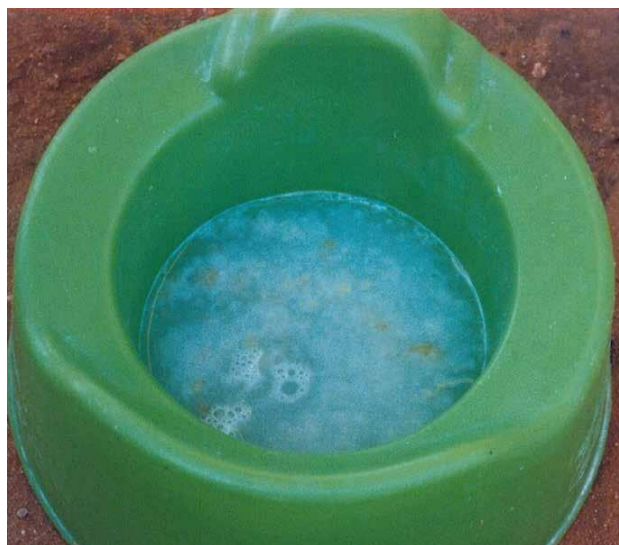
- Then start the treatment for HIV and follow the national guidelines.

Children with SAM and TB

- Do not immediately transfer to a TB centre if they have little experience/ are untrained in treating SAM. The treatment of the SAM takes precedence in view of the respective mortality rates. Treatment for TB can also be delayed for at least two weeks, except in the cases of military TB, TB meningitis, and Pott's disease when treatment should start immediately despite the danger of drug toxicity.
- Avoid AL and rifampicin if the patients have SAM and are on ARVs.

7.17. Cholera in SAM conscious

Cholera in SAM cases can be difficult to diagnose/ assess the degree of dehydration. The normal signs for dehydration are all unreliable. Nevertheless, giving appropriate rehydration is critical and lifesaving. You should observe the stools to make the diagnosis as well as taking the history of a change in appearance and copious watery stools. These stools are clearly liquid and almost colourless in parts- like the water in which rice has been boiled. The stools do not smell like normal faeces. The child's eyes are usually staring in appearance.





- Medical practitioners and people working in the management of acute malnutrition should take additional efforts in ensuring that there are staff trained to identify and manage the cholera in malnourished children. Similarly, it is important that the staff of the cholera treatment centre (CTC) know how to manage the severely malnourished child and how this differs from the management of cholera in a normally nourished child who has normal renal function.
- Children with oedematous malnutrition do not get cholera unless they are already under treatment.
- Cholera is an infectious disease and strict isolation/hygiene measures must be imposed so that other non-cholera children do not contract the condition.
 - o **Transfer/referrals** SAM children who are diagnosed with cholera should be immediately transferred to either the nearest SC/IPF for SAM which has isolation room with good hygiene and trained staff with the management of both SAM and cholera,
 - o or to the nearest CTC which has staff trained in the management of both cholera and SAM.

The choice depends to some extent upon the distance to the SC/IPF or CTC. The staff of one unit are often not sufficiently trained in the management of the other condition. Thus, if the nearby SC/IPF does not fulfil all the above criteria (staff, isolation etc.), it is preferable for the child to be immediately transferred to the nearest CTC.

- o It is important that the referral to the CTC is with a **printed guidance note** clearly stating the management of the SAM child with cholera together with two weeks' nutrition treatment supplies.

Note: in extreme remote OTP centres that receive a SAM child with cholera, the OTP staff should improvise a temporary isolation area and establish treatment with the

remote consultation of a qualified doctor or nurse in the district.

In the case where the child is already in the SC/IPF centre, the child should be isolated in a separate room to avoid the transmission to the other SAM children which can lead to high mortality. There must be a separate system for dealing with the cholera patient's excreta - buckets of strong chlorine solution for soaking of soiled cloths before safe disposal.

- o **Transportation:** in case the referring centre is away from the receiving centre, it is preferable that a qualified nurse accompanies the child with rehydrating supplement to be given while on the way.
- o **Treatment:** For a SAM child who is diagnosed with cholera, refer to global guidance and standards for the treatment of cholera with the following considerations:
 - ORS must be used not ReSoMal.
 - As these children do not have normal renal function, their rehydration should be managed by monitoring changes in body weight.
 - Assume that the child has between 5 and 10% of body weight deficit, calculate the target rehydration weight and give 15ml/kg/h, and monitor the weight as in the treatment of rehydration.
 - Mark the edge of the liver and take the respiratory rate before treatment. The child is becoming overhydrated if the liver enlarges by more than one centimetre or the respiratory rate increases by more than 5 breaths per min. If visible veins become full, the child is fully rehydrated.
 - In addition, the required nutrition treatment should be continued until the child recovers.

8. FAILURE TO RESPOND TO TREATMENT

8.1. Diagnostic

It is usually only when children fulfil the criteria for “failure-to-respond” that they need to have an extensive history and examination or laboratory investigations conducted. Skilled staff time and resources should be mainly directed to training, supervision, diagnosis, and management of the few children who fail-to-respond to the standard treatment.

Failure-to-respond to standard treatment is a “**diagnosis**” in its own right.

For OTP, the most common reasons for failure are social; social and psychological reasons can also cause failure to respond in in-patients although this is less likely.

Table 29: Diagnosis of Failure-to-respond for In-Patients

CRITERIA FOR FAILURE TO RESPOND	TIME AFTER ADMISSION
Failure to improve/regain appetite	Day 4
Failure to start to lose oedema	Day 4
Oedema still present	Day 10
Failure to fulfil the criteria for recovery-phase (OTP)	Day 10
Clinical Deterioration AFTER admission	At any time

Note that the day of admission is counted as day 0, so that day 1 is the day after admission.

8.2. Investigation on the Causes of failure to respond (In-patients)

PROBLEMS WITH THE TREATMENT FACILITY:

- Failure to apply the protocol appropriately
- Poor environment for malnourished children
- Excessively intimidating, strict, or cross staff
- Failure to treat the children in a separate, dedicated area
- Failure to complete the multi-chart correctly (or use of traditional hospital records only)
- Insufficient staff (particularly at night)
- Poorly trained staff - excessive staff turnover or untrained senior medical staff
- Inaccurate weighing machines (or failure to take and plot the weight change routinely)
- F75 not prepared or given correctly

PROBLEMS OF INDIVIDUAL CHILDREN:

- A severe medical complication (see section on complications)

- Drug toxicity (see section on drugs)
- Insufficient food given (criteria for NGT not applied)
- Food taken by siblings or caretaker
- Sharing of caretaker's food
- Malabsorption
- Psychological trauma
- Rumination (and other types of severe psychosocial deprivation)
- Infection, especially: viral, bacteria resistant to the antibiotics being used, fungal, diarrhoea, dysentery, pneumonia, TB, urinary infection/ Otitis media, malaria, HIV/AIDS, Schistosomiasis/ Leishmaniasis, Hepatitis/ cirrhosis
- Other serious underlying disease: congenital abnormalities (e.g. Down's syndrome), neurological damage (e.g. cerebral palsy), inborn errors of metabolism

When a child deteriorates after having initially progressed satisfactorily, it is usually due to:

- Electrolyte imbalance with the movement of sodium from the cells and an expansion of the circulation to give fluid overload or to the refeeding syndrome.
- Inappropriate dosage of drugs, or the use of drugs not recommended in the severely malnourished child.
- Inhalation of diet into the lungs.
- An acute infection that has been contracted in the centre from another patient (called a “nosocomial” infection) or from a visitor / sibling / household member.
- Sometimes as the immune and inflammatory system recovers there appears to be a “reactivation” of an existing infection.
- 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 uncommon with modern diets commercially produced (F100 and RUTF) but may well occur when they are made in the facility or where untried recipes are introduced or the child is sharing the mother’s food (see refeeding syndrome).

8.3. Actions required

- Record on the chart the diagnosis and refer the child to more senior and experienced staff.
- Take a detailed history and fill the clinical history and examination form.
- Examine the child carefully. Measure the temperature, pulse rate and respiration rate accurately.

- Where appropriate, examine urine for pus cells and culture blood, culture sputum, or tracheal aspirate for TB. Examine the retina in a low light for retinal tuberculosis.
- Do a chest x-ray.
- Examine stool for blood, look for trophozoites or cysts or giardia. Culture stool for bacterial pathogens. Test for HIV, hepatitis and malaria.
- Examine and culture Cerebral Spinal Fluid (CSF).
- Sometime parents bring traditional medicines and other treatments into the facility and give them to the child (a sort of “insurance” in their mind to have both modern and traditional treatments)
- Systematically consider the common causes listed in the box.
- If this is not immediately successful then an external evaluation by someone with experience of running a program for the treatment of severe malnutrition should be requested.
- Review of the supervision of staff with refresher training if necessary.
- Re-calibration of scales (and length-boards).
- Refer children with chronic diseases (congenital heart disease, neural tube defects, cerebral palsy, broncho-pulmonary dysplasia, chronic renal failure, etc.) to the appropriate paediatric ward under the care of the paediatrician. These patients are referred out of the program and all further management decisions and treatment will be under the direction of another service.

9. CRITERIA TO PROGRESS FROM ACUTE-PHASE TO TRANSITION PHASE

There is no “fixed” time that a child should remain in the acute phase - individual children differ. It is expected that the most severely ill children will remain in the acute phase for longer than average and the less severely complicated cases and those that respond readily to treatment a shorter time.

Transfer a patient from Acute-phase to Transition Phase when all the following are present:

- o Return of appetite

and

- o Beginning of loss of oedema (Normally judged by

an appropriate and proportionate weight loss as the oedema starts to subside)

and

- o The patient appears to be clinically recovering.

Patients with gross oedema (+++) should wait in Acute-phase at least until their oedema has reduced to moderate (++) oedema. These patients are particularly vulnerable.

10. TRANSITION PHASE

Transition Phase prepares the patient for Recovery-phase as an out-patient. Occasionally the recovery-phase is as an in-patient where there is no appropriate home for the child to go to, the caretaker chooses to remain in in-patient care (see also the care of the less than 6 month old infant), or there is no OTP functioning.

The transition phase usually lasts between 1 and 5 days - but may be longer, particularly when there is another pathology (e.g. TB or HIV). A prolonged transition phase is a criterion for failure-to-respond.

10.1. Diet

The ONLY change that is made to the treatment on moving from Acute-phase to Transition-Phase is a change in the diet from F75 to RUTF, or, if the RUTF is not accepted, to F100.

It is preferable to use RUTF in the Transition Phase. Those children who have been very ill and are going to continue treatment as out-patients with take-home treatment should become habituated to RUTF before they go home.

- Give the total amount of RUTF that should be taken during the day according to the table.
- Advise the mother to breastfeed the child 30 min before giving the RUTF.
- Tell the mother to wash hands before giving the sachet of RUTF to the child.
- Tell the mother to offer plenty of water to the child.
- Advise the mother to put the sachet in a box (insect and rodent proof) when the child has finished each session of eating.
- CHECK five times during the day the amount given by the mother. It is important for the assistant to check regularly and counsel the mother and not assume that the mother will give all the RUTF to the child. It is useful to have regular “meal times” for the children where the mothers all gather together in one place to feed their children.

For children that are not taking sufficient RUTF (not gaining any weight),

- Either give F100 for a few days and then re-introduce RUTF;
- Or return the child to the acute-phase for a day or so and give F75.
- Do NOT give any other food to the patient during this period.
- Do NOT let the caretaker eat in the same room as the malnourished children.

- Check that the caretaker or other children do not consume the patients' RUTF.
- Make drinking water available both in the ward and also to individual children. The mother must offer as much water to drink as they will take during and after they have taken some of the RUTF.
- Write the amount given and taken on the multi chart.

One advantage of the RUTF is that there is no need for surveillance during the night so that minimum or no night staff is needed.

Some patients initially refuse the RUTF completely. If this is the case they should be given the F100 diet for one or two days and then reintroduce the RUTF. Other children prefer the RUTF. It is good practice to give the diet that the children prefer - the two diets are nutritionally equivalent.

If RUTF is not available, or the child does not readily take the RUTF (younger children and about 10% of the older children prefer a liquid diet) then use F100 (130ml = 130kcal).

When F100 is used the number of feeds, their timing, and the volume of the diet given remains exactly the same in Transition Phase as it was in Acute-phase.

- Ask the mother to breastfeed their children, half an hour before giving the feed;
- Prepare the diet: It is made up from pre-packed canister of F-100 (400g) diluted into 1,850ml of water to make 2,158ml of F100 reconstituted or for small quantity: 1 blue levelled
- 1 scoop for 25ml of water to make 29ml of F100; when the tin is open, it should not last for more than 4 weeks.
- Give five or six feeds per day.
- Write on the multi-chart the amount given and taken.

Even if the child is going to remain in a facility for recovery-phase, RUTF can be given for transition phase and subsequently. This relieves the burden on the staff of making up feeds frequently.

Warning: F100 should **never** be given to be used at home. F100 is always prepared and distributed in an in-patient unit by staff trained in its use. F100 should not be kept in liquid form at room temperature for more than 2 hours before it is consumed. If there is a functioning refrigerator, constant electricity, and a very clean kitchen/utensils, then it can be kept (cold) for up to 6 hours (i.e. overnight).

Amounts of RUTF to give per 24h in Transition phase

The amounts given in the table are for the full 24h period.

Table 30: Look up table for RUTF in Transition Phase per 24h

CLASS OF WEIGHT (KG)	PASTE	PASTE	BARS	TOTAL KCAL
	IN GRAMS	SACHETS	BARS	
3.0 – 3.4	90	1.00	1.5	500
3.5 – 3.9	100	1.00	1.5	550
4.0 – 4.9	110	1.25	2.0	600
5.0 – 5.9	130	1.50	2.5	700
6.0 – 6.9	150	1.75	3.0	800
7.0 – 7.9	180	2.00	3.5	1000
8.0 – 8.9	200	2.00	3.5	1100
9.0 – 9.9	220	2.50	4.0	1200
10 – 11.9	250	3.00	4.5	1350
12 – 14.9	300	3.50	6.0	1600
15 – 19.9	370	4.00	7.0	2000
≥20	450	5.00	8.0	2500

NOTE: If both F100 and RUTF are being given, they can be substituted on the basis of 100ml of F100 = 20g of RUTF⁵⁹.

Table 31: Look up table on the amounts of f100 to give for 6 – 5 feeds per day

CLASS OF WEIGHT (KG)	6 FEEDS PER DAY	5 FEEDS PER DAY
Less than 3.0	F100 full strength should not be used	
3.0 – 3.4	75 ml per feed	85 ml per feed
3.5 – 3.9	80	95
4.0 – 4.4	85	110
4.5 – 4.9	95	120
5.0 – 5.4	110	130
5.5 – 5.9	120	150
6.0 – 6.9	140	175
7.0 – 7.9	160	200
8.0 – 8.9	180	225
9.0 – 9.9	190	250
10.0 – 10.9	200	275
11.0 – 11.9	230	275
12.0 – 12.9	250	300
13.0 – 13.9	275	350
14.0 – 14.9	290	375
15.0 – 19.9	300	400
≥20.0	320	450

NOTE: if small quantities of F100 are being reconstituted from the commercial powder, the blue scoop should be used and 25ml of water added to each scoop of F100 to make 29ml of F100 reconstituted.

The table gives the amount of F100 (full strength) that should be offered to the patients in transition phase who are not taking RUTF. They should normally be taking 5 feeds during the day and none at night.

⁵⁹ If tables are to be constructed then 100 ml of F100 = 18.5g of RUTF; 10g of RUTF = 54ml of F100 should be used and the resulting values rounded to the nearest 5 or 10 ml

10.2. Routine Medicine

Routine antibiotics should be continued for 4 more days after acute-phase or until transferred to recovery-phase as an outpatient (patients entering OTP after having been in a facility do not need to be given antibiotics).

10.3. Surveillance

The surveillance of Acute-phase is maintained in Transition Phase.

10.4. Criteria to move back from transition phase to the acute phase

Move the child back to acute-phase:

- If there is a rapid increase in the size of the liver;
- If any other signs of fluid overload develop (increased respiratory rate);
- If the patient gains weight more rapidly than 10g/kg/d (this indicated excess fluid retention);
- If tense abdominal distension develops (indicates abnormal peristalsis, small bowel overgrowth and perhaps excess carbohydrate intake);
- If the patient gets significant re-feeding diarrhoea so that there is weight loss (see separate section);
- If a complication arises that necessitates an intravenous infusion (e.g. malaria, dehydration, etc.);
- If there is any deterioration in the child's condition (see section on refeeding syndrome);
- If there is increasing oedema (look for unexpected sodium intake, particularly from mother's diet or drugs. If an extraneous source of sodium is found then it should be eliminated and children with good appetites

can remain in transition-phase); or

- If a child who does not have oedema develops oedema (look for extraneous intake of sodium)

It is common for the children to get some change in stool frequency when they change diet. This does not need to be treated unless the children lose weight. Several loose stools without weight loss is not a criterion to move back to acute-phase.

10.5. Criteria to progress from transition phase to OTP

Transfer the patient to the OTP:

- If s/he has a good appetite - this means taking at least 90% of the RUTF (or F100) prescribed for transition phase;
- For oedematous patients (kwashiorkor), if there is a definite and steady reduction in oedema;
- If there is a capable caretaker;
- If the caretaker agrees to out-patient treatment;
- If there are reasonable home circumstances;
- If there is a sustained supply of RUTF; and
- If an OTP program is in operation in the area close to the patient's home

A patient transferring from one to another phase of treatment, one as an in-patient and the other as an outpatient, is still under the care of the IMAM program for this episode of severe malnutrition. This is not a "discharge" from the in-patient facility but an internal transfer to another part of the same program. Nevertheless the IPF records this as "successful treatment".

11. DISCHARGE PROCEDURES

- Register the patient in the registration book as successfully treated, dead, defaulter or a medical referral.
- Complete the multi-chart and fill in a transfer form with the SAM N° and give all the required information about the treatment.
- Call the OTP to give them notice about the patient

returning home.

- Give the mother a copy of the transfer form, the name and address of the OTP and the day of the consultation, and a provision of RUTF until the next appointment in the OTP.
- Write in the child's health card the treatment given and the weight.

INFANTS LESS THAN 6 MONTHS OLD WITH A FEMALE CARETAKER⁶⁰ (SC)

1. OBJECTIVES AND OVERVIEW

The objective of treatment of these patients is to return them to full exclusive breast-feeding. This is achieved by stimulating breast-feeding at the same time as supplementing the child during breast feeding until the infant becomes stronger and breast milk production is sufficient to allow the child to grow properly.

Breast milk output is stimulated by the Supplemental Suckling (SS) technique. It is important to put the child to the breast as often as possible.

The SS technique is time consuming and requires skill, but is the only technique that works in practice.

Infants who are malnourished are weak and do not suckle strongly enough to stimulate an adequate production of breast milk.

The mother often thinks that she herself has insufficient milk and is apprehensive about her ability to adequately feed her child. The low output of milk is due to inadequate stimulation by the feeble infant. Attempts to put such infants to the breast repeatedly fail, the infant continues to lose weight, and the mother is confirmed (correctly) in her view that attempts at exclusive breast feeding will not work after her infant has become so malnourished. This does not work.

On the other hand, treating the infant with artificial diets rapidly leads to weaning and the mother sees that the “formula” is the only way to allow her child to recover. Weaning an infant in most circumstances where malnourished infants are found carries a high risk of mortality. This is not recommended.

2. STRUCTURE AND ORGANISATION

These infants should always be treated in SC and not in OTP. RUTF is NOT suitable for young infants and milk-based feeds should not be given for home treatment.

There should be a special service/program established to assist mothers who have difficulty breast feeding. The aim of such a service would be concentrate on all breastfeeding problems - for the malnourished, to re-establish exclusive breastfeeding, and to achieve confidence in the mother's ability to produce sufficient milk for her baby to thrive.

- It's out-patient arm would counsel and provide one-to-one support for all mothers who have difficulty with breast-feeding.
- The in-patient arm would be for mothers whose children are not “thriving” and become malnourished.

It is inappropriate to admit young infants to most general paediatric or nutrition wards. If such a service does not exist then the program should be part of the neonatal service; otherwise there should be a specific section of

the SC devoted to the management of the malnourished young infant. However, since we do not offer neonatal service in most hospitals, these children can be managed in the stabilization centres in a separate space/breast feeding corner or breast feeding room. Female staff with professional training in breast feeding and counselling should be available to support the mothers.

The ward: In most cultures, the ward/room where these infants are managed should be adequately screened and private. Unannounced arrival of males in the section should be forbidden. The mothers must be confident that they will not be disturbed or surprised by men arriving in the ward whilst they are uncovered. Rounds by male doctors should be announced in advance. There should be a separate visiting room where mothers can meet with their husbands without them being admitted to the service.

60 See annex 20 for infants less than 6 months without a female caretaker. ANNEX 20 IS M&E, DNO SUPERVISOR LIST. THERE IS NO ANNEX FOR <6MO INFANTS W/O FEMALE CARETAKER. THAT INFO IS IN THE TEXT

3. ACTIVITIES AND TOOLS

3.1. Activities

- Admit the baby: take the anthropometric measurements and examine the baby, check the criteria of admission, register in the registration book and the chart.
- Explain to the mother the aim of the management.
- Manage the infants using the Supplemental Suckling Technique (SST).
- Prepare the milks, teach and demonstrate the techniques, conduct surveillance, and follow the baby and the mother.
- Discharge the baby and the mother.

3.2. Tools

- o Registration book
- o Infant SS- chart (annex 19)
- o Material for SST: NGT size 8 or 6, cups, material to clean the tube, measuring jug (do not use a feeding bottle)
- o Scale with a precision of 10g
- o Diet: F100 Dilute or Generic infant formula, meals for the mother
- o Drugs: for systematic treatment and food/nutrients for the mother
- o Others: posters to encourage breastfeeding, flip charts to show technique, look up table for the feeds

4. ADMISSION

4.1. Anthropometric measurement and clinical examination

- Take the infant's weight with a scale of 10g precision.
- Check the infant clinically (presence of bilateral oedema, infection, etc.).
- Examine the mother's breasts.

4.2. Criteria of Admission

AGE	ADMISSION CRITERIA
Infant less than 6 months Or Infant < 3 kg with a female carer capable of breast feeding	➤ The infant is too weak or feeble to suckle effectively (irrespective of his/her Weight-for-Length(WL), Weight-for-Age (WA) or other anthropometry) or ➤ The infant is not gaining weight at home (by serial measurement of weight during growth monitoring, i.e. change in weight-for-age) or ➤ W/L (Weight-for-Length) less than <-3 Z or ➤ Presence of bilateral oedema

Each of these criteria objectively shows a failure of satisfactory breast feeding so that the child is not gaining weight and developing normally.

From birth to 6 months of age, weight-for-age is the most appropriate measure to assess nutritional status. At this age, failure to gain weight can be defined as **acute malnutrition**.

However, there are premature and small-for-gestational-age babies born who are being exclusively breast fed and gain weight at a satisfactory rate. Such infants are thriving and do not need admission to the program. The best way to differentiate those infants who are thriving from those who are becoming malnourished is to take repeated weight measures longitudinally; this is the value of the growth-monitoring program.

Where there is a growth-monitoring program,

- Admit all infants who are not following the weight for age (WA) growth channels and
- Admit infants if they are losing weight or have crossed WA centile lines because their weight is static

Where there is no growth monitoring program or there are no “historical” weight measurements and the mother reports that she does not have sufficient breast milk or that the infant “does not like my breast milk”:

- Check the weight-for-age and admit those who are less than -3Z scores.
- Check the infant clinically.
- Examine the mother’s breasts.
- Observe the mothers breast-feeding performance.

If the infant is clinically well and appears to be breast feeding satisfactorily, the mother should be counselled and given a return appointment in one or two weeks to monitor the weight change of the infant (an accurate 10g precision infant scale is needed - not a survey scale with 100g divisions).

Where the infant has a clinical illness, the mother’s breast-feeding performance is not satisfactory, the infant appears clinically malnourished.

- Admit the infant and mother to the program.

4.3. Registration

- Register the infant in the registration book and fill in the infant SS-chart.
- Explain to the mother the aim of the management, which is to return the infant to exclusive breast feeding.

5. MANAGEMENT

5.1. Diet

The SS-milk can be either generic infant formula or made by diluting F100 to make F100dilute.

Note: Full strength F100 should NEVER be used for small infants of children less than 3kg. The renal solute load is too high for this category of child and could provoke hypernatraemic dehydration.

Type of milk

For Oedematous infant: Give F75.

For Non Oedematous infant: Give Generic Infant formula or F100 dilute.

If there is a choice, use a formula designed for premature infants.

NOTE: Unmodified powdered whole cow’s milk should NOT be used (e.g. Nido®).

Preparation

- For Infant formula:
- Dilute according to the supplier’s instructions.
- For F100 dilute:
- Add to 4 blue levelled scoops of F100 100ml of water to make 116ml of F100.
- Use only 100ml of F100 already prepared and add 35ml of water, then you will get 135ml of F100diluted. Discard any excess waste or give it to the lactating mother.
- If you needed more than a total of 135ml of F100 diluted, use 200ml of F100 reconstituted and then add 70ml of water, etc.
- Don’t make smaller quantities.

Amounts to give by SS technique

- Give the amount of SS-milk at each feed according to the look-up table.
- Do NOT increase the amount given as the infant starts to regain strength, suckle more strongly, and gain weight.
- Encourage the mother when the infant is gaining weight and tell her that “the recovery is due to her own breast milk”.
- Ask the mother to breast-feed every 3 hours for at least 20 minutes, more often if the infant cries or seems to want more.
- Shortly after (30 to 60 minutes) giving a normal breast-feed, return the infant to the breast and help the mother to give the generic infant formula/F100dilute using the SS technique.
- Write the information on the infant chart.

Table 32: Look-up table of the Amounts of SS-Milk for infants during SS feeding

Class of Weight (kg)	ml per feed (for 8 feeds/day)
	Infant formula or F100 dilute
≥1.2 kg	25 ml per feed
1.3 to 1.5 kg	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

Start on F75 until the beginning of loss of oedema
(do not wait until all the oedema are resolved, it can be too long and they need F100 diluted to grow)

5.2. Supplementary Suckling Technique

5.2.1. At the beginning of the SST technique

- Use a tube the same size as n°8 NGT (a n°5 tube can be used and is better for the infant, but the milk should be strained through cotton wool to remove any small particles that block the tube).
- Put the appropriate amount of SS-milk in a cup and hold it.
- Put the end of the tube in the cup.
- Put the tip of the tube on the breast at the nipple.
- Tell the mother to offer the breast in the normal way so that the infant attaches properly.

Note: At the beginning the mothers find it better to attach the tube to the breast with some tape, later as she gets experience this is not normally necessary.

- When the infant suckles on the breast, with the tube in his mouth, the milk from the cup is sucked up through the tube and taken by the infant. It is like taking a drink through a straw.
- Help the mother at first by holding the cup and the tube in place.

- Encourage the mother confidently.
- Place the cup at first about 5 cm to 10 cm below the level of the nipple so the SS-milk can be taken with little effort by a weak infant.
- NEVER place the cup above the level of the nipple, or it will flow quickly into the infant's mouth by siphonage with a major risk of inhalation.
- Tell the mother to relax. Excessive or officious instructions about the correct positioning or attachment positions often inhibit the mothers and make them think the technique is much more difficult than it is. Any way in which the mother is comfortable and finds that the technique works is satisfactory.

It may take one or two days for the infant to get used of the tube and the taste of the mixture of milks, but it is important to persevere.

5.2.2. Later, as the infant becomes stronger

- Lower the cup progressively to about 30cm below the breast.
- Later when the mothers are more confident, ask if they want to manage to hold the cup and tube without assistance. The mother, instead of the assistant, can hold the tube at the breast with one hand and the other hand holds the infant and the cup. In this way she can perform SS-feeding without assistance.
- Use another mother who is using the technique successfully to help.
- Try to have the mothers together at the same time using the SS technique. Once one mother is using the SS-technique successfully, the other mothers are greatly encouraged and find it relatively easy to copy her.
- If the SS-milk formula is changed suddenly then the infant normally takes a few days to become used to the new taste. It is preferable to continue with the same supplementary diet throughout the treatment.



This infant is suckling the breast and also getting the SS-milk (135ml/kg/d) by the supplemental suckling technique.

Raising or lowering the cup determines the ease with which the infant gets the supplement: for very weak

infants it can be at the level of the infant's mouth. If it is above this level, the feed can go into the child by siphonage and there is a danger of aspiration.

5.2.3. Cleaning the tube

- After feeding, flush the tube through with clean water using a syringe.
- Then spin (twirl) the tube rapidly to remove the water in the lumen of the tube by centrifugal force, and inspect to ensure that no water remains in the tube. If convenient, the tube is then left exposed to direct sunlight. The UV rays in sunlight penetrate the plastic and can effectively sterilise the tube if it is already clean and all opaque matter is removed.

5.2.4. Progress and follow up

Table 33: Quantity of feeds for 8 feeds – 50% less – 75% required

CLASS OF WEIGHT (KG)	ML PER FEED (FOR 8 FEEDS /DAY) (100%)	50% OF THE REQUIRED QUANTITY	75% OF THE REQUIRED QUANTITY
	F100-dilute		
>=1,2 kg	25 ml per feed	12,5	18 ml
1,3 – 1,5	30	15	24 ml
1,6 – 1,7	35	18	27 ml
1,8 – 2,1	40	20	30
2,2 – 2,4	45	23	35
2,5 – 2,7	50	25	40
2,8 – 2,9	55	28	45
3,0 – 3,4	60	30	45
3,5 – 3,9	65	33	50
4,0 – 4,4	70	35	55

- Monitor the progress of the infant by the daily weight with a scale graduated within 10g (or 20g) and record the information on the on the infant chart.

If the child loses weight over 3 consecutive days yet seems hungry and is taking all his F100 dilute/infant formula,

- Add 5ml to each feed.

The Supplemental Suckling feed is giving maintenance amounts. If it is being taken and there is weight loss, either the maintenance requirement is higher than calculated or there is significant malabsorption.

If the child grows regularly with the same quantity of milk,

- Tell the mother that the quantity of breast milk is increasing and she is “responsible” for recovery.

If after some days, the child does not finish all the supplemental food, but continues to gain weight,

- Tell the mother that the breast milk is increasing and that the infant is getting enough to fully recover.
- Reduce the amount of SS-milk given at each feed by the amount not taken. For example, if the child is supposed to take 10ml, but only manages to take 7ml in the current feed, then the next feed should be 7ml not 10ml. This means that the treatment is working, as the idea is to gradually reduce the SS-Milk and increase the breast milk taken.

When a baby is gaining weight at 20g per day for 2 consecutive days (whatever her/his weight),

- Decrease the quantity of SS-milk given at each feed to one half of the maintenance intake.

If, on half the SS-intake, the weight gain is maintained at 10g per day (whatever her/his weight),

- Then stop supplement suckling completely. Tell the mother that she is doing this all by herself.

If the weight gain is not maintained when the SS-milk intake is cut in half,

- Then change the amount given to 75% of the maintenance amount for 2 days and then reduce it again if weight gain is maintained.

If the mother wishes to go home as soon as the child is taking the breast milk greedily and gaining weight, they should be discharged.

If the mother is agreeable, keep in the centre for a further 2 days on breast milk alone to confirm that her infant continues to gain weight on breast milk alone.

Then discharge the infant, no matter what his current weight for age or weight for length.

5.3. Routine Medicine

These children have to be seen by a nurse every day because they are exceptionally vulnerable.

- Give Antibiotics: Amoxicillin (from 2kg): 30mg/kg 2 times a day (60mg/day) in association with Gentamicin once daily (3 to 5mg/kg/d). (Never use Chloramphenicol in young infants) during four to five days.

If any clinical signs of measles or xerophthalmia, Vitamin A should be given.

If any signs of anaemia, 2.5mg of folic acid can be given once on admission.

6. SURVEILLANCE

Monitor the infant and write on the infant chart:

- Weight (measured daily)
- Body temperature (measured twice per day)
- The standard clinical signs are assessed and noted in multi-chart each day
 - o Respiration rate
 - o Stool
- A record is taken (on the intake part of the multi-chart) if the patient is absent, vomits, or refuses a feed,

Care for the mothers

As the aim is to increase breast milk, the mother's health and nutritional status are critical for the nutritional repletion of the infant.

- Check mother's MUAC and the presence of oedema.
- Explain to the mother what the aim of treatment is and what is expected of her.
- Do not make the mother feel guilty for the state of her child or blame her for giving other foods.
- Introduce her to the other mothers in the centre and introduce her to the staff personally. Make her feel "at home" in a friendly and relaxing atmosphere.

- Agree with her that she may not have enough milk at present - but strongly reassure the mother that the technique works and that enough milk will "come into" her breasts as her baby recovers. She will then be able, with her own milk, to make her baby better.
- Tell her and encourage her to drink at least 3 litres per day.
- Make the necessary arrangement for the mother so she can eat about 2500kcal/day of a high-quality diet.
- Give the mother Vitamin A: 1) If the child is below 2 months or if the mother is menstruating: 200.000UI (there should be no risk of pregnancy), 2) If the child is above 2 months: 25.000UI once a week.
- Give Micronutrient supplementation.
- Decrease as much as possible the length of stay in the facility.
- If needed, give drugs which help with lactation (e.g. metoclopramide 10mg 8 hourly).

Other drugs that increase milk flow (e.g. chlorpromazine) are less effective, cross into breast milk, and will potentially affect the mother and child adversely. In some cultures, there are local spices that stimulate breast milk output (e.g. fenugreek) but their safety has not been established.

7. DISCHARGE

Decide when to discharge the infant according to the discharge criteria and write in the registration book, the infant SS chart, and on the health card (passport) of the child. He/she is “successfully treated.” The infant should be closely followed each week or every 2 weeks etc. at MCH clinic and by CHW at home.

AGE	DISCHARGE CRITERIA
<i>Infant less than 6 months or less than 3 kg being breast-fed</i>	➤ it is clear that s/he is gaining weight on breast milk alone after the Supplemented Suckling technique has been used; ➤ there is no medical problem; and ➤ the mother has been adequately supplemented with vitamins and minerals, so that she has accumulated body stores of the type 1 nutrients.

NOTE: there are no anthropometric criteria for discharge of the fully breast-fed infant who is gaining weight.

- Advise the mother to come to the Mother and Child Health (MCH) clinic regularly and the TSFP programme to receive high-quality food to improve the quantity and quality of breast milk.

INFANTS WITHOUT ANY PROSPECT OF BEING BREAST-FED (SC)

These young infants are particularly vulnerable because they have neither a mother nor the protection of breast milk.

Anthropometry in these small infants is difficult and imprecise. MUAC is not yet used in this age group. Where there is a growth monitoring program, infants that are losing weight or have crossed weight-for-age centile lines because their weight is static can be admitted into the SC.

1. ADMISSION CRITERIA⁶¹

AGE	ADMISSION CRITERIA
INFANT LESS THAN 6 MONTHS OR LESS THAN 3 KG WITH NO PROSPECT OF BEING BREAST-FED	➤ The infant is not gaining weight at home (by serial measurement of weight during growth monitoring, i.e. change in weight-for-age). or ➤ W/L (Weight-for-Length) less than <-3 Z. or ➤ Presence of bilateral oedema.

When there is no prospect of being given breast milk, severely malnourished, less than 6 months old infants should be treated according to the standard protocol with the following modifications.

2. ACUTE PHASE

The diet should normally be based upon Generic Infant Formula except for those with oedema when F75 is used in the acute phase. Generic Infant Formula is preferred, however, F100diluted can be used, but full strength F100 must never be used⁶². (See table below for amounts in the different phases). The criteria for using an NG-Tube and passage to transition phase are the same as for older children.

The infants must have antibiotics routinely and the management of complications is the same as for older infants and children.

3. TRANSITION PHASE

If the infant has been taking F75 during the acute phase, then this is changed to Generic Infant Formula (or F100diluted) during the transition phase. Otherwise there is no change in the diet given, but the volume offered is increased by about one third.

4. RECOVERY PHASE

During recovery phase, twice the volume of Generic Infant Formula (or F100diluted) is OFFERED to the infants. This is a large amount to encourage rapid catch up growth - they must NEVER be force fed. The frequency of feeding can be reduced to 6 times per day.

⁶¹ There are no standards for infants below 45cm and the increments to judge nutritional status require precise scales that are not generally available. The in-patient therapeutic unit is not appropriate for managing premature and low-birth-weight, non-breast-fed infants below 45cm in length. These infants should be referred to the neonatology service/nursery and given infant formula.

⁶² NEVER use full strength F100 – it can cause hypernatraemic dehydration in these infants. There has been very little experience in treating these infants in the developing world. In the developed world, special formula for premature infants is used – if available it is suggested that these formulae are used. The diets given can be the same as those given to infants being fed with the SS-technique. Nearly all these infants have been born prematurely or have had intra-uterine growth retardation with low birth weight. Thus, the aetiology of the “malnutrition” in the small infant is normally different from the older child.

Table 34: Look-up table of the amounts of Generic Infant formula, F100dilute or F75 to give for infants not breast-fed in the Acute, Transition and recovery phases.

	Acute Phase	Transition phase	Recovery phase
Class of Weight (kg)	Amount (ml) of Generic Infant formula F100dilute or F75 to give per feed		
	8 feeds/day	8 feeds/day	6 feeds/day
=< 1.5 kg	30	40	60
1.6 to 1.8 kg	35	45	70
1.9 – 2.1	40	55	80
2.2 - 2.4	45	60	90
2.5 - 2.7	50	65	100
2.8 – 2.9	55	76	110
3.0 - 3.4	60	80	120
3.5 – 3.9	65	85	130
4.0 – 4.4	70	95	140

5. CRITERIA FOR DISCHARGE

When the infant reaches -1.5Z score weight-for-height and is gaining weight at 20g/d, s/he can be discharged. He/she should be followed at the MCH clinic every week in addition to home visit by an outreach worker and community volunteer.

The infant is discharged from the SC as “cured”.

The infants will be discharged on Generic Infant Formula.

It is essential that the caretaker has access to adequate amounts of Generic Infant Formula. This has to be supplied by the clinic or orphanage/foster parents. Commercially produced formulae are nearly always unaffordable by families with malnourished young

infants when no mother or wet-nurse is available. Most caretakers⁶³ (fathers, siblings) in this situation over-dilute the formula to make it “stretch” and last longer, others use the cheapest milk, which will be dried whole milk, evaporated or condensed milk, yet these are all unsuitable for the growth and development of the previously malnourished infant.

The caretaker (father/siblings) must have the knowledge and facilities to prepare the formula milk safely.

Follow-up for these infants and their caretakers is very important and should be organised by the outreach worker in conjunction with the communityvolunteers.

⁶³ In many areas with a high prevalence of HIV there are substantial numbers of “child-headed households” where the adults have all died. These children looking after children present a particular difficulty in terms of livelihood, knowledge, exploitation etc. The whole household needs direct assistance.

MONITORING AND EVALUATION

1. INTRODUCTION

Monitoring of nutrition interventions is fundamental to the implementation and measurement of the effectiveness of programmes. Providing feedback about the progress of a project to health authorities, donors, implementers, and beneficiaries of a project is a critical component of programme monitoring. It enables troubleshooting for necessary and real time corrective actions if well conducted. Reporting enables the gathered information to be used in making decisions for improving project performance. A well-designed monitoring and reporting system can identify gaps in implementation of respective components, provide information for on-going needs assessment, advocacy, planning, redesigning, and accountability.

Monitoring and reporting should be an integral component of the IMAM programme (inpatient care/ stabilization centres (SC), outpatient therapeutic programme (OTP), targeted supplementary feeding programme (TSFP) and community mobilization). Monitoring and reporting of an

IMAM programme constitutes four major components: assigning a unique beneficiary registration number/ identifier; registration of the patients in the registration book; recording of the patients' evolution in the individual follow-up chart; and preparation of the monthly statistic reports. Other important dimensions of programme monitoring may include programme monitoring to assess effectiveness of treatment interventions (proportion of clients treated effectively) and community-level activities for mobilization and case-finding, and to assess programme coverage (i.e. proportion of the target group being reached with treatment) and the appropriateness of the programme for communities. Other critical mechanisms for monitoring the IMAM programme in Somalia include joint/interagency/multi-sectoral monitoring, review of programme implementation and the use of third-party monitoring in the hard to reach areas in Somalia.

2. DEFINITIONS

2.1. "SAM or MAM-Number"/"Scope Number"

The SAM- or MAM-Number is defined as a unique number assigned to each patient DIAGNOSED with SAM or MAM and entering the IMAM program. It is in addition to any other numbers that may be given by a registered IMAM facility.

The SAM- or MAM-Number must be used on all internal transfer forms and documents related to that patient (SC multi-charts, OTP chart, register book).

The SAM- or MAM-Number should normally take the following format:

Health district code (letter or number)/Facility name or Number/Child Number

Note: As long as the SCOPE number does not exist, "SAM- or MAM-Number" will be used.

For example, if a patient is the first to be diagnosed from District of Doloow in an OTP at the Kabasa health centre, that patient may have the SAM number of <Dol/OTPKabasa/0001>; the 156th patient first treated at the district hospital of Burao may have the SAM number of <Bur/SCBurao/0156>. If a patient is first diagnosed from District of Garowe in an TSFP at the Jilab health centre, that patient may have the MAM number of <Gar/TSFPJilab/0001>; The principles are that each facility's name should be unique within the country whilst being as

short as possible (the staff have to repeatedly write the number).

The National Nutrition Department assigns a code for each region/district in consultation with the other departments of the Ministry of Health.

The District Nutrition Officer with the DMO and the DHMT,

- Liaises with any other agencies or NGOs that collaborate in the government's IMAM program
- Assigns the code and registers each facility as part of the IMAM program, whether it is an OTP site or a SC/IPF, before the site is opened, and informs the National Nutrition Department of the facility's registration details.

The patient keeps this same SAM- or MAM-number during ALL internal transfers. The individual facilities can also give their own registration number to the patient for internal use and filing - a site specific number - but they must use the SAM-Number on all transfer forms and documents related to that patient.

This SAM- or MAM-Number is assigned where the patient is first DIAGNOSED, whether this is an OTP, TSFP site or in the SC/IPF. This number is unique and should always be denoted as the SAM- or MAM-Number. In all the documents relating to the patient, i.e. for in-patient care

on Multi charts, registration book, and transfer forms; for Out-patient care, on the OTP chart, registration book and transfer forms. Where there is a National health card, road-to-health chart or other monitoring document then the SAM- or MAM-Number and the admission must be entered into that document retained by the caretaker.

2.2. "Facility-Registration-Number"

The facility registration number is defined as a registration number assigned by the facility. This should normally take the form of a number followed by the year (e.g. 0234/2011). This number is used for internal filing and sorting records within the facility on the multi-charts and register book in the SC and the OTP chart and registration book in the OTP. The facility registration is neither used for transfer of patients nor for constructing a database of patients.

For clarity: the sequence of numbers will not be the same. This is because internal transfers may be given a new facility registration number, but should NOT be given a new SAM-Number - they retain the same SAM-number from facility to facility.

2.3. "Exit"

An exit is defined as a patient leaving a facility - it is the sum of patients cured/successfully treated, died, defaulted, medical referral, and internally transferred.

For the OTP this represents the sum of discharges and internal transfers. For the SC this is the sum of successfully treated patients, discharges, and internal transfers.

2.4. "Discharge"

A discharge is defined as a patient who leaves the IMAM program because they are cured, died, defaulted, or medically referred.

2.5. "Missing-Patients"

Missing-patients are defined as those patients that are transferred to another facility and fail to attend the receiving facility to which they have been transferred within a reasonable space of time (several days). This statistic is not recorded in any of the documents - but can be calculated from the collated reports of the OTPs and SC within a district.

2.6. "New admission"

A new admission is defined as a patient with SAM who has not been under treatment elsewhere for this episode of SAM and has not been assigned a SAM-Number. An OTP which diagnoses and transfers the child to an SC without treatment should assign the SAM-Number

upon diagnosis before transfer. It is a new admission for the OTP. The new admissions to each site should have consecutive SAM-Numbers so that the total number of new admissions can be verified from the numbers.

2.7. "Relapse"

Relapse is defined as 1) where a patient is admitted for SAM that has been previously treated for SAM and has been discharged from the program as cured, or 2) where the child has abandoned the program and returns with SAM after a lapse of more than 2 months. A relapse should be counted as a "new admission". For the SAM-Number and relapse, a postfix should be given to her/his SAM-Number thus: xxxx-2 to denote that this is the second episode of SAM for this patient. If the original SAM-Number cannot be found a new SAM-Number should be given, but it should always have xxx-2 to denote a second admission to the program.

2.8. "Readmission"

Readmission is defined as a defaulter who returns to either the OTP or SC to resume treatment after an absence of 2 months or less. The child is not a new admission and is reassigned his/her original SAM-number.

2.9. "Internal transfer"

Internal transfer is defined as a patient who arrives because s/he has been transferred from another facility (from OTP to SC, OTP to another OTP, or SC to OTP) after receiving a SAM-Number. Such transfers are recorded in both the entry and exit sections of the register and report. If it is necessary to differentiate these two, then the terms transfer-in and transfer-out can be applied as follows. Transfer-in" is a patient arriving from another facility (OTP or SC). Transfer-out" is a patient sent to another facility to continue treatment (OTP or SC)

2.10. "Other admission"

Other Admission is defined as a patient that is admitted to the facility for whatever reason but does not fulfil any of the criteria of SAM (e.g. a twin, etc.); these patients are not counted in the facility's monthly report statistics. They are not given a SAM-number.

2.11. "Cure"

Cure is defined as a patient reaching the criteria for discharge. Note: Discharge to the Supplementary Feeding Program (SFP) is not considered as a transfer, but as a discharge from the program for severe malnutrition.

2.12. "Successfully Treated"

This term is used for 1) patients in the SC/IPF who

successfully complete phase 1 (acute-phase) of treatment and are transferred to OTP to continue their treatment, or 2) for infants less than 6 months who are discharged gaining weight on exclusive breast feeding. For clarity, when the patients exit the SC to continue treatment in the OTP they are still in the program and have not reached the criteria for discharge - that is, they are not yet “cured”. However, the SC has successfully “graduated” the patient and fulfilled its role in treatment properly.

2.13. “Dead”

Died or dead is defined as a patient who dies during their stay in the SAM program after they have been assigned a SAM-Number. For clarity: this includes patients who die in transit from one facility to another. Where a patient with SAM dies during transit from an OTP to an SC/IPF, the death should be recorded as death within the program and assigned to the OTP report. If the child was previously reported as “defaulter unconfirmed” and is subsequently found to have died, this should be notified in a subsequent monthly report in the “change of category section.” A note is made in the registration book and the SC/IPF chart or OTP chart.

2.14. “Defaulter-Confirmed”

A defaulter-confirmed is defined as a patient who is absent, without making any arrangements with the staff, for 2 consecutive weightings (14 days in OTP and 2 days in an SC) and without being officially discharged, who is known to be still alive (from home visit, neighbour, volunteer or outreach worker’s feedback).

2.15. “Defaulter-Unconfirmed”

A defaulter-Unconfirmed is defined as a patient that fulfils the definition for defaulter, but that it is uncertain whether they are in fact alive or dead. In the reports, the defaulters are recorded as defaulting when they have failed to return. In OTP this will normally mean that they are recorded in the month following the actual time that they were last seen, and to a lesser extent for SC. If any calculations

are made on defaulters (e.g. rates of weight gain before defaulting etc.), then 14 days should be subtracted from the “date of defaulting” for OTP patients and 2 days for SC/IPF patients.

2.16. “Non-Response to treatment”

Non-response to treatment is defined as a patient in either OTP or SC/IPF who fulfils the criteria set out in the guidelines as failure-to-respond to treatment and fails to respond to all treatment and whose caretaker refuses referral or referral to a senior paediatrician to take over the case is impossible. This includes all children who do not respond for any reason (social, psychological and medical) and is not restricted only to those who have suspected underlying medical conditions requiring transfer or referral.

2.17. “Medical-referral”

Medical-referral is defined as a patient who has a serious underlying illness that requires treatment beyond the scope of the SC for SAM (or is suspected of having such a condition that requires diagnostic tests beyond the capacity of the SC/IPF) and is referred to another service which takes over the complete management of the child. This is counted as the patient leaving the IMAM program for management by another service.

2.18. “Refusal of transfer”

Refusal of transfer is defined as a patient who fulfils the criteria for admission to an IPF (according to the triage criteria) but declines the invitation for transfer from the OTP. For clarity, this is not a reason for discharge from the OTP, where the patient remains for continued treatment. A note is made in the register and the chart to say that the patient declined transfer. This is not recorded in the monthly report. But as it can be an explanation for mortality in the OTP, it should be periodically examined for the annual report and evaluations. If frequent, this should signal the need for investigation of the reasons (distance to the SC, reputation of the SC, etc.) and remedial action to be taken.

3. REGISTRATION

3.1. Registration book for SC, OTP and TSFP (annex 6)

There should be a registration book in each TSFP, OTP and SC.

The registration book for TSFP, SC, and OTP contain the following items:

- Registration number of facility (TSFP, SC or OTP)
- IMAM number (unique to the child)

- Date of admission
- First and family name
- Address
- Telephone number
- Type of entry (new admission, relapse, returning defaulter, internal transfer)
- Sex
- Age (in months)

- Weight at admission
- Length/Height at admission
- Weight-for-height on admission (Z-score)
- MUAC at admission
- Oedema at admission
- Date of exit
- Weight at exit
- MUAC at exit
- Type of exit (cured, successful treatment (SC only), dead, defaulter (confirmed or unconfirmed - TSFP and OTP only), referred (SC only) internal transfer, admission error
- Final diagnosis

- Observations (e.g. refused transfer, other major illnesses, special cases etc.)

The register for IMAM should be maintained separately from other registers (such as IMCI) and must contain all the information necessary to also calculate the length of stay and weight gain and permit all the data to be differentiated by gender for compilation of the annual (or more frequent) report.

3.2. Registration book for TSFP (annex 28)

The registration book of the TSFP contains all the information of the follow-up of the child at each visit plus the admission and the discharge.

4. THE CHARTS OF THE OTP AND SC PROGRAMME

There are three sorts of charts: the multi-chart (SC); the infant SS-chart (SC); and the OTP chart. The charts are in the appendix. For details of how to fill the charts see the training modules.

- In patient multi-chart is the primary tool for managing in-patients in SC

It should be filled for each patient. It is the primary tool for managing malnutrition and is recommended for all facilities looking after these patients. Other documents and local hospital records should not be the primary records for these patients. There is no place for spending time making duplicate records.

The chart is designed so that it allows proper control of all aspects of the care of the patient (from admission to follow-up and throughout his/her stay in the in-patient facility). All the staff use the same chart. All the essential information is recorded systematically in the same predetermined part of the chart. The information can thus be found easily and quickly for each patient.

- Infant SS-chart is the primary tool for managing the less than 6 months infants in the SC;
- OTP chart is a single A4 double sided sheet upon which all the OTP information is recorded.

5. RATION CARDS FOR TSFP (SEE ANNEX 27)

A ration card is given to the patient to take home and is updated with each subsequent visit. On it is recorded the progress of the client at each visit, including anthropometric monitoring.

Similarly, each OTP patient is given weekly follow up OTP card. This card contains key information on the client.

The caregiver should bring this card at each visit to the clinic/feeding site.

63 In many areas with a high prevalence of HIV there are substantial numbers of “child-headed households” where the adults have all died. These children looking after children present a particular difficulty in terms of livelihood, knowledge, exploitation etc. The whole household needs direct assistance.

6. TRACKING THE INDIVIDUAL SC/OTP/TSFP CLIENTS USING A SCOPE/SAM NUMBER

Each patient entering IMAM through the SC, OTP or TSFP should be given an IMAM registration number to be recorded on client cards, ration cards, register, and any relevant IMAM records. Patients transferring between sites or programme components retain the same IMAM number. As well, returning defaulters continuing treatment retain the same number. Re-admissions or relapses (patients who meet admission criteria again after being discharged as cured) receive a new number and a new card, as they are suffering from a different episode of malnutrition and need full treatment again.

Clients entering the health care system through a healthcare facility other than OTP (e.g. an antenatal clinic, child clinic, HIV/AIDS clinic, etc.) are also given a patient clinic number. Upon admission for treatment for acute

malnutrition, the client is also given an IMAM registration number. Therefore, IMAM monitoring materials will include spaces both for the IMAM registration number and for the client clinic number assigned, if necessary, by the healthcare facility.

Given the limitation in having a centralized/national coding system for health facilities offering IMAM services in Somalia, the IMAM programme will take advantage of the SCOPE that more efficiently assigns unique numbers to all children on treatment. SCOPE is a digital beneficiary identity and benefit management system. It is being implemented in many parts of Somalia and once brought to scale will provide a more reliable means to uniquely identify and follow up children in the IMAM programme.

7. REPORTS

The monthly report is the standard report. A report from each facility (OTP and SC/IPF) should be completed and submitted to the District Nutrition Officer/focal point each month. These are entered into the district database which is transmitted to the national level. These are used to assess the quality of services provided at the facility level. The monthly reports from each district are collated together to give an overall picture of the quality of service and magnitude of the problem of SAM at district level. Software is being developed to complete this task. The results of the analysis are reported back to the OTP and IPF supervisors at the next monthly meeting.

In addition to the standard monthly report, there should be: 1) an annual report where additional data is collected from the OTPs and SC/IPFs and 2) a three yearly external evaluation of the IMAM program in each district.

The monthly report should include: the total at the start of the month; the total entry (in categories); total exits (by category); total at the end of the month; and stock control data.

The annual report, in addition to the totals for the whole year, should include: the average rate of weight gain; the average length of stay; and disaggregation of the data by gender (where there are large numbers of patients, this can be done on a representative sample).

The three yearly evaluation report should include: a) a review of each component of the program (community

aspects, screening, TSFP, OTP, SCs, organisation, etc.) with an overview of the monthly and annual reports; b) a review of the tools, modules, and methods of training; c) the quality of supervision; d) the staffing and organisation; e) the logistics; f) the financing of the program; and g) recommendations for adjustment.

7.1. Monthly report

The monthly report should contain the following:

7.1.1. Categories of patient

The different categories are the type of malnutrition, the age groups, and the type of entry and exit,

- Type of malnutrition: oedematous and non-oedematous

NOTE: Where oedematous malnutrition is exceptionally rare there is no need to separate the data by oedema status. Where it is more common the report should be separated by oedema status. Where a child is oedematous s/he should be recorded in the oedema column whether or not s/he fulfils other criteria for admission. The report should accommodate both types.

- Age groups

For SC: <6 months, 6-23months, 24-59months, >59months

For the OTP: 6-23months, 24-59months, >59months

7.1.2. Numbers of patients by type of entry and exit to the facility

The types of entry to the facility should be: new admissions, relapses (both given new SAM-Numbers), readmissions (after defaulting), and internal transfers (transfer-in, where new SAM numbers are not given).

The types of exit from the SC should be: successful treatment (i.e. transfer-out to OTP and < 6 month successfully breast feeding and gaining weight), cured (for the few that remain in SC), died, defaulter, and medical-referral (including non-responders).

The types of exit from OTP should be: cured, died, defaulter-confirmed, defaulter-unconfirmed, internal transfer (transfer-out), and non-respondent (those who leave after refusing to transfer to SC, or are transferred out of the program to social or other services).

The report from the OTP contains a box to indicate the SC to which patients are normally transferred.

For clarity, some OTPs close to administrative boundaries may properly transfer patients to SCs within another district if that SC is closer or more convenient for the patients. If this is the case then it should be indicated on the report.

7.1.3. Other information

There is a separate section of the report enabling correction of previously submitted reports. In particular, reclassification of children previously classified as “defaulters-unconfirmed” into those that have been confirmed as defaulters and those who have died.

The report also contains stock details of the major consumables of the centre and those liable to pipeline rupture. In particular RUTF, but other essentials such as routine drugs can be included (e.g. antibiotics, antimalarial, etc.). The data should include stock at the beginning of the month, stock received, and stock at the end of the month.

Mean length of stay for cured children:

This indicator should be calculated and reported for the recovered patients⁶⁴ for each category.

For an individual, length of stay = *date the patient reached discharge criteria – date of admission*.

For a group of patients, mean length of stay = *Sum of (Number of days for each recovered patient from admission to discharge criteria are met) / number of recovered patients*

Note: this is the average of the date the patient reaches discharge criteria minus the date of admission for each patient. Some patients remain in the program/SC after they reach the discharge criteria for social reasons (need for communication with family, escort, transport etc.) if the date of actually leaving the centre is used then this should be stated with the result.

Mean rate of weight gain for wasted cured children:

This indicator is particularly useful to show the quality of feeding. In OTP it gives an indication of the amount of the RUTF dispensed that has been taken by the child.

The average weight gain is calculated for all RECOVERED patients for each patient category.

The rate of weight gain for an individual is calculated as the discharge weight minus the minimum weight multiplied by 1000 to convert the weight gain to grams. This is then divided by the minimum weight to give grams of weight gained per kilo of body weight. Lastly, this total weight gain is divided by the number of days from the day of minimum weight to the day of discharge, to give g/kg/d.

For an individual the rate of weight gain = $\frac{\text{Weight at discharge} - \text{minimum weight}}{\text{Date of discharge} - \text{date of minimum weight}} \times 1000$

$\frac{(\text{Date of discharge} - \text{date of minimum weight}) \times \text{minimum weight}}$

The Average rate of weight gain is then:

$\text{Average rate of weight gain (g/kg/day)} = \frac{\text{Sum of individual rates of weight gain}}{\text{Total No of individuals}}$

Note: There should not normally be a high rate of weight gain in the SC/IPF.

In the OTP it is often not possible to determine the minimum weight and the length of stay will be in units of 7 days. If the admission date & weight are used in the calculation instead of the minimum weight & date then this should be stated and designated as RWGadm to differentiate it from RWGmin. The date of FIRST reaching the discharge criterion - weight or MUAC - should be used in the calculation and not the date 7 days later when it is confirmed that the child has reached the required weight/MUAC and discharged.

⁶⁴ The mean length of stay for other categories of patient is also useful. Thus the average time that the dead patients were in the programme before death and the average time of defaulting can give an indication of where effort needs to be focused to lower these rates. However, as there is usually considerable variation and the data are highly skewed, this information is more usefully collected for individual children and analysed separately or presented as a graph.

To facilitate the calculation and to speed up data processing, a simple programme can be written in Excel. If the following data are entered into the computer then it is simple to calculate the length of stay and rate of weight gain (you can also calculate additional information such as the risk of death according to the Prudhon index, weight loss during loss of oedema), date of admission (DoA), date of minimum weight (Dmin), date of discharge (DoD),

admission weight (WtAdm), minimum weight (WtMin), discharge weight (WtDis), height at admission (HtAdm), and outcome (to analyse only the recovered patients). The data can also be taken directly into programs that calculate anthropometric indices automatically. These data should all be recorded in the admission book to make data entry easy.

8. KEY PERFORMANCE INDICATORS

The key IMAM performance indicators are recognized internationally under the sphere standards and they inform programs on how the intervention is progressing. These indicators are monitored monthly and are reflected in the monthly reporting template. Any performance indicator outside the recommended sphere threshold needs to be investigated. A low recovery is linked with the other performance indicators; reasons for low recovery

rate might be found in high defaulter and/or death and/or non-recovery rates. Any high death rate needs to be investigated. It is important to look at the day (after admission) and hour (day or night) of death as well as the causes. It is important to ensure that a high proportion of death rates is not recorded amongst defaulters in rural areas where defaulter tracing is difficult.

Table 35: Performance indicators for Somalia IMAM programme

Performance Indicator	SC		OTP		TSFP	
	Acceptable	Alarming	Acceptable	Alarming	Acceptable	Alarming
Cure rate (%)	>85	< 50	>90	< 50	> 80	< 50
Death rate (%)	<5	> 10	<3	> 10	< 1	> 5
Defaulting rate (%)	<10	>25	<10	>25	< 15	> 30
Coverage (%)	Rural: > 50; Urban: > 70; Camp: > 90					

9. MONITORING AND REPORTING OF NUTRITION SUPPLIES

Monitoring of nutrition supplies is critical to ensuring continuity of service provision and to prevent pipeline disruption. It is also a form of accountability for supplies and services provided at the facility. By closely monitoring the amount of supplies, it is possible to replenish supplies timely, prevent supplies leakage and spoilage, monitor the use of supplies in terms of numbers of children treated, and support learning in relation to cost effectiveness of supplies. Incorporation of infrastructure monitoring to ensure that partners have facilities with adequate capacity and integrity to manage supplies is critical and will determine the level of supplies that can be prepositioned

at various sites, especially in light of the seasonal impediments to supplies delivery. There is currently no unified supplies management system. Because nutrition treatment products are not included in the essential medicines list, the monitoring of nutrition supplies across Somalia is complicated and there is no centralized means of monitoring nutrition supplies. A logistics management information system (LMIS) that will soon be established will provide a more integrated platform to monitor all ranges of supplies delivered across Somalia. Monitoring of supplies is incorporated using various tools annexed to this guideline.

10. MONITORING AND REPORTING OF COMMUNITY NUTRITION PROGRAMMES

The essential components of the Community nutrition program as prescribed by the 2015 Somali health strategy includes:

- Promoting good health in the community by working with families, schools, community leaders, community health committees, and women's groups;
- Organizing and strengthening communities to be able to take control of their own health;
- Providing essential information on preventive and promotive services to prevent ill health;
- Providing basic care for some common illnesses; and
- A referral system providing a continuum of care for the Somali people.

The overall focus of the community health strategy is to provide integrated services promoting good health with an emphasis on addressing the key underlying causes of morbidity and mortality, improving the reproductive health status of adolescents, women, and addressing the most common causes of mortality in the under-five years children (ARI, diarrhoea, malnutrition, and vaccine preventable disease).

Fundamental to the success of a community program is sound supportive supervision, mentoring, and on-going training to the service providers and community health workers (CHW). To do this, it is essential that a strong monitoring, supervision, and support system is implemented between the different levels of the health system.

Generating relevant data is an important part of community nutrition programs. The community-based monitoring and reporting helps signal where there are gaps and is aimed primarily at using data generated by the different programmes to help the decision-making process for mobilizing resources in a targeted and appropriate way. Data is mostly generated by community workers on a wide range of promotion and prevention interventions. Data generated at the community level should be part of the overall information system. Most community health programs are already collecting key indicators though not quite harmonized. Based on the role and responsibilities of the CHW a two-way reporting system will need to be established that provides data on community prevention and promotive activities to the PHU which will then feed into the existing HMIS data flow up to the district MoH. Monitoring a small number of clearly defined indicators will help to keep the community IYCF programme focused on the essential activities and provide information for assessing overall programme progress. Monitoring and

reporting of community nutrition interventions will be conducted using the tools listed below that capture a few critical indicators of community nutrition programmes.

Community nutrition screening weekly tally sheet (Annex 2)

The Referral System

At the community level, referral slips may be used by community health workers to refer clients for nutrition treatment. Trained community health service providers are expected to screen children using MUAC, assess bipedal pitting oedema, and make referrals. Referrals between sites/health facilities and different programme components should be conducted using health facility referral slip to ensure continuum of care of service provision. In the latter, care should be taken not to double count children by adapting the unique number already assigned at the previous programme category. Children who don't meet admission criteria to the IMAM program should receive the different preventive elements of the Basic nutrition services package (BNSP) including immunization, deworming and individual IYCF counselling for their care givers. As well, a system needs to be in place to ensure that referred children access treatment accordingly. This allows for continued monitoring of their progress and prevents attrition of clients from the system. The referral slip should describe the treatment(s) and medication(s) given to the client, to avoid having the same medication given twice.

An additional referral layer ensures malnutrition is addressed through referral systems that manage its underlying and basic determinants. The food security and livelihoods referral pathway will provide guidance on ensuring that the most nutritionally vulnerable groups are supported to achieve more durable results while building household resilience and improving access to food and income through livelihood protection, restoration, and diversification for households with malnourished children.

The various referral tools included in this guideline are:

- Community screening referral slip - for referral of malnourished children screened in the community to nutrition treatment sites
- Facility referral slip - for referral of malnourished children screened in a facility to nutrition treatment sites
- Food security and livelihoods referral pathway - to guide linkage between livelihood support and nutrition treatment programmes

11. SUPPORTIVE SUPERVISION OF NUTRITION PROGRAMMES

Supportive supervision of health facility care providers in data collection, analysis, and reporting helps to ensure accurate information at prescribed periods of time and to ascertain both the quality of information and its usage to strengthen the quality of IMAM services. Supervisors should perform regular supportive supervision visits and use a standardized checklist to systematically cover specific job functions to assess and address service performance (refer to supervision checklist in annex). At the same time, the supervisor is a mentor and he/she should use the opportunity to provide support to health facility workers and community health workers based on their needs and knowledge gaps and strengthen capacities for improving quality.

Supervision for improving quality of protocol implementation entails monitoring admission and discharge trends and adherence to protocols. Accurate recording and compilation of information regarding admissions, re-admissions, referrals, and discharges from IMAM sites is important. Periodic analysis of the IMAM data is essential for both supervisor and implementer as it provides important information about the performance of individual sites and can be used to ensure actions be taken to improve service quality.

Regularly reviewing treatment cards, particularly of those children under treatment and of those who have defaulted, died, who did not respond, to treatment or did not recover, can identify weaknesses in community outreach, the management of individual cases, or service delivery. Treatment cards and site reports reveal if admissions and discharges are carried out according to these guidelines, routine medicine and dietary treatments are administered correctly, and bilateral pitting oedema is properly assessed. They highlight if deterioration in the condition of the child is identified and acted upon according to the action protocol and whether these children who are not gaining weight are referred for medical investigation before they are discharged as non-recovered. Review findings should be discussed with implementing health facility workers so that necessary improvements can be made.

Supervisors should also review the organizational structure of service delivery, crowd management, supply flow and stock management for medicines, therapeutic foods and supplementary food, organization of human resources, quality of health and nutrition group sessions at the health facility and in the communities, links with community outreach, and links with other community services

Supportive Supervision of community nutrition programmes

Community health programmes already have established systems of supervision and support, albeit at a small scale. During a supervision visit, the mentor/supervisor aims to further build the skills of community health cadres in terms of planned activities implemented, coverage of target population, and the quality of program support activities, and to help strengthen their performance where gaps are identified. Supervisory visits provide the opportunity to determine whether service providers are using their knowledge and skills to deliver services and if they are feeling confident about what they are doing or whether they are experiencing particular difficulties and provide constructive feedback on both the strong points and any difficulties the community worker (CW) has experienced. In Somalia, supportive supervision/mentoring is part of routine monitoring activities where data obtained as part of supervisory visits and reporting can help to monitor whether defined targets for activities were met during a reporting period, as well as assess the performance of individual community workers and the coverage achieved. The EPHS programs in Somalia propose that the HC staff should visit the PHU and provide support to the CHWs at least monthly; an opportunity for bringing FHWs together at the PHCU as part of ongoing mentoring and training.

In the 2015 community health strategy, it is proposed that the Community Development Committee takes on the responsibility for management and governance of the female CW and holding CWs accountable for delivering quality services while supporting and supervising the work of CW and the in their communities. Supervision of community-based programs is usually done by NGO partners, ministries of health (at federal, district and regional levels), and UN agencies and donors. In annex a supervisory checklist is attached that can be tailored to the supervision activity.

Feedback Mechanism

Health facility workers and supervisors at out-patient care, in-patient care, and supplementary feeding sites and those involved in community outreach should hold regular meetings to discuss performance using the monitoring data. Experiences should be shared, feedback given, and action plans for improving performance developed and discussed. In out-patient care settings and supplementary feeding programme sites, feedback can be provided to

the community through focus group discussions and community mobilization activities.

It is also recommended that feedback be provided to the community on a regular basis to gain trust and confidence in the treatment and empower them to participate in the treatment of children with acute malnutrition. This may be done through regular focus group discussions. Focus groups should be carefully selected to ensure that specific issues are discussed with appropriate community representatives. These may be community leaders, teachers, beneficiaries and non-beneficiaries, and/or mother-to-mother support group leaders. 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.

Feedback from communities encourage service providers to set up a platform for beneficiaries compliant and mechanism. Beneficiaries should play a role in giving feedback on service and Consider options such as hotlines, community conversation or exit interviews of beneficiaries. For further information, refer to accountability to affected populations guideline (add link).

12. INTEGRATION OF CURRENT NUTRITION REPORTING AND MONITORING PLATFORMS WITH NATIONAL INFORMATION MANAGEMENT SYSTEMS (DHIS2)

UNICEF has been supporting the Somalia government since 2007 in implementing DHIS2 (Digital Health Information System). The system collects EPHS (including morbidity & mortality), Malaria, HIV, TB, Immunisation, Safe Motherhood, and Nutrition as well as basic surgery and laboratory data at health facility level on a monthly basis. The data collection tools were disaggregated according to age and gender in 2016, to facilitate planning and advocacy. Since this revision, the MoHs and partners have indicated the need to revise the indicators, to enable data collection relevant for global health reports and tracking progress on health-related sustainable development goals (SDGs). This process is due to start in the second quarter of 2019 to review, update, and augment the nutrition indicators currently collected by DHIS2. Thus, all implementing partners are required to report using DHIS2 platform in alignment with the policy directions and strategic priorities of the country.

SCOPE is a digital beneficiary identity and benefit management system. It informs on who the beneficiaries are, what they are entitled to, issues instructions to the

appropriate delivery mechanism, and receives feedback about whether or not the right amount of transfer has been given to the intended family, thereby giving relevant, on-time data for decision-making and targeting. SCOPE supports in-kind distributions through a specially issued card that can contain a barcode, a QR code, or a chip, with the beneficiary information (i.e. NFC cards). It is a highly customizable platform that allows each programme/activity to have a tailor-made operational management solution across different modalities. With each registration happening only once, it makes easier the enrolment of an existing beneficiary or household in future or parallel interventions, whether in the same or different modalities and delivery mechanisms. Overall, it saves resources, value for money, compliance, and reduces risk of resource mismanagement. Despite the limiting context of Somalia that presents technological limitations to implementing SCOPE, SCOPE has been successfully implemented in several parts of Somalia and scaling it might provide gains and save costs in nutrition service delivery.

ANNEXES

TRIAGE

- 1 - Measurement techniques
- 2 - Screening tally sheet
- 3 - Weight-for-height -Child
- 4 - Weight-for-height -Adolescent
- 5 - BMI chart for adults
- 6 - Registration book

OTP

- 7 - OTP chart
- 8 - Transfer form
- 9 - Variable/minimum RUTF in OTP
- 10 - 5% Weight loss/gain chart
- 11- Weight gain over 14 days
- 12- Preparation of small quantities of F75 - F100 using scoops

SC/IPF

- 13 - SC Multi-chart
- 14 - Critical care chart
- 15 - How to insert NG-tube
- 16 - Dangers of IV cannula
- 17 - History and examination sheet
- 18 - Recovery Phase in an in-patient facility

INFANTS

- 19 - Supplementary sucking - SS-chart

MONITORING AND EVALUATION

- 20 - Supervision Checklist IMAM (DNO)
- 21 - OTP Supervision Form
- 22 - SC Supervision Form

MATERIALS

- 23 - Recipes for F75/F100
- 24 - RUTF specifications
- 25 - Drug dosages

TSFP

- 26 - TSFP Registration book
- 27 - TSFP Ration card
- 28 - TSFP Monthly report
- 29 - Advantages and Disadvantages of dry and wet feeding
- 30 - Nutrient Density for Supplementary Foods Used for IMAM

ANNEX 1 – ANTHROPOMETRIC MEASUREMENT TECHNIQUES

1 DIAGNOSING BILATERAL OEDEMA:

- Oedema is the swelling of the body or one of its parts.
- Oedema should be in both feet (bilateral). It is noticed when the bilateral oedema is pitting on both feet after pressing for a few seconds. “Pitting” is when you press on the top of the feet or the leg and the fingers leave a pit in the skin for some seconds.
- Oedema which appears only in one foot or leg is not a nutritional oedema. However, these patients still need to be seen by a medical person, in order to do a proper diagnosis.

Steps of diagnosing oedema:

- Oedema is evaluated first on dorsum of the feet.
- Press gently with your thumbs on each foot simultaneously, while you count: 121, 122, 123 (approx. 3 seconds).
- After removing the thumb, there is oedema if a pit stays for some seconds.
- Do the same thing for the lower legs (above the knee) and for the back of the hands.



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

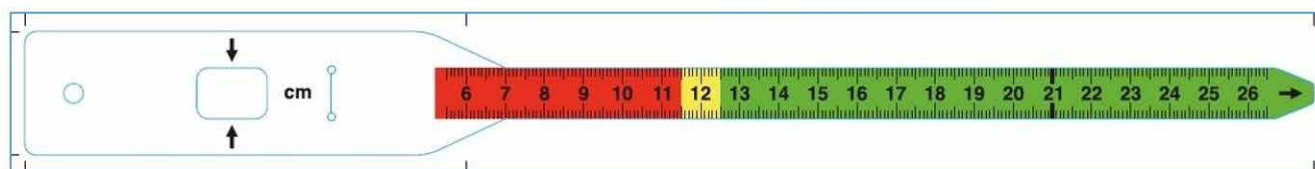
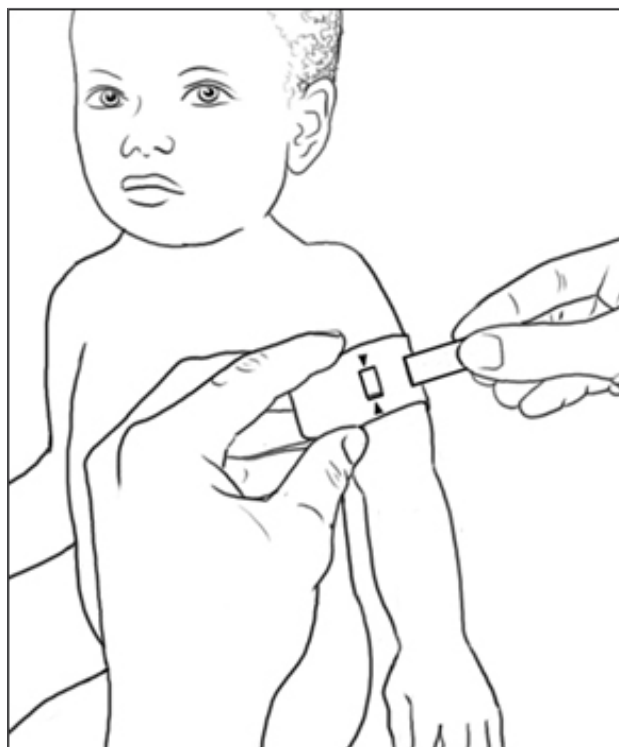
2. TAKING A CHILD'S MIDDLE UPPER ARM CIRCUMFERENCE (MUAC)

MUAC is used for children six months to five years old to measure thinness

2.1. How to Measure MUAC

- Measure the arm that the mother spontaneously presents to you (left or right) *
- Ask the mother to remove clothing that may cover the child's arm
- Bend the child's elbow to make the right angle
- Visually estimate the midpoint of the child's upper arm. If necessary, mark the midpoint with a pen on the arm
- Straighten the child's arm and wrap the tape around the arm at the midpoint. Make sure the numbers are right side up. Make sure the tape is flat around the skin
- Inspect the tension of the tape on the child's arm. Make sure the tape has the proper tension and is not too tight so that the skin is compressed or too loose so that the tape does not contact the skin all the way round the arm
- When the tape is in the correct position on the arm with correct tension, read the measurement to the nearest 0.1cm
- Immediately record the measurement.

* Studies indicate that there is no difference between left and right arm measurements in children. In order to avoid disturbing a child in changing position either arm can be measured, depending which arm the mother presents to you. In adults, the left arm is measured.



(RED) MUAC < 11.5 mm:

Severe acute malnutrition

(YELLOW) MUAC ≥ 11.5 and < 12.5 mm:

Moderate acute malnutrition

(GREEN) MUAC ≥ 12.5 mm:

Not to refer

3. TAKING A CHILD'S WEIGHT

Children are weighed with a 25 kg hanging spring scale, graduated to 0.100 kg. Do not forget to re-adjust the scale to zero before each weighing. A plastic wash basin is commonly used in Somalia to weigh children but weighing pants can still be found.

A plastic wash basin should be supported by four ropes that attach (are knotted) underneath the basin. The basin is close to the ground in case the child falls out and to make the child feel secure during weighing. If the basin is soiled, first clean it with disinfectant. The basin is comfortable and familiar for the child, can be used for ill children, and is easily cleaned. In the absence of a basin, weighing pants can be used although are sometimes inappropriate for very sick children. When pants are soiled, they can be cleaned and disinfected to reduce the risk of passing an infection to the next patient.

When the child is steady in the basin or pants, record the measurement to the nearest 100 grams, recording with the frame of the scale at eye level. The scales must be checked for accuracy by using a known weight on a regular basis, i.e. weekly.

3.1. Instructions for taking weight with a salter scale

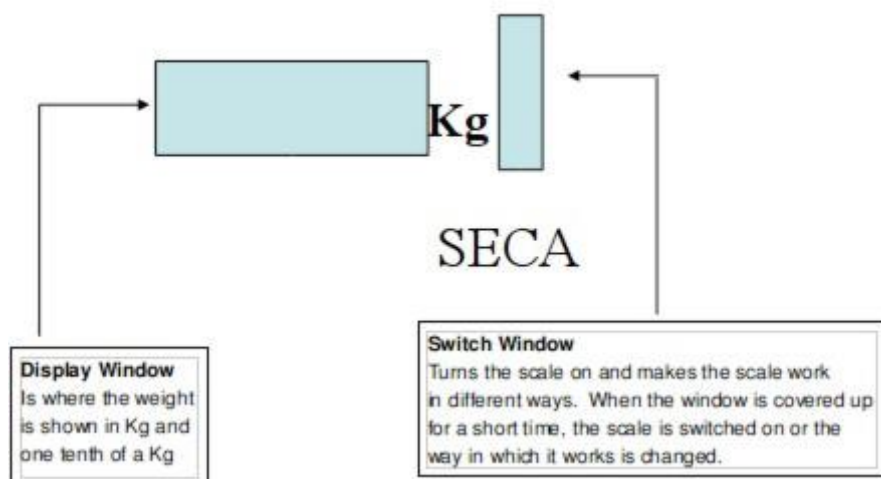
Before weighing the child, take all his/her clothes off. If possible, provide privacy for girls.

- Zero the weighing scale (i.e. make sure the arrow is on 0 after placing the empty basin or the weighing pants)
- Ensure that the weighing scale is at eye level
- Place the child in the basin or the weighing pants
- Make sure the child is not holding onto anything
- Read the child's weight. The arrow must be steady
- Record the weight in kg to the nearest 100g e.g. 6.6 kg
- Do not hold the scale when reading the weight



3.2. Using the electronic scale

How to use the ELECTRONIC /UNISCALE - display and switch window



Using the switch window



The best way to cover the switch window is to use your foot:

- Pass one foot close over the top of the switch window from one side to the other.
- DO NOT step on or touch the window. It is not a push button switch.



1. Put the scale on the floor. Choose the flattest, most level surface you have. Do not stand on the scale yet.

2. Look at the display window. It should be blank.

3. Move your foot quickly across the switch. The scale will switch on and you will see:

4. In 5 seconds, the scale will adjust itself to zero. You are ready to weigh a person.

5. Stand on the scale. Stand still. Make sure that feet or clothes do not cover the switch window. You should see:

and then

and then

6. The 1 will move back and forth from side to side to show you the scale is working. The you should see the weight in the display, for example:

Weighing adults and children who can stand on their own



1. Turn on the scale
2. Ask the person to step on the scale. Wait until the display shows weight.
3. Ask the person to get off the scale. Wait until the display shows 0.0 before weighing the next person.

Weighing children who are held by their mothers



1. Turn on the scale. Move your foot across switch window.
2. Ask the mother to step on the scale by herself. She can give her child to you or another person to hold.

Make sure her feet or clothes do not cover the switch window. You will see the mother's weight in the display, for example:

58.3

3. With the mother on the scale pass your foot slowly across the switch window. Then wait a couple seconds.

00.0

4. Ask the mother to step off the scale. You should see:

--.

5. Ask the mother to step back on the scale with her child. You should see the child's weight.

5.4

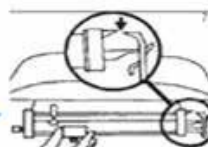
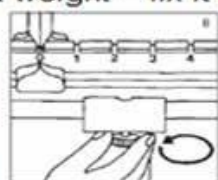
6. Ask the mother to step off the scale. You should see:

--.

7. Pass your foot across the switch window to reset the scale before weighing the next other. You should see:

0.0

For the infant scale (SECA), 1- you have first to tare the scale using the lower black weight – fix it tightly with the screw and do not touch it.



2- Move the upper sliding weights to the anticipated weight of the child using the small and big cursor.

3- Put the child on the scale and adjust the cursor, first in kg and then in g.



32

4. TAKING A CHILD'S LENGTH/HEIGHT

4.1 If the child is less than 87cm or less than 2 years:

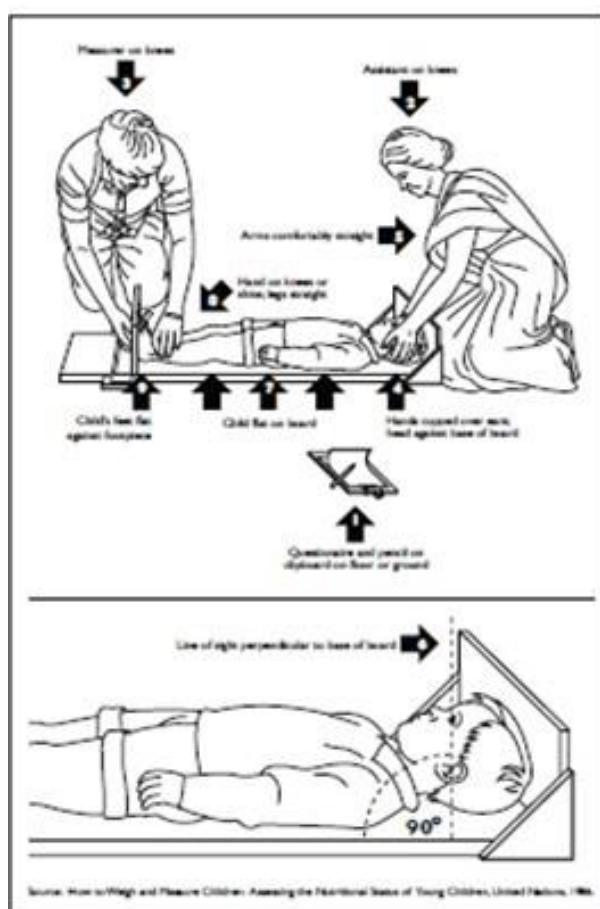
For children less than 87cm, the measuring board is placed on the ground

- You will need two people to take a good measurement. If there is no assistant, the mother may help by holding the head straight.
- The child is placed lying down along the middle of the board.
- The assistant holds the sides of the child's head and positions the head until it firmly touches the fixed headboard with the hair compressed.
- The measurer places her hands on the child's legs, gently stretches the child and then keeps one hand on the thighs to prevent the child bending the leg.
- While positioning the child's legs, the sliding foot-plate is pushed firmly against the bottom of the child's feet.
- To read the length measurement, the foot-plate must be perpendicular to the axis of the board and vertical.
- The length is read to the nearest 0.1cm.

4.2. If the child is 87cm height or more or 2 years old or more

The measuring board is fixed upright on level ground.

- The child stands, upright against the middle of the measuring board.
- The child's head, shoulders, buttocks, knees, and heels

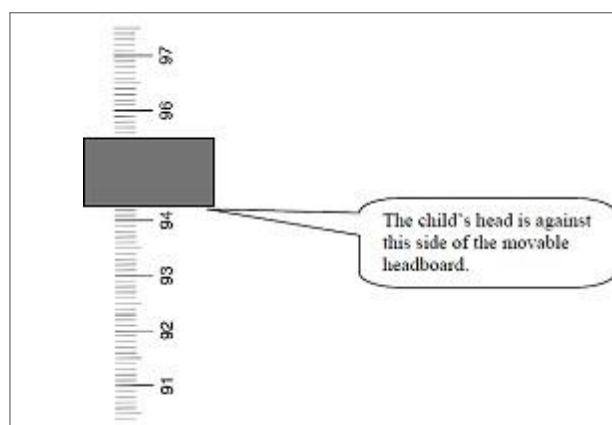
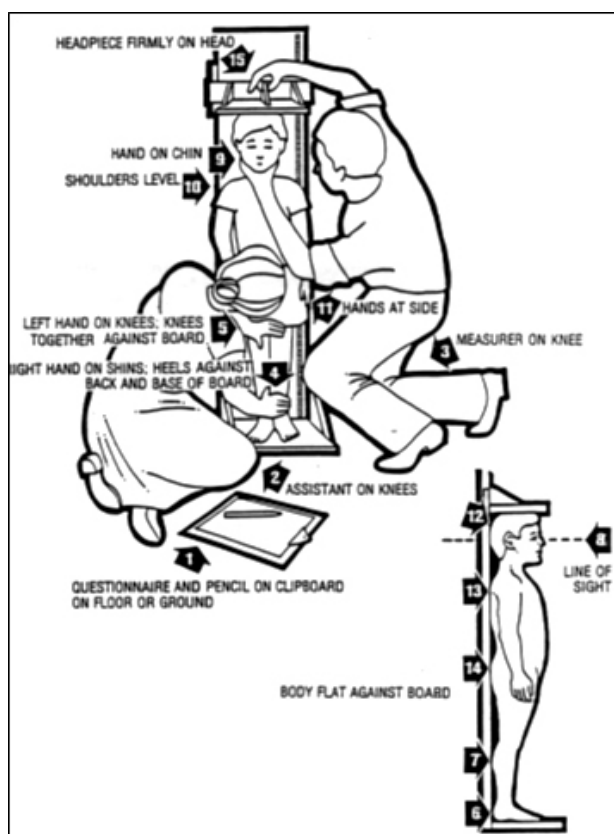


Source: How to Height and Measure Children: Assessing the Nutritional Status of Young Children, United Nations, 1986.

are held against the board by the assistant.

- The measurer positions the head and the cursor.
- The height is read to the nearest 0.1 cm. Measurement is recorded immediately.

©Shorr Productions ©WHO Growth standard training



Determining Weight-for-height (WFH) z-scores

Weight/Height Z-score using unisex table (see annex 3)

How to use the weight/height z-score tables:

Example: a child is 63 cm length and weighs 6.5 kg.

- Take the table, look in the 1st column and look for the figure 63cm (=height).
- Take a ruler or a piece of card place it under the figure 63 and the other figures on the same line.
On this line find the figure corresponding to the weight of the child, in this case 6.8.
- Look to see what column this figure is in. In this case it is in the MEDIAN WEIGHT column.

In this example the child's weight is normal in relation to his LENGTH. He therefore has an appropriate weight for his length.

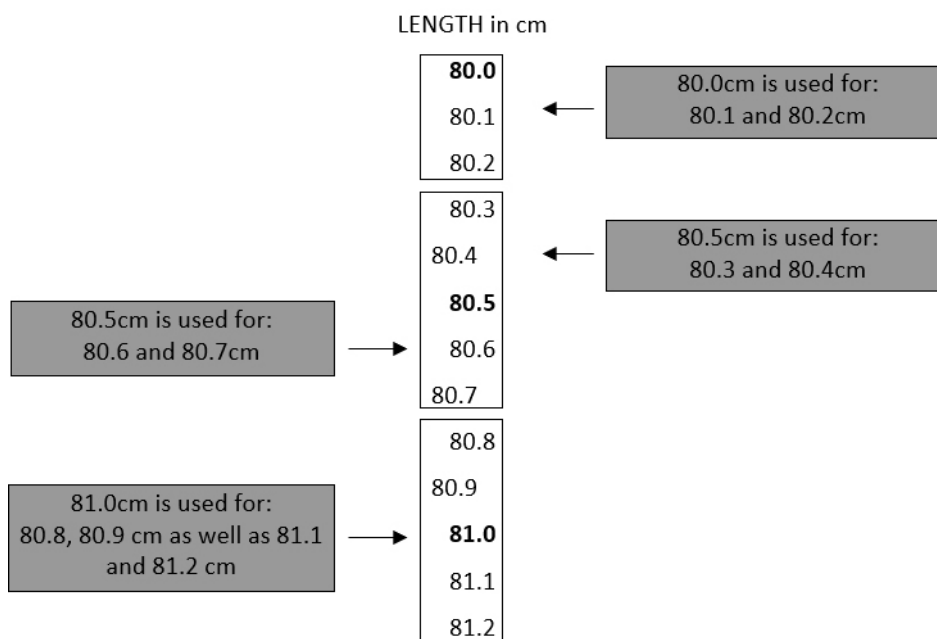
Example: a child is 78 cm tall and weighs 8.3 kg

This child is between the column -2 & -3 Z-score or between MAM and SAM. He is too thin in relation to his length or less than -2 and more than -3; he is <-2 (less) and >-3 (more): he is MODERATELY MALNOURISHED but NOT Severely Malnourished.

NOTE: It may be that the weight or the height is not a whole number.

Example: length: 80.4 cm and weight 7.9 kg. These 2 figures are not in the table. See below.

For the height/length: The height/length measurement has to be rounded to the nearest 0.5cm, as it is in the following example.



For the weight: Looking at the table, for a length of 80.5 cm the weight is 7.9 kg. This is between 7.7 and 8.3 kg. To express the fact that the child is between these 2 weights, write down that this child's Z-score is between -4 and -3 Z-score or <-3 AND >-4 Z-score. The child has SAM.

Interpretation of weight for height:

< -3 z-scores	>	Severe acute malnutrition
≥ -3 z-scores < -2	>	Moderate acute malnutrition
≥ -2 z-scores	>	No acute malnutrition

ANNEX 2 – SCREENING TALLY SHEET

NUTRITION SCREENING TALLY SHEET using MUAC			
DISTRICT.....HC.....VILLAGE/OTP.....		Month.....	
From ____/____/____ to ____/____/____		Function _____	Signature _____
Put a cross to the “o” within the different categories, according to the MUAC			
6 months & more	MUAC <115mm	MUAC ≥ 115 & <125mm	MUAC ≥ 125mm
	O O O O O	O O O O O O O O O O	O O O O O O O O O O O O O O O O
	O O O O O	O O O O O O O O O O	O O O O O O O O O O O O O O O O
	O O O O O	O O O O O O O O O O	O O O O O O O O O O O O O O O O
	O O O O O	O O O O O O O O O O	O O O O O O O O O O O O O O O O
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	O O O O O	O O O O O O O O O O	O O O O O O O O O O O O O O O O
	O O O O O	O O O O O O O O O O	O O O O O O O O O O O O O O O O
Total			

ANNEX 3 – UNISEX BOYS AND GIRLS TABLE (WHO2006)

Use for both boys and girls (highest for either gender)													
Length	Weight Kg – Z-score					Length	Weight Kg – Z-score						
cm	-4,0	-3	-2	-1,5	-1	0	cm	-4,0	-3	-2	-1,5	-1	0
Use Length for less than 87 cm													
45	1,75	1,90	2,07	2,16	2,25	2,46	66	5,5	5,92	6,4	6,65	6,92	7,5
45,5	1,81	1,97	2,14	2,23	2,33	2,55	66,5	5,6	6,02	6,5	6,75	7,03	7,62
46	1,88	2,03	2,21	2,30	2,41	2,63	67	5,7	6,11	6,6	6,86	7,14	7,74
46,5	1,94	2,10	2,28	2,38	2,48	2,72	67,5	5,8	6,2	6,69	6,96	7,24	7,85
47	2,00	2,16	2,35	2,45	2,56	2,80	68	5,8	6,29	6,79	7,06	7,35	7,97
47,5	2,06	2,23	2,42	2,53	2,64	2,89	68,5	5,9	6,38	6,89	7,16	7,45	8,1
48	2,12	2,30	2,50	2,61	2,72	2,97	69	6,0	6,47	6,99	7,26	7,56	8,2
48,5	2,18	2,37	2,57	2,68	2,80	3,06	69,5	6,1	6,56	7,08	7,36	7,66	8,3
49	2,25	2,44	2,65	2,76	2,89	3,16	70	6,2	6,65	7,18	7,46	7,77	8,4
49,5	2,32	2,51	2,73	2,85	2,97	3,25	70,5	6,3	6,74	7,27	7,56	7,87	8,5
50	2,39	2,59	2,81	2,94	3,07	3,35	71	6,3	6,82	7,37	7,66	7,97	8,6
50,5	2,46	2,67	2,90	3,03	3,16	3,46	71,5	6,4	6,91	7,46	7,76	8,1	8,8
51	2,54	2,75	2,99	3,12	3,26	3,56	72	6,5	7	7,55	7,86	8,2	8,9
51,5	2,62	2,84	3,08	3,22	3,36	3,68	72,5	6,6	7,08	7,65	7,95	8,3	9,0
52	2,70	2,93	3,18	3,32	3,47	3,79	73	6,7	7,16	7,74	8,0	8,4	9,1
52,5	2,79	3,02	3,28	3,42	3,58	3,91	73,5	6,7	7,25	7,83	8,1	8,5	9,2
53	2,88	3,12	3,38	3,53	3,69	4,03	74	6,8	7,33	7,91	8,2	8,6	9,3
53,5	2,98	3,22	3,49	3,64	3,80	4,16	74,5	6,9	7,41	8	8,3	8,7	9,4
54	3,08	3,33	3,61	3,76	3,92	4,29	75	6,9	7,49	8,1	8,4	8,8	9,5
54,5	3,18	3,44	3,73	3,88	4,05	4,42	75,5	7,0	7,56	8,2	8,5	8,8	9,6
55	3,29	3,55	3,85	4,01	4,18	4,55	76	7,1	7,64	8,3	8,6	8,9	9,7
55,5	3,39	3,67	3,97	4,14	4,31	4,69	76,5	7,2	7,72	8,3	8,7	9,0	9,8
56	3,50	3,78	4,10	4,26	4,44	4,83	77	7,2	7,79	8,4	8,8	9,1	9,9
56,5	3,61	3,90	4,22	4,40	4,58	4,98	77,5	7,3	7,87	8,5	8,8	9,2	10,0
57	3,7	4,02	4,35	4,53	4,71	5,13	78	7,4	7,94	8,6	8,9	9,3	10,1
57,5	3,8	4,13	4,47	4,66	4,85	5,27	78,5	7,4	8	8,7	9,0	9,4	10,2
58	3,9	4,25	4,6	4,79	4,99	5,42	79	7,5	8,1	8,7	9,1	9,5	10,3
58,5	4,1	4,37	4,72	4,92	5,12	5,56	79,5	7,6	8,2	8,8	9,2	9,5	10,4
59	4,2	4,49	4,85	5,05	5,25	5,71	80	7,6	8,2	8,9	9,2	9,6	10,4
59,5	4,3	4,6	4,97	5,17	5,39	5,85	80,5	7,7	8,3	9,0	9,3	9,7	10,5
60	4,4	4,71	5,09	5,3	5,52	5,99	81	7,8	8,4	9,1	9,4	9,8	10,6
60,5	4,5	4,82	5,21	5,42	5,65	6,13	81,5	7,8	8,5	9,1	9,5	9,9	10,7
61	4,6	4,93	5,33	5,54	5,77	6,26	82	7,9	8,5	9,2	9,6	10,0	10,8
61,5	4,7	5,04	5,44	5,66	5,89	6,4	82,5	8,0	8,6	9,3	9,7	10,1	10,9
62	4,8	5,14	5,56	5,78	6,01	6,53	83	8,1	8,7	9,4	9,8	10,2	11,0
62,5	4,9	5,25	5,67	5,89	6,13	6,65	83,5	8,2	8,8	9,5	9,9	10,3	11,2
63	5,0	5,35	5,77	6,00	6,25	6,78	84	8,3	8,9	9,6	10,0	10,4	11,3
63,5	5,1	5,45	5,88	6,12	6,36	6,9	84,5	8,3	9	9,7	10,1	10,5	11,4
64	5,1	5,54	5,99	6,23	6,48	7,03	85	8,4	9,1	9,8	10,2	10,6	11,5
64,5	5,2	5,64	6,09	6,33	6,59	7,15	85,5	8,5	9,2	9,9	10,3	10,7	11,6
65	5,3	5,74	6,19	6,44	6,7	7,27	86	8,6	9,3	10,0	10,4	10,8	11,7
65,5	5,4	5,83	6,29	6,55	6,81	7,39	86,5	8,7	9,4	10,1	10,5	11,0	11,9

Use for both boys and girls													
Height	Weight Kg – Z-score						Height	Weight Kg – Z-score					
cm	-4,0	-3	-2	-1,5	-1	0	cm	-4,0	-3	-2	-1,5	-1	0
Use Height for more than or equal to 87 cm													
87	9,0	9,6	10,4	10,8	11,2	12,2	104	12,0	13,0	14,0	14,6	15,2	16,5
87,5	9,0	9,7	10,5	10,9	11,3	12,3	104,5	12,1	13,1	14,2	14,7	15,4	16,7
88	9,1	9,8	10,6	11,0	11,5	12,4	105	12,2	13,2	14,3	14,9	15,5	16,8
88,5	9,2	9,9	10,7	11,1	11,6	12,5	105,5	12,3	13,3	14,4	15,0	15,6	17,0
89	9,3	10,0	10,8	11,2	11,7	12,6	106	12,4	13,4	14,5	15,1	15,8	17,2
89,5	9,4	10,1	10,9	11,3	11,8	12,8	106,5	12,5	13,5	14,7	15,3	15,9	17,3
90	9,5	10,2	11,0	11,5	11,9	12,9	107	12,6	13,7	14,8	15,4	16,1	17,5
90,5	9,6	10,3	11,1	11,6	12,0	13,0	107,5	12,7	13,8	14,9	15,6	16,2	17,7
91	9,7	10,4	11,2	11,7	12,1	13,1	108	12,8	13,9	15,1	15,7	16,4	17,8
91,5	9,8	10,5	11,3	11,8	12,2	13,2	108,5	13,0	14,0	15,2	15,8	16,5	18,0
92	9,9	10,6	11,4	11,9	12,3	13,4	109	13,1	14,1	15,3	16,0	16,7	18,2
92,5	9,9	10,7	11,5	12,0	12,4	13,5	109,5	13,2	14,3	15,5	16,1	16,8	18,4
93	10,0	10,8	11,6	12,1	12,6	13,6	110	13,3	14,4	15,6	16,3	17,0	18,6
93,5	10,1	10,9	11,7	12,2	12,7	13,7	110,5	13,4	14,5	15,8	16,4	17,1	18,8
94	10,2	11,0	11,8	12,3	12,8	13,8	111	13,5	14,6	15,9	16,6	17,3	19,0
94,5	10,3	11,1	11,9	12,4	12,9	13,9	111,5	13,6	14,8	16,0	16,7	17,5	19,2
95	10,4	11,1	12,0	12,5	13,0	14,1	112	13,7	14,9	16,2	16,9	17,7	19,4
95,5	10,4	11,2	12,1	12,6	13,1	14,2	112,5	13,9	15,0	16,3	17,1	17,9	19,6
96	10,5	11,3	12,2	12,7	13,2	14,3	113	14,0	15,2	16,5	17,2	18,0	19,8
96,5	10,6	11,4	12,3	12,8	13,3	14,4	113,5	14,1	15,3	16,7	17,4	18,2	20,0
97	10,7	11,5	12,4	12,9	13,4	14,6	114	14,2	15,4	16,8	17,6	18,4	20,2
97,5	10,8	11,6	12,5	13,0	13,6	14,7	114,5	14,3	15,6	17,0	17,8	18,6	20,5
98	10,9	11,7	12,6	13,1	13,7	14,8	115	14,5	15,7	17,2	18,0	18,8	20,7
98,5	11,0	11,8	12,8	13,3	13,8	14,9	115,5	14,6	15,9	17,3	18,1	19,0	20,9
99	11,1	11,9	12,9	13,4	13,9	15,1	116	14,7	16,0	17,5	18,3	19,2	21,1
99,5	11,2	12,0	13,0	13,5	14,0	15,2	116,5	14,8	16,2	17,7	18,5	19,4	21,3
100	11,2	12,1	13,1	13,6	14,2	15,4	117	15,0	16,3	17,8	18,7	19,6	21,5
100,5	11,3	12,2	13,2	13,7	14,3	15,5	117,5	15,1	16,5	18,0	18,9	19,8	21,7
101	11,4	12,3	13,3	13,9	14,4	15,6	118	15,3	16,6	18,2	19,0	19,9	22,0
101,5	11,5	12,4	13,4	14,0	14,5	15,8	118,5	15,4	16,8	18,4	19,2	20,1	22,2
102	11,6	12,5	13,6	14,1	14,7	15,9	119	15,5	16,9	18,5	19,4	20,3	22,4
102,5	11,7	12,6	13,7	14,2	14,8	16,1	119,5	15,7	17,1	18,7	19,6	20,5	22,6
103	11,8	12,8	13,8	14,4	14,9	16,2	120	15,8	17,3	18,9	19,8	20,7	22,8
103,5	11,9	12,9	13,9	14,5	15,1	16,4							

ANNEX 4 – WEIGHT-FOR-HEIGHT ADOLESCENTS

Height (cm)	100% Median	85% (target)	<80% mod	<70% Severe	sex
120.5	22.1	18.8	17.7	15.5	mf
121	22.3	19	17.8	15.6	mf
121.5	22.5	19.1	18	15.8	mf
122	22.7	19.3	18.2	15.9	mf
122.5	23	19.5	18.4	16.1	mf
123	23.2	19.7	18.6	16.2	mf
123.5	23.5	19.9	18.8	16.4	mf
124	23.7	20.1	19	16.6	mf
124.5	24	20.4	19.2	16.8	mf
125	24.2	20.6	19.4	16.9	mf
125.5	24.5	20.8	19.6	17.1	mf
126	24.7	21	19.8	17.3	mf
126.5	25	21.2	20	17.5	mf
127	25.3	21.5	20.2	17.7	mf
127.5	25.5	21.7	20.4	17.9	mf
128	25.8	21.9	20.7	18.1	mf
128.5	26.1	22.2	20.9	18.3	mf
129	26.4	22.4	21.1	18.5	mf
129.5	26.7	22.7	21.3	18.7	mf
130	27	22.9	21.6	18.9	mf
130.5	27.3	23.2	21.8	19.1	mf
131	27.6	23.4	22.1	19.3	mf
131.5	27.9	23.7	22.3	19.5	mf
132	28.2	24	22.5	19.7	mf
132.5	28.5	24.2	22.8	19.9	mf
133	28.8	24.5	23	20.2	mf
133.5	29.1	24.7	23.3	20.4	mf
134	29.4	25	23.5	20.6	mf
134.5	29.7	25.3	23.8	20.8	mf
135	30.1	25.6	24.1	21.1	mf
135.5	30.4	25.8	24.3	21.3	mf
136	30.7	26.1	24.6	21.5	mf
136.5	31	26.4	24.8	21.7	mf
137	31.4	26.7	25.1	22	mf
137.5	31.7	27	25.4	22.2	mf
138	32.1	27.2	25.6	22.4	mf
138.5	32.4	27.5	25.9	22.7	mf
139	32.7	27.8	26.2	22.9	mf
139.5	33.1	28.1	26.4	23.1	mf
140	33.4	28.4	26.7	23.4	mf
140.5	33.7	28.7	27	23.6	mf
141	34.1	29	27.3	23.9	mf
141.5	34.4	29.2	27.5	24.1	mf
142	34.8	29.5	27.8	24.3	mf
142.5	35.1	29.8	28.1	24.6	mf

143	35.4	30.1	28.3	24.8	mf
143.5	35.8	30.4	28.6	25	mf
144	36.1	30.7	28.9	25.3	mf
144.5	36.5	31	29.2	25.5	mf
145	36.8	31.3	29.4	25.8	mf

Height (cm)	100% Median	85% (target)	< 80% mod	< 70% Severe	sex
146	37.5	31.9	30	26.2	mf
146.5	37.8	32.2	30.3	26.5	mf
147	38.2	32.4	30.5	26.7	mf
147.5	38.5	32.7	30.8	27	mf
148	38.9	33	31.1	27.2	mf
148.5	39.2	33.3	31.4	27.4	mf
149	39.5	33.6	31.6	27.7	mf
149.5	39.9	33.9	31.9	27.9	mf
150	40.3	34.2	32.2	28.2	mf
150.5	40.6	34.5	32.5	28.4	mf
151	41	34.8	32.8	28.7	mf
151.5	41.3	35.1	33.1	28.9	mf
152	41.7	35.4	33.4	29.2	mf
152.5	42.1	35.8	33.7	29.4	mf
153	42.4	36.1	34	29.7	mf
153.5	42.8	36.4	34.3	30	mf
154	43.2	36.7	34.6	30.2	mf
154.5	43.6	37.1	34.9	30.5	mf
155	44	37.4	35.2	30.8	mf
155.5	44.2	37.6	35.4	30.9	m
156	44.6	37.9	35.7	31.2	m
156.5	45	38.2	36	31.5	m
157	45.4	38.6	36.3	31.8	m
157.5	45.8	38.9	36.7	32.1	m
158	46.2	39.3	37	32.4	m
158.5	46.6	39.6	37.3	32.7	m
159	47.1	40	37.7	33	m
159.5	47.5	40.4	38	33.3	m
160	48	40.8	38.4	33.6	m
160.5	48.4	41.1	38.7	33.9	m
161	48.8	41.5	39.1	34.2	m
161.5	49.3	41.9	39.4	34.5	m
162	49.8	42.3	39.8	34.8	m
162.5	50.2	42.7	40.2	35.1	m
163	50.7	43.1	40.5	35.5	m
163.5	51.1	43.5	40.9	35.8	m
164	51.6	43.9	41.3	36.1	m
164.5	52.1	44.3	41.7	36.5	m
165	52.6	44.7	42.1	36.8	m
165.5	53.1	45.1	42.5	37.2	m
166	53.6	45.6	42.9	37.5	m

166.5	54.1	46	43.3	37.9	m
167	54.6	46.4	43.7	38.2	m
167.5	55.1	46.9	44.1	38.6	m
168	55.6	47.3	44.5	38.9	m
168.5	56.2	47.7	44.9	39.3	m
169	56.7	48.2	45.4	39.7	m
169.5	57.3	48.7	45.8	40.1	m
170	57.8	49.2	46.3	40.5	m
170.5	58.4	49.6	46.7	40.9	m
171	59	50.1	47.2	41.3	m

This table has been constructed using the NCHS standards. The height-for-age and weight-for-age standards were amalgamated to determine the median weight for height. The sexes were combined when the unisex standard is within 1.5% of the body weight of the standard for either sex.

ANNEX 5 – BMI CHART ADULT

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

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

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

BMI	INTERPRETATION
< 16.0	severe thinness
16.0 - 16.9	moderate thinness
17.0 - 18.4	marginal thinness
18.5 - 24.9	normal

Source : WHO (1995) Physical status : the use and interpretation of anthropometry,
Report of a WHO expert committee, WHO

ANNEX 6 – REGISTRATION BOOK SC/OTP

DATE	Register/ Scope #	SAM-No (Ex-cure)	Patient's Name	Caretaker's Name	Address& Phone No	Entry to facility					MUAC mm	
						Type of admission	Transfer-IN Code/Name of the SC/OTP	Sex M/F	Age mo	Wt kg.g		Ht/L cm
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												

	Exit from facility					Type of Exit		Date of Minimum Weight	Minimum Weight	Observation
	Date	Wt kg.g	W/L or H	Oed 0,1,2,3	MUAC mm	Type	Transfer-TO Name/code of SC/OTP			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

ANNEX 7 – OTP CHART

OTP Chart			
SAM/Scope Number.....Registration Number..... Admission date.....			
OTP code OTP nameDistrict.....			
Reason of Admission MUACmm W/H.....Z-score OR Oedema Yes ☐ No ☐			
Patient Name.....	Breast feeding Yes ☐ No ☐	Special Problem.....	
Caretaker Name.....	Twins Yes ☐ No ☐		
Age (mo)..... Sex	Parents alive Yes ☐ No ☐ If No, precise.....	Update Immunisation Yes ☐ No ☐	
Address.....	Health of caretaker.....	Immunisation card Yes ☐ No ☐	
Phone #		Measles 1..... 2.....	
Admission Information			
Before beginning treatment (circle the answer)		TYPE of ADMISSION	
Referral BY: Spontaneous / Active screening / HC /(circle answer)		☐ New admission	
During the treatment or beginning of treatment		☐ Transfer-IN*	
* TRANSFER- IN: Yes ☐ No ☐		☐ Relapse	
if Yes, SC/ Other OTP / District hospital (circle the answer)		☐ Readmission after defaulting <2months	
Name of..... Registration NO			
Date of IMAM admission..... Date of transfer TO OTP.....			
Examination		Education given	
Circle the answer	Theme	Date	Signature
Condition of Patient: Normal / Sick / Very sick	Causes of malnutrition		
Handicap: Yes ☐ No ☐ If yes,	Diarrhoea, fever, ARI		
Respiration: Normal / Fast	Infection (skin, eyes, ear)		
Eyes: Normal / Vitamin A deficit / photophobia	Play & stimulation		
Skin lesions: Yes ☐ No ☐	Nutrition – child care		
Oedema (0, +, ++, +++).....	Hygiene		
Home Visit (HV)			
DATE	REASON(S)	DATE HV	CONCLUSION
**Transfer-TO-IPF during treatment in OTP			
DATE	REASON(S)	WHERE	RESULT (RETURN-DATE/NOT RETURN/DEATH)
Discharge			
Date of discharge/...../.....			
Cured ☐	Defaulter Confirmed ☐	cause.....	
Defaulter Unconfirmed ☐	Dead ☐	cause.....	
Transfer-TO..... (to complete in **)			
Non Responder ☐ cause..... Medical referral ☐ TO			
Follow up in TSFC			

Admission Length / Height.....cm		Target Weightkg.g							Target MUAC.....mm												
Date	Adm	2	3	4	5	6	7	8	9	10	11	12									
Date (dd/mo)																					
Weight (kg.g)																					
Oedema (0,+,++,+++)																					
MUAC (mm)																					
Diarrhoea (0 to #d)																					
Vomiting (0 to #d)																					
Fever (0 to # d)																					
Cough (0 to #d)																					
Pale Conj (0 to ++)																					
Respir. Rate/min																					
Temp. C° (Axi/Rect)																					
Malaria test result (0 / - / +)																					
Appetite Test (Good/Moderate/Poor)																					
Appetite test (g/sachet/bar)																					
Failure to respond (precise the cause)																					
Treatment carer choice (SC/OTP)																					
RUTF (# sachets given back)																					
RUTF (# sachets to caretaker)																					
Transfer TO / Absent																					
Need HomeVisit (Y / N)																					
Routine Medicine																					
Drugs	Date (dd/mm)	Dose			Drugs	Date (dd/mm)	Dose														
Amoxycillin					Deworming																
Vitamin A					Measles vaccine																
Antimalaria drugs					Other																
Specific treatment																					
Date (dd/mm)	Observation					Treatment															
	°																				

ANNEX 8 – TRANSFER FORM

TRANSFER FORM during SAM TREATMENT							
SCOPE/SAM-Number							
<i>Circle the information below and fill in codes</i>							
Transfer-IN (From)	OTP SC	Facility Name (From)		Reg No			
Transfer -TO	OTP SC	Facility Name (TO)					
Phone call made	Y / N	If returning patient reg no in receiving facility					
<i>Fill the administrative information</i>							
Patient's Name				Date of Transfer			
Caretaker Name				Sex	M / F	Age (mo.)	
Address							
Phone No							
Time & condition of transport							
<i>Fill the information of the follow up of the patient</i>							
	Date	Weight	Height / Lenght	WH Z	MUAC	Oedema	Result of Appetite Test
Admission							
Minimum Weight							
Day of Transfer-TO							
<i>Complete the information of the diet and medical treatment already given</i>							
	Acute Phase	Transition	Rehab/OTP				
F75							
F100							
F100 dilute							
RUTF							
Date at beginning							
	Drugs		Date				
Routine treatment	Amoxycillin						
	Mebendazole						
	Measles vac.						
	other						
	other						
Other Specific treatment given			Date				
Reason for Transfer-TO SC							
Failure of appetite test Y / N Complications Y / N if Y Oedema Y / N Failure-to-Responses in OTP Y/N							
SPECIFY:							
Reason for Transfer-TO OTP							
ood appetite Y / N No complications Y / N Ready for recovery phase Y / N Transfer-TO another OTP Y / N Other							
Any Specific treatment Given or other important items							
Laboratory test results							
Name and function of the staff				Date and signature			

ANNEX 9 – VARIABLE RUTF IN OTP TABLE

week of treatment	RUTF Paste - grams per week				RUTF Sachets (96g)			
	CRITICAL stock shortage	Absolute Minimum (week one)	Intermediate (week two)	STANDARD ration	CRITICAL stock shortage	Absolute Minimum (week one)	Intermediate (week two)	STANDARD ration
Class of weight (kg)	100 kcal/kg/d	135 kcal/kg/d	150 kcal/kg/d	170 kcal/kg/d	100 kcal/kg/d	135 kcal/kg/d	150 kcal/kg/d	170 kcal/kg/d
3.0 - 3.4	440	600	660	750	5	6	7	8
3.5 - 4.9	530	720	800	900	6	8	9	10
5.0 – 6.9	830	1100	1250	1400	9	12	13	15
7.0 – 9.9	1060	1430	1600	1800	12	15	17	20

NOTE: This table can be used if there is a limited supply of RUTF **due to a pipeline break (not planned)**, or if the children have marginal appetites at the start of treatment and the OTP wants to discourage sharing because of a large surplus before the child regains a full appetite. The amount given should NEVER fall below 135 kcal/kg/week. If the amount falls below 100 kcal/kg/d the children will loose weight and deteriorate. NOTE the relatively small difference between the Critical and standard amounts to be dispensed! It is the "little" extra which gives the impetus for growth - this is why sharing in the family can lead to low recovery rates and this needs to be explained to the caretaker and her family.

ANNEX 10 – WEIGHT LOSS AND WEIGHT GAIN BY 5% CHART

5% weight loss (for failure-to-respond in OTP)					
1st week	loss	2nd week	1st week	loss	2nd week
4,0	0,2	3,8	8,0	0,4	7,6
4,1	0,2	3,9	8,1	0,4	7,7
4,2	0,2	4,0	8,2	0,4	7,8
4,3	0,2	4,1	8,3	0,4	7,9
4,4	0,2	4,2	8,4	0,4	8,0
4,5	0,2	4,3	8,5	0,4	8,1
4,6	0,2	4,4	8,6	0,4	8,2
4,7	0,2	4,5	8,7	0,4	8,3
4,8	0,2	4,6	8,8	0,4	8,4
4,9	0,2	4,7	8,9	0,4	8,5
5,0	0,3	4,8	9,0	0,5	8,6
5,1	0,3	4,8	9,1	0,5	8,6
5,2	0,3	4,9	9,2	0,5	8,7
5,3	0,3	5,0	9,3	0,5	8,8
5,4	0,3	5,1	9,4	0,5	8,9
5,5	0,3	5,2	9,5	0,5	9,0
5,6	0,3	5,3	9,6	0,5	9,1
5,7	0,3	5,4	9,7	0,5	9,2
5,8	0,3	5,5	9,8	0,5	9,3
5,9	0,3	5,6	9,9	0,5	9,4
6,0	0,3	5,7	10,0	0,5	9,5
6,1	0,3	5,8	10,1	0,5	9,6
6,2	0,3	5,9	10,2	0,5	9,7
6,3	0,3	6,0	10,3	0,5	9,8
6,4	0,3	6,1	10,4	0,5	9,9
6,5	0,3	6,2	10,5	0,5	10,0
6,6	0,3	6,3	10,6	0,5	10,1
6,7	0,3	6,4	10,7	0,5	10,2
6,8	0,3	6,5	10,8	0,5	10,3
6,9	0,3	6,6	10,9	0,5	10,4
7,0	0,3	6,6	11,0	0,5	10,5
7,1	0,4	6,7	11,1	0,6	10,5
7,2	0,4	6,8	11,2	0,6	10,6
7,3	0,4	6,9	11,3	0,6	10,7
7,4	0,4	7,0	11,4	0,6	10,8
7,5	0,4	7,1	11,5	0,6	10,9
7,6	0,4	7,2	11,6	0,6	11,0
7,7	0,4	7,3	11,7	0,6	11,1
7,8	0,4	7,4	11,8	0,6	11,2
7,9	0,4	7,5	11,9	0,6	11,3
8,0	0,4	7,6	12,0	0,6	11,4

5% weight gain (for treatment of dehydration)					
initial	gain	final	initial	gain	final
4,0	0,2	4,2	8,0	0,4	8,4
4,1	0,2	4,3	8,1	0,4	8,5
4,2	0,2	4,4	8,2	0,4	8,6
4,3	0,2	4,5	8,3	0,4	8,7
4,4	0,2	4,6	8,4	0,4	8,8
4,5	0,2	4,7	8,5	0,4	8,9
4,6	0,2	4,8	8,6	0,4	9,0
4,7	0,2	4,9	8,7	0,4	9,1
4,8	0,2	5,0	8,8	0,4	9,2
4,9	0,2	5,1	8,9	0,4	9,3
5,0	0,3	5,3	9,0	0,5	9,5
5,1	0,3	5,4	9,1	0,5	9,6
5,2	0,3	5,5	9,2	0,5	9,7
5,3	0,3	5,6	9,3	0,5	9,8
5,4	0,3	5,7	9,4	0,5	9,9
5,5	0,3	5,8	9,5	0,5	10,0
5,6	0,3	5,9	9,6	0,5	10,1
5,7	0,3	6,0	9,7	0,5	10,2
5,8	0,3	6,1	9,8	0,5	10,3
5,9	0,3	6,2	9,9	0,5	10,4
6,0	0,3	6,3	10,0	0,5	10,5
6,1	0,3	6,4	10,1	0,5	10,6
6,2	0,3	6,5	10,2	0,5	10,7
6,3	0,3	6,6	10,3	0,5	10,8
6,4	0,3	6,7	10,4	0,5	10,9
6,5	0,3	6,8	10,5	0,5	11,0
6,6	0,3	6,9	10,6	0,5	11,1
6,7	0,3	7,0	10,7	0,5	11,2
6,8	0,3	7,1	10,8	0,5	11,3
6,9	0,3	7,2	10,9	0,5	11,4
7,0	0,3	7,3	11,0	0,5	11,6
7,1	0,4	7,5	11,1	0,6	11,7
7,2	0,4	7,6	11,2	0,6	11,8
7,3	0,4	7,7	11,3	0,6	11,9
7,4	0,4	7,8	11,4	0,6	12,0
7,5	0,4	7,9	11,5	0,6	12,1
7,6	0,4	8,0	11,6	0,6	12,2
7,7	0,4	8,1	11,7	0,6	12,3
7,8	0,4	8,2	11,8	0,6	12,4
7,9	0,4	8,3	11,9	0,6	12,5
8,0	0,4	8,4	12,0	0,6	12,6

ANNEX 11 – WEIGHT GAIN OVER 14 DAYS TO USE IN OTP

Gain of Weight (gr/kg/day) for a length of stay of 14 days											
		Gain of weight (g/kg/day) over 14 days						Gain of weight (g/kg/day) over 14 days			
		2,5	5	10	15			2,5	5	10	15
Weight 14 days before	4,0	4,1	4,3	4,6	4,8	Weight 14 days before	7,0	7,2	7,5	8,0	8,5
	4,1	4,2	4,4	4,7	5,0		7,1	7,3	7,6	8,1	8,6
	4,2	4,3	4,5	4,8	5,1		7,2	7,5	7,7	8,2	8,7
	4,3	4,5	4,6	4,9	5,2		7,3	7,6	7,8	8,3	8,8
	4,4	4,6	4,7	5,0	5,3		7,4	7,7	7,9	8,4	9,0
	4,5	4,7	4,8	5,1	5,4		7,5	7,8	8,0	8,6	9,1
	4,6	4,8	4,9	5,2	5,6		7,6	7,9	8,1	8,7	9,2
	4,7	4,9	5,0	5,4	5,7		7,7	8,0	8,2	8,8	9,3
	4,8	5,0	5,1	5,5	5,8		7,8	8,1	8,3	8,9	9,4
	4,9	5,1	5,2	5,6	5,9		7,9	8,2	8,5	9,0	9,6
	5,0	5,2	5,4	5,7	6,1		8,0	8,3	8,6	9,1	9,7
	5,1	5,3	5,5	5,8	6,2		8,1	8,4	8,7	9,2	9,8
	5,2	5,4	5,6	5,9	6,3		8,2	8,5	8,8	9,3	9,9
	5,3	5,5	5,7	6,0	6,4		8,3	8,6	8,9	9,5	10,0
	5,4	5,6	5,8	6,2	6,5		8,4	8,7	9,0	9,6	10,2
	5,5	5,7	5,9	6,3	6,7		8,5	8,8	9,1	9,7	10,3
	5,6	5,8	6,0	6,4	6,8		8,6	8,9	9,2	9,8	10,4
	5,7	5,9	6,1	6,5	6,9		8,7	9,0	9,3	9,9	10,5
	5,8	6,0	6,2	6,6	7,0		8,8	9,1	9,4	10,0	10,6
	5,9	6,1	6,3	6,7	7,1		8,9	9,2	9,5	10,1	10,8
	6,0	6,2	6,4	6,8	7,3		9,0	9,3	9,6	10,3	10,9
	6,1	6,3	6,5	7,0	7,4		9,1	9,4	9,7	10,4	11,0
	6,2	6,4	6,6	7,1	7,5		9,2	9,5	9,8	10,5	11,1
	6,3	6,5	6,7	7,2	7,6		9,3	9,6	10,0	10,6	11,3
	6,4	6,6	6,8	7,3	7,7		9,4	9,7	10,1	10,7	11,4
	6,5	6,7	7,0	7,4	7,9		9,5	9,8	10,2	10,8	11,5
	6,6	6,8	7,1	7,5	8,0		9,6	9,9	10,3	10,9	11,6
	6,7	6,9	7,2	7,6	8,1		9,7	10,0	10,4	11,1	11,7
	6,8	7,0	7,3	7,8	8,2		9,8	10,1	10,5	11,2	11,9
	6,9	7,1	7,4	7,9	8,3		9,9	10,2	10,6	11,3	12,0
	7,0	7,2	7,5	8,0	8,5		10,0	10,4	10,7	11,4	12,1

ANNEX 12 – PREPARATION OF SMALL QUANTITIES OF F75 - F100 USING SCOOPS

F75

WHITE scoop F75	boiled water at 70° C or more (ml)	reconstituted F75 (ml)
1	25	28
2	50	56
3	75	84
4	100	112
5	125	140
6	150	168
7	175	196
8	200	224
9	225	252
10	250	280
11	275	308
12	300	336
13	325	364
14	350	392
15	375	420
16	400	448
17	425	476
18	450	504
19	475	532
20	500	560
30	750	840
1 canister (400 G)	2200	2480

F100

BLUE SCOOP	BOILED WATER AT À 70° C OR MORE (ML)	RECONSTITUTED F100 (ML)
1	25	29
2	50	58
3	75	87
4	100	116
5	125	145
6	150	174
7	175	203
8	200	232
9	225	261
10	250	290
11	275	319
12	300	348
13	325	387
14	350	406
15	375	435
16	400	464
17	425	493
18	450	522
19	475	551
20	500	580
30	750	870
1 canister (400g)	1850	2158

100

100

Diet															
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Acute Ph./Trans./Rehab.															
F75/F100/F100D															
# feeds/day															
MI/feeds															
Iron added.....															
RUTF															
# feeds/day															
Sachet/day															
App. test (Good/Mod/Poor)															
Feeds hrs															
A=Absent															
V=vomiting															
R=refused															
NGT=Naso gastric tube															
IV=IV infusion															
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
.....ml=extra															

Surveillance														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Alert / Lethargic (A/L)														
Stools (0 to IIII)														
Vomiting (0 to IIII)														
Dehydrated (0 to +++)														
Cough (0 to +++)														
Shock (0 to +++)														
Capillary refill (secs)														
Resp/min														
Pale conjunct. (0 to +++)														
Temp AM .Ax/Rec														
Temp PM Ax/Rec														
Liver size cm														
Other														

Routine treatment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	DATE														
	Antibiotic 1														
		x													
	Antibiotic 2														
	Anti-malaria														
	Anti-fungal														

Specific Treatment	Antibiotic 3														
	Antibiotic 4														
	Resomal ml														
	IV Inf/Blood Tr														
	NGT														

Lab tests	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Hb														
	Malaria test														
	TB Test														
	Chest x-ray other														

OBSERVATION:

ANNEX 14 – CRITICAL CARE CHART

CRITICAL CARE CHART													
Patient's Name		Reg. No		Sheet No									
Age:		H/L:		SAM-No		Oedema: 0 + ++ +++							
SC / emergency ward/ casualty/ paediatr ward/ other		Nurse in charge		Dr in Charge									
Date:													
Check the patient everymin/hour		Time started		AM /PM									
Examination	HOUR	Check	Initial Eval.										
Level of Consciousness													
Weight - Kg.g													
Capillary refill (nail bed) - secs													
Cold extremities Yes No													
Respiration rate - per min													
Pulse - per min													
Liver (cm below costal margin)													
Stool (liquid/semi/solid) number													
Vomit - number													
Passed urine Yes No													
Temperature (axilla / rectal)													
Eye lids retract/sleep eyes open													
Other													
Other													
Treatment given													
ResSoMal.....	ml												
IV- fluid.....	ml												
Blood/pack cells.....	ml												
F75/sugar water.....	ml												
IV glucose 10%.....	ml												
Oxygen													
Wet cloths													
Kangaroo - rewarming													
stat Drug													
stat Drug													
stat Drug													

use another sheet if necessary

Diagnosis:
Check the vital signs that are to be monitored in the "check" column and write in the times in the time row (only check those that are needed)
- attach graph for graphing critical signs if necessary

ANNEX 15 – HOW TO INSERT AN NGT

- Choose the appropriate size tube (range is 6, 8, or 10 FG). Lie infants on their back, swaddled in a small blanket as a mild restraint.
- Measure the tube from the child's ear to the tip of the nose and then to just below the tip of the sternum (for pre-term and neonates from the bridge of the nose to just beyond the tip of the sternum). Hold or mark this position so that you know how far to insert the tube.
- Lubricate the catheter with a jelly type lubricant, Vaseline, or at least water and insert through the nose, bending the tube slightly upwards to follow the nasal passage.
- Bend the head slightly backwards to extend the neck. Insert the catheter smoothly and quickly, at first pushing upwards (not just backwards) so that the catheter bends in one loop downwards along the back of the throat. Do not push against resistance (if you cannot pass the tube through the nose, pass it through the mouth instead). Take care that the tube does not enter the airway. If the child coughs, fights or becomes cyanotic, remove the tube immediately and allow the patient to rest before trying again. It is vital to check that the tube is in the stomach before anything is put down the tube. This should be re-checked before each feed is given in case the tube has been dislodged from the stomach. Note that sick, apathetic children and those with decreased consciousness can have the tube passed directly into their lungs without coughing. It is not a guarantee that the tube is in the right place just because it has passed smoothly without complaint from the child.
- The best way to test that the tube is fully in the stomach is to aspirate some of the stomach contents and test for acid with litmus paper. The stomach contents in normal children are acid and turn blue litmus paper red. However, the malnourished frequently have "achlorhydria" (lack of gastric acid). In the absence of litmus paper and in the malnourished child check that there is the characteristic appearance and smell of stomach contents ("sour" or like vomit).
- Also check the position by injecting 0.5 - 1ml of air into the tube whilst listening to over the stomach with a stethoscope. A "gurgling" or bubbling sound can be heard as air enters the stomach.
- It is always best to ask someone else to check if you are not sure the tube is in the right place, to avoid the risk of milk going onto the lungs. Before each feed, aspirate the tube to check that the previous feed has left the stomach. This may be slow and gentle in very sick children as strong suction can damage the stomach lining. It is important not to cause gastric distension by giving a new feed on top of an old one⁶⁵. The flow of the feed should be slow.
- Attach the reservoir (10 or 20 ml syringe) and elevate it 15 - 20 cm above the patient's head. The diet should always be allowed to flow into the stomach by gravity and not pushed in with the plunger. When the feed is complete, irrigate the NGT with a few ml of plain water and stopper the tube (or clamp it). Place the child on his/her side to minimise regurgitation and aspiration. Observe the child after feeding for vomiting, regurgitation, or abdominal distension.
- In an SC the tube should be changed every 3-5 days.

⁶⁵ If there is «sour» gastric juice, with flocculent old food suspended in it, then this should be completely aspirated, the volume noted, and about 20ml of isotonic sugar solution passed down the tube and immediately re-aspirated to «irrigate» the stomach. Why ARE THESE WORDS IN <<>> The stomach is then allowed to rest for about 30 minutes before the diet is re-introduced. If after 3 hours this second feed has not passed out of the stomach then the volume of the diet will need to be reduced and/or the frequency increased..

ANNEX 16 – THE DISADVANTAGES OF INDWELLING CANNULA

- They give access to the circulation for antibiotic-resistant bacteria in these immuno-compromised patients.
- The dressings quickly become dirty in conventional hospital settings.
- They often become colonised with Candida and can give rise to fungal septicaemia.
- They require fluid or anticoagulants to keep the vein open - but these children have impaired liver function (bleeding tendency) and are very sensitive to fluid overload.
- They require skilled health persons to insert, re-site, and maintain the cannula - staff time is the limiting factor in most resource poor settings.
- The administration of IV drugs takes more time, from higher grades of staff, than giving oral drugs.
- IV preparations are much more expensive than oral preparations and the cannula itself is expensive.
- Insertion of the cannula is painful and distressing for the child and they frequently need to be re-inserted.
- The cannula restricts the movements of the child and impairs feeding, washing, play, and care.
- Extravasations into the tissue can cause skin necrosis and other complications.



Example of fluid extravasation with scalp necrosis and resisting of cannula several times

ANNEX 17 – HISTORY AND EXAMINATION SHEET

History sheet for severe complicated malnutrition/Failure to respond - page 1

SAM/Scope N°.....Caretaker's name.....Patient name.....Age.....d/m/y Sex.....

Date of examination:...../...../..... Examiner's name..... Status:.....

Who is giving the history? *Patient/mother/father/sister/grandmother/aunt/other*.....

Is this person the main caretaker for the patient at home? *Yes/No* If not, who is the caretaker?.....

History of present illness

How long has the patient been ill?h/ d/ wk/ mo/ yr

What are the **complaints** - in the patient's own words - and how long has each been present?

1.....h/ d/ wk/ mo/

yr2.....h/ d/ wk/ mo/ yr

3.....h/ d/ wk/ mo/ yr

4.....h/ d/ wk/ mo/ yr

Describe the details of the complaints, how they have progressed, and the factors associated with each one

Systematic questions(give additional details of abnormal findings above)

Appetitehungry/ normal/ poor/ very poor **Weight** is decreasing/ steady/ increasingd/wk/ mo

Swelling: none/ feet/ legs/ face/ all over.....d/wk/mo **Eyes** sunken no/ recent/ longstanding

Diarrhoea N / Yh/d/wk/mo stools per day..... Normal/ watery/ soft/ blood/ mucus/ green/ pale

Vomiting N / Y.....h/d/wk/mo N° per day..... Repeated episodes of Diarrhoea N Y

Breathing: normal/ fast/ noisy/ difficult forh/d/wk **Cough:** N Y - for.....d/wk/mo

Fever N / Y **Convulsions** N Y **Unconsciousness** N Y

Treatment: Patient has already seen Dr/Clinic/Hospital/Traditional healertimes for this illness.

Treatment given.....

Past and social history

Past diseases: describe.....

Mother / father absent N/Y reason.....wk/mo/yr **Patient:** twin/ fostered/ adopted/ orphan

Gestation: early/ normal or.....wk/ mo **Birth weight:** large/ normal/ small orKg

Mother's ageyr n°live births n° Living children.....

Family eating together: n° adults..... n°children.....

Resources(food income crops livestock).....

Diet history

Breast feed alone forwk/ mo age stopped breast feeding.....wk/mo

Food before ill breast/ milk/ porridge/ family plate/ fruit/ leaves/ drinks/ other

Food since ill breast/ milk/ porridge/ family plate/ fruit/ leaves/ drinks/ other

Last 24h -describe

Examination sheet for severe complicated malnutrition/Failure to respond - page 2 - Examination

SAM N°..... Parent's name..... First name..... Age.....d/m/y Sex.....

General: does the patient look: *not-ill/ ill/ very ill/ comatose*

Mood and behaviour *normal/apathetic/ inactive/ irritable/repeated movements*

Development / regression Patient can: *sit/ crawl/ stand/ walk*

Ear Nose & Throat

Eyes *normal/ conjunctivitis/ xerosis/ keratomalacia mild/ mod/ severe*

Mouth *normal/sore/red/smooth tongue/candida/herpes/angular stomatitis*

Membrane Colour: *normal/pale/jaundiced/cyanosed* **Gums** *normal/ bleeding*

Ears *normal/discharging* **Teeth** number *—/+* *normal/caries/plaque*

Respiratory system & Chest

Breathing *normal/ noisy/ asymmetrical/ laboured/ wheeze/in drawing*

Rate/min or *more /less than 50/60* Chest *normal/ asymmetric/ pigeon/ sulcus*

Cardiovascular system & Hydration

Oedema none/+/++/+++/*uncertain* *feet/ pretibial/ hands/ face/ generalised*

Hydration *normal/ dehydrated/ shock/ uncertain* **Passing urine** *N / Y*

Eyes *normal/sunken/staring* **Peripheries** *normal/ warm/ cold*

Capillary refill *quick/ slow/ very slow*secs **Visible veins** *full/ normal/ empty*

Pulse rate...../min *normal/ strong/ weak* Heart sounds *normal/ gallop/ murmur*

Gastro-Intestinal

Stool *not seen/ normal/ soft/ watery/ green/ pale/ mucus/ blood*

Abdomen: *normal/ distended/tender/ visible peristalsis /ascites*

Bowel sounds: *normal/ active/ quiet/ absent* **Splash** N / Y

Livercm below costal margin *normal/ firm/hard/smooth/irregular*

Spleen *not felt/ felt/ large - normal/ firm/ hard - tender/ painless*

Nervous system

Tone *normal/ stiff/ floppy*

Meninges *normal* /*stiff neck* /*Brudzinski* /*fontanelle bulging*

Reflexes *normal/ symmetrical/ asymmetrical/increased/ decreased/ absent***Skin Hair Bone Lymph Nodes**

Skin change none/mild/mod/severe peeling/ raw / ulcers infection/ cuts/ bruises

Perineum <i>normal/rash/raw /candida</i>	Purpura N / Y
---	----------------------

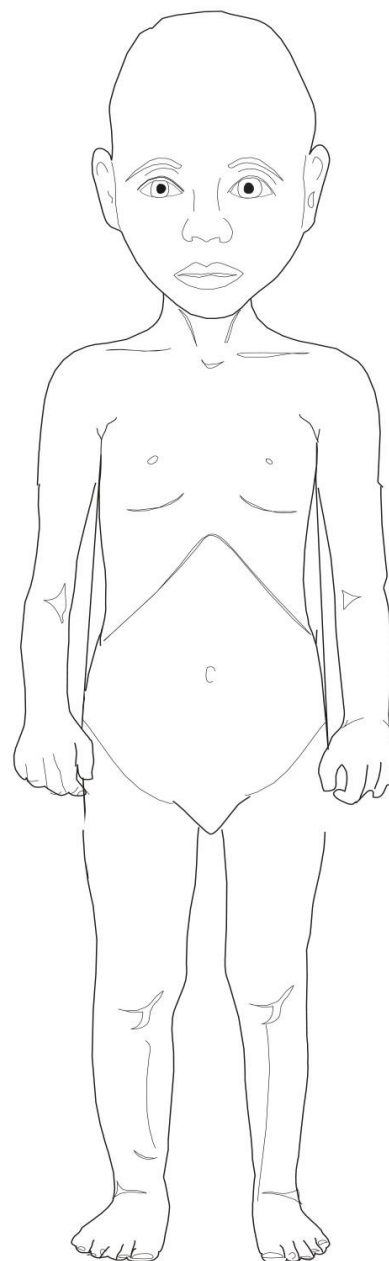
Hair *black/ brown/ red/ blond* *normal/easily plucked/ balding*

Scabies *none/ local/generalised* **Eyelash** *normal/ long*

Lymph nodes *none/ groin/ axilla/ neck* *Tender/ painless* *Soft/ firm/ hard/ fixed*

Ribs' ends *normal/ swollen/ displaced* **Gynecomastia** N / Y

Describe abnormalities below and draw on diagram

**Diagnoses 1:**

2:

3:

ANNEX 18 – HISTORY AND EXAMINATION SHEET

Although it is highly desirable that the recovery phase be managed on an out-patient basis, this is not always possible.

If there is no capable caretaker, impossible home circumstances, no other family willing to care for the child, an abandoned child without an available orphanage, no operational OTP service or no supply of RUTF:

Then patients may have to be kept in the SC until fully recovered.

This annex details the treatment of such patients.

The principles of the treatment in the facility and in the community are exactly the same however, the diet, organisation, and documentation differ.

It is not efficient to keep children and caretakers in an acute hospital ward for the recovery phase. They should be residents in a separate structure. The best structures to use are local style houses with which the patients and caretakers are familiar; in the absence of such a structure, tents on the grounds of the hospital/health centre can be used.

2.1 DIET (F100 OR RUTF)

Breast-fed children should always get breast-milk before they are given F100 or RUTF and also breastmilk on demand.

In the Recovery Phase (Phase 2), the patients have an unlimited intake (but almost never take more than 200kcal/kg/d).

Either F100 or RUTF are used in Phase 2 in SC; they are nutritionally equivalent (except that F100 does not have added iron, RUTF does contain adequate iron) and one can substitute for the other.

F100 (100ml = 100 kcal): five to six feeds of F100 are given. One porridge may be given for patients who are more than 24 months of age (approximately 8Kg); it is neither necessary nor desirable to give porridge - but many children demand food with which they are familiar and then it can be given as a separate meal and used as an inducement for the child to take the therapeutic food. It is better to give the porridge as the last feed in the evening to ensure that adequate F100 is taken during the day and to give time for the porridge to digest overnight.

RUTF can be used for in-patients. The advantages of use in the SC are that it requires less staff time and supervision, no preparation is necessary, the food can be taken throughout the day, and the mother can feed the child by herself overnight. There is no need to give the child additional iron.

Some children prefer F100 and others RUTF. However, taking a single food for several weeks is monotonous and many older patients welcome a change in diet. One can give F100 during the day when there are adequate staff and RUTF for evening and overnight feeding.

Give the amounts shown in the table.

The amount of F100 or RUTF to OFFER at each feed for 5 or 6 feeds per day or RUTF for the whole day to be used in the recovery phase in an SC. If the patients take the whole amount then more should be offered.

Class of weight Kg	6 feeds/ day		5 feeds/day		Whole [†] day
	F100	RUTF	F100	RUTF	RUTF
	ml/feed	g/feed	ml/feed	g/feed	g/day
<3 kg	Full strength F100 and RUTF are not given below 3kg: use F100dilute				
3.0 to 3.4	110	20	130	25	120
3.5 - 3.9	125	20	150	25	130
4.0 - 4.9	135	25	160	30	150
5.0 - 5.9	160	30	190	35	175
6.0 - 6.9	180	35	215	40	200
7.0 - 7.9	200	35	240	45	220
8.0 - 8.9	215	40	260	45	235
9.0 - 9.9	225	40	270	50	250
10.0 - 11.9	230	45	280	50	260
12.0 - 14.9	260	50	310	60	290
15.0 - 19.9	300	55	360	65	330
20.0 - 24.9	370	65	440	80	400
25.0 - 29.9	420	75	500	90	450
30.0 - 39.9	450	80	540	100	500
40 - 60	530	100	640	120	600

One sachet of commercial RUTF contains about 92g and 500kcal (one gram = 5.4kcal)

When RUTF is given, as much water as satisfies the patient's thirst must be offered during and after each feed. Because RUTF can be kept safely the amount for the whole day can be given once per day. This is then eaten at the patient's leisure, in his/her own time. The aid-nurse should periodically check on the amount taken, assess the child's appetite, and ensure that the caretaker does not consume the diet.

Note: Iron is added to the F100 in Phase 2. Add 1 crushed tablet of ferrous sulphate (200mg) to each 2 litres to 2.4 litres of F100. For lesser volumes: 1000 to 1200ml of F100, dilute one tab of ferrous sulphate (200mg) in 4ml water and add 2ml of the solution. For 500ml to 600ml of F100, add 1ml of the solution. Alternatively, if there are few children, iron syrup can be given to the children.

RUTF already contains the necessary iron.

Surveillance in phase 2	Frequency
Weight and oedema	3 times per week
Body temperature is measured	Every morning
The standard clinical signs (stool, vomiting, etc.)	Every day
MUAC is taken	Every week
Appetite is judged from the amount taken	Intake record is kept on chart

The other routine treatments are the same as that given to OTP patients: 1) de-worming, 2) measles vaccination and 3) vitamin A before being discharge.

The Criteria to move back from Phase 2 to the Acute

Phase (Phase 1) in the SC are the same as given for OTP patients.

The discharge criteria are the same as those given for OTP patients.

ANNEX 19 – INFANT SS CHART

SS-Chart for Infants with SS feeding (less than 6 months or 3kg)																											
SAM/Scope-Number..... Registration No..... SC Code..... Sheet No..... SC Name..... Caretaker's Name..... Day care/Pediatric W/Other..... Patient's Name..... Age (day or mo.)..... Address..... Birthdate ____/____/____ Phone-No..... Sex..... Special Problems 1..... 2..... 3..... Breastfed..... Y / N Receiving other feed..... Y / N Admission Date ____/____/____ Time.....am/pm New Admission ☐ Relapse..... Readmission Y / N If Y, Type..... Reg No..... Reason admission 1) Growth Monitoring static: Y / N - 2) Weight/Length... Y / N 3) Weight/Age Y / N 4) Complication Y / N if Y..... - 5) Edema Y / N Discharge Date ____/____/____ Successfully Treated ☐ Dead ☐ Time.....am/pm Cause of death..... Defaulter ☐ Med. Referral ☐ To..... Non Response to treatment ☐																											
Anthropometry	Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21					
	Length (cm)																										
	Weight (kg.g)																										
	Wt for Ht (Z%)																										
	Edema (0 to +++)																										
Weight Chart		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21					
	Therapeutic Diet	Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21				
# feeds/day																											
Infant Formula/F100Dil																											
SS ml / feed																											
A=Absent V=Vomit R=Refused NG=tube IV=IV Fluid																											
Amount taken																											
100% ☐																											
3/4 ☐																											
1/2 ☐																											
1/4 ☐																											
Surveillance	Alert/Lethargic (A/L)																										
	Stool (0 to IIII)																										
	Vomit (0 to IIII)																										
	Dehydrated (0 to +++)																										
	Cough (0 to +++)																										
	Shock (0 to +++)																										
	Resp. rate /mn																										
	Pale Conjunct. (0 to +++)																										
	Temp. AM (Ax/Rec)																										
	Temp. PM (Ax/Rec)																										

ANNEX 20 – SUPERVISION CHECK-LIST FOR THE DISTRICT NUTRITION OFFICER/FOCAL POINT

SUPERVISION CHECK-LIST FOR THE DISTRICT NUTRITION OFFICER/FOCAL POINT

Period: From ____/____/____ to ____/____/____/ Region: _____

District: _____

Number OTPs Visited: **Functioning:** **No HC Visited:** **Functioning:**

Number SC/IPF Visited: **Functioning:** **Number Hospitals Functioning:** **Number district's OTPs using the SC:**

Total Population: **% of Catchment pop:** (<5km)

New OTP: YES / NO If Yes, Name..... Code..... **OTP Closed:** YES / NO If YES, Name.....Code....

New Staff Expected YES / No **Allocated YES / No** If YES, No.....

Reason for visits – routine / results of reports / staff problems / logistic problems / patient complaints

High defaulting / high death / screening results / coverage low / other.....

ACTIVITIES	YES	NO	COMMENTS
1.Protocol applied in all the OTPs			%
1.Protocol applied in the SC			
2.Supervision of the OTP			No of OTP visited:
2.Supervision of the SC			No:
3. Transfer system in place			Transport Free – Paid by
3. Transfer form, communication between OTP/SC working, etc.			N° transfer..... Death during transfer..... Not arriving.....Other.....
3.SAM-Number used for Internal transfer			Y / N
4.On job Training activities needed for OTP			If Yes, which OTP & how many?
4. On job Training activities needed for SC			If Yes, which SC & how many?
4.On job Training during the Period			If Yes, where & how many?
4. New staff appointed in OTP			
4. New staff appointed in OTP Trained			
4. New staff appointed in SC			
4. New staff appointed in SC Trained			

5. Monthly Reports a) Received from the OTP Last month, b) Transmitted to the HMIS			a) N° Received: N° Expected: b) Transmitted to HMIS:
6. Material lacking in any OTPs ?			If yes, Name of the OTP: Action taken:
6. RUTF lacking in any OTPs?			If yes, Name of the OTP: Action taken:
6. F75-F100-RUTF lacking in SC?			If yes, Products: Action taken:
6. Systematic Treatment lacking in OTP			If yes, Name of the OTP: Action taken:
6. Systematic Treatment lacking in SC			If yes, Name of the drug: Action taken:
7. Staff Paid last month in OTP / SC			
8. Meeting last month with the OTP/SC supervisors			Last date:
8. Meeting last month with the DHMT			Last date:
8. Meeting with the other team members in the district (for community mobilisation)			
9. Any activities for Community Mobilisation at district level			If yes, which?
9. Community Mobilization Evaluated			
9. Regular Meetings of CHW in each OTP			
9. Are there adequate CHWs in each OTP			Total no: Expected no:
9. Training Material distributed to the HC for Community Mobilisation			
9. District Storage in Good Condition for the Therapeutic food ?			
9.for Drugs			
9. Stock Cards Updated in District/OTPs/ SC			
9. Rupture of RUTF in previous 2 mos at district level			If yes, explain

9. Rupture of Drugs in previous 2 mos at district level			If yes explain
9. Any Delivery/Transport Problems of supplies (e.g. RUTF) to OTP?			
10. OTP Structures in bad shape			
10. OTP Structures with NO/insufficient Water			

CONCLUSION AND ACTIONS TAKEN FOR THE NEXT MONTH:

Joint the monthly reports of the months and the supervision of the OTP / SC

Name, Surname	Position	Qualification	E-mail	Phone

Date:

Position:

Signature:

ANNEX 21– OTP SUPERVISION FORM

OTP SUPERVISION FORM

Date: District: Site: Code.....

Supervision' visit while the OTP is running? *Yes / No*;

Month of the last visit..... By.....

Person interviewed during the visit

Name	Position	Qualification	Employed by

STAFF & TRAINING

Staff of the OTP/HC:

Number	Qualification	Responsible for	Salaries/ Incentives given last month	Training on SAM if Yes, date of the last training	Present/Absent the day of the visit
	CHW/Volunteers				

Conclusion & Actions taken

.....

PROTOCOL

1.1 Copy of the protocol? *Yes /No*. If Yes, Version No:

1.2 Posters on OTP/HC wall? *Yes /No*. If Yes, which ones?

.....

1.3 Protocol READ? *Yes /No* KNOWN? *Yes /No* DIFFICULTIES in UNDERSTANDING? *Yes /No*

If Yes, which part?

Conclusion & Actions taken.....

.....

TOOLS – MATERIALS – PRODUCTS

3.1 Register? *Yes /No*

3.2 Charts? *Yes /No*

3.3 Card for the patient? *Yes /No*

3.4 Transfer form? *Yes /No*

- 3.5 Look up Tables? Yes /No If No, which ones are missing?.....
- 3.6 Drinkable water available? Yes /No If No, actions taken.....
- 3.7 Sugar water available? Yes /No If No, actions taken.....
- 3.8 Health Education materials available? Yes /No
- 3.9 Anthropometric material present and in good condition? Yes /No
- If not, please precise for MUAC.....length-board.....Scale.....Others.....
- 3.10 Routine medicine available? Yes /No If not, which one?.....
- 3.11 Other Specific drugs available? Yes /No If not, which ones
- 3.12 Logistics resources (motorbike, car, truck – petrol)? Yes /No If no, what arrangements have been made.....
- 3.13 RUTF available? Yes /No If not why?
- 3.14 Structures: Any problem to report.....
- Conclusion & Actions taken.....
-

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

Observed or Written on the charts of the 2 last months	Totally Checked	Totally Adequate	Directly observed	Quality				Remarks
				A +1	B +0.5	C -0.5	D -1	
1. Welcome the patients								
2. Flow of the patients								
3. Passive screening								
4. N° of patients coming from CHW/ volunteers								
5. Length/height checked								
6. Weight measurement								
7. MUAC								
8. Oedema								
9. Degree of oedema								
10. WH Z score								
11. Criteria of admission								
12. OTP chart filled in								
13. Discharge Criteria								
14. App. Test at admission								
15. Register & SAM N°								
16. Frequency of the measurements								

3.5 Look up Tables? Yes /No If No, which ones are missing?.....

3.6 Drinkable water available? Yes /No If No, actions taken.....

3.7 Sugar water available? Yes /No If No, actions taken.....

3.8 Health Education materials available? Yes /No

3.9 Anthropometric material present and in good condition? Yes /No

If not, please precise for MUAC.....lenght-board.....Scale.....Others.....

3.10 Routine medicine available? Yes /No If not, which one?.....

3.11 Other Specific drugs available? Yes /No If not, which ones

3.12 Logistics resources (motorbike, car, truck – petrol)? Yes /No If no, what arrangements have been made.....

3.13 RUTF available? Yes /No If not why?

3.14 Structures: Any problem to report.....

Conclusion & Actions taken.....

.....

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

Observed or Written on the charts of the 2 last months	Totally Checked	Totally Adequate	Directly observed	Quality				Remarks
				A +1	B +1.5	C -1.5	D -1	
1. Welcome the patients								
2. Flow of the patients								
3. Passive screening								
4. N° of patients coming from CHW/ volunteers								
5. Length/height checked								
6. Weight measurement								
7. MUAC								
8. Oedema								
9. Degree of oedema								
10. WH Z score								
11. Criteria of admission								
12. OTP chart filled in								
13. Discharge Criteria								
14. App. Test at admission								
15. Register & SAM N°								
16. Frequency of the measurements								

17. Frequency of RUTF distribution								
18. Absents noted on chart?								
19. Diff. Of Unconfirmed & Confirmed Defaulters?								
20. Temp. taken & written?								
21. Medical Examination taken & written								
22. Appetite test done correctly & written								
23. Syst. Treat. given & written								
24. N° Sachets given & written								
25. Health Education given								
26. Other specific drugs given								
27. Failure to Respond to treatment diagnosed?								
28. Home visit according to criteria?								
29. Type of discharge written on the chart and register								
30. HV of the Unconfirmed defaulter written on chart?								
31. HV of the absent patients done and written on the chart?								
32. Stock card of RUTF updated								
33. Stock card of routine drugs updated								
34. Internal Transfer noted in the register? Form with chart?								
35. Respect of transfer criteria?								
36. Transfer back from IPF?								
37. Transfer form attached to the chart?								
38. Monthly report adequately filled in								
39. Monthly report sent on time								

17. Frequency of RUTF distribution								
18. Absents noted on chart?								
19. Diff. Of Unconfirmed & Confirmed Defaulters?								
20. Temp. taken & written?								
21. Medical Examination taken & written								
22. Appetite test done correctly & written								
23. Syst. Treat. given & written								
24. N° Sachets given & written								
25. Health Education given								
26. Other specific drugs given								
27. Failure to Respond to treatment diagnosed?								
28. Home visit according to criteria?								
29. Type of discharge written on the chart and register								
30. HV of the Unconfirmed defaulter written on chart?								
31. HV of the absent patients done and written on the chart?								
32. Stock card of RUTF updated								
33. Stock card of routine drugs updated								
34. Internal Transfer noted in the register? Form with chart?								
35. Respect of transfer criteria?								
36. Transfer back from IPF?								
37. Transfer form attached to the chart?								
38. Monthly report adequately filled in								
39. Monthly report sent on time								

40. Charts securely stored in order by SAM N° and registration N°								
Total score :								

3. **STRUCTURE - STORAGE**

Shelter: *Yes/No* Hygiene: *Yes/No* Other:

Adequate Storage: *Yes/No* If No, explain.....

4. **COORDINATION**

Date of the last District Meeting/...../.....

Date of the last transport of RUTF/...../.....

Date of the last Meeting with the CHW/...../.....

Remarks.....

5. CONCLUSION & ACTION TO BE TAKEN FOR THE NEXT MONTH

Date

Signature of the person interviewed.....

Signature of the evaluator.....

ANNEX 22 – SC SUPERVISION FORM

SC SUPERVISION FORM

Date: ___/___/___ District _____ Site: _____ Code: _____

Supervision's visit during FEEDING? Yes / No Month of the last visit.....By.....

Person interviewed the day of the visit

Name	Position	Qualification	Employed by

STAFF & TRAINING

Staff

Grade/ Qualification	Number	Responsible for	Salaries/ Incentives given last month	Training on SAM if Yes, date of the last training	Length of time in IPF: # expected to transfer/leave soon	Present/Absent on c of the visit – if absent gi reason (ill/leave etc.)

Conclusion & Actions taken _____

PROTOCOL

5.1 Copy of the protocol? Yes / No If Yes, Version No: _____

5.2 Posters on the wall? Yes / No. If Yes, which ones? _____

5.3 Protocol READ? Yes / No KNOWN? Yes / No DIFFICULTIES UNDERSTANDING? Yes / No

If Yes, which parts? _____

Conclusion & Actions taken _____

6. Structure

6.1 Integrated within the MoH? Yes / No

Health Centre Yes/No - Hospital Yes/No - Other Yes/No

Specify.....

6.2 Type of structure: Separate SC / SC in Paediatric Ward / Day-Care Non-Residential/Residential / Other

6.3 Organisation responsible..... MoH / Private / NGO /Other specify.....

6.4 Reference Centre for ALL the OTPs in the district. If Not, specify the OTPs (codes) not covered by the SC.....

☐ 3.5 **OPD** Yes / No Screening? Yes/ No If Not, why?

☐ Register? _____ Lengthboard? _____ Scale? _____ MUAC? _____

☐ If _____ Not, why? _____

☐ 3.6 **Emergency Ward:** Screening? Yes / No If Not, why?

☐ Register? _____ Length-board? _____ scale? _____ MUAC? _____

☐ If _____ No, why? _____

☐ Posters? Yes / No Protocol? Yes / No Emergency Staff trained? Yes / No

3.7 Storage:

Therapeutic products separate from the SC/IPF Yes / No If yes, specify _____

Drugs Yes / No If yes, specify _____

Other Material Yes / No

If yes, specify _____

Conclusion & Actions taken _____

4. TOOLS – MATERIALS – PRODUCTS

Anthropometric materials present and in good condition? Yes / No

If not MUAC _____ Length-board _____ Scale _____ Others _____

IMAM Register used? Yes / No

Multi-Charts used? Yes / No SS-Infant Charts Yes / No Critical care charts Yes / No

Other records kept (hospital charts) Yes / No

Transfer form? Yes / No

Look up Tables? Yes / no If no, which ones are missing? _____

Drinkable water available? Yes / No If No, Actions taken _____

Hand-washing facilities within IPF Yes / No If yes are they used? Yes / No

Sugar water available? Yes / No If No, Actions taken _____

F75 present and used Yes / No – commercial / made in SC

F100 present and used Yes / No – commercial / made in SC

6.2 Type of structure: Separate SC / SC in Paediatric Ward / Day-Care Non-Residential/Residential / Other

6.3 Organisation responsible..... MoH / Private / NGO /Other specify.....

6.4 Reference Centre for ALL the OTPs in the district. If Not, specify the OTPs (codes) not covered by the SC.....

- ☐ 3.5 **OPD** Yes / No Screening? Yes/ No If Not, why?
- ☐ Register? _____ Lengthboard? _____ Scale? _____ MUAC? _____
- ☐ If _____ Not, why? _____
- ☐ 3.6 **Emergency Ward:** Screening? Yes / No If Not, why?
- ☐ Register? _____ Length-board? _____ scale? _____ MUAC? _____
- ☐ If _____ No, why? _____
- ☐ Posters? Yes / No Protocol? Yes / No Emergency Staff trained? Yes / No

3.7 Storage:

Therapeutic products separate from the SC/IPF Yes / No If yes, specify _____

Drugs Yes / No If yes, specify _____

Other Material Yes / No

If yes, specify _____

Conclusion & Actions taken _____

4. TOOLS – MATERIALS – PRODUCTS

Anthropometric materials present and in good condition? Yes / No

If not MUAC _____ Length-board _____ Scale _____ Others _____

IMAM Register used? Yes / No

Multi-Charts used? Yes / No SS-Infant Charts Yes / No Critical care charts Yes / No

Other records kept (hospital charts) Yes / No

Transfer form? Yes / No

Look up Tables? Yes / no If no, which ones are missing? _____

Drinkable water available? Yes / No If No, Actions taken _____

Hand-washing facilities within IPF Yes / No If yes are they used? Yes / No

Sugar water available? Yes / No If No, Actions taken _____

F75 present and used Yes / No – commercial / made in SC

F100 present and used Yes / No – commercial / made in SC

RUTF available and used? *Yes / No*

ReSoMal available and used? *Yes / No*

Routine medicine available? *Yes / No* If not, which ones? _____

Specific drugs available? *Yes / No*; If no, which ones? _____

Blood transfusion available *Yes / No*

Laboratory/radiology facilities available *Yes / No* – if yes, which tests.....

Health Education materials available? *Yes / No*

Toys for children present? *Yes / No* *On beds / on floor / locked away*

Conclusion & Actions taken _____

1. ACTIVITIES OBSERVED (on patients and/or written on the charts)

Observed or Written on the charts of the 2 last months	Checked	Totally Adequate	Directly observed	Quality				Remarks
				A +1	B +0.5	C -0.5	D -1	
<i>1-Screening</i>								
1a. Screening in OPD								
1b. Screening in Emergency Ward								
1b. N° Transferred appropriately								
1c. N° Transfer Form filled in								
1d. N° Patients referred directly								
<i>2-Measurements</i>								
2a. Length/height checked								
2b. Weight								
2c. MUAC								
2d. Oedema& degree								
2e. WH Z-score								
<i>3-Admission</i>								
3a. Sugar water/drinking water available								
3b. Medical History & examination form filled in								
3c. Appetite Test								
3d. Transfer form with SAM-N°								
3e. Register & SAM N°								
<i>4-Management Acute Phase</i>								
4a. Breastfeeding before feeds								
4b. Washing hands before feeds								
4c. F75 Feeds prepared								
4d. Feeds given, observed, & chart completed								
4e. Syst. treatment								
4f. Multi-chart filled								
4g. Critical care charts used properly								
4h. Other specific drugs given								

4i. Criteria for Transition phase respected								
4j. Fail-to- Respond in IPF recognised and managed								
<i>5-Transition Phase & exit</i>								
5a. RUTF/F100 given & written								
5b. Feeds well given								
5c. Water available								
5d. Health Education given								
5e. Type of exit written on the chart and register completed								
<i>6. Less than 6 months</i>								
6a. Treatment implemented								
6b. SST- Chart used & filled-in								
6c. F100 dilute preparation								
6d. Treatment correctly applied?								
6e. Position of the mother & infant during SS-T?								
6f. Systematic treatment given?								
<i>7. Stock</i>								
7a. Stock card of Therapeutic foods maintained and updated								
7b. Stock card of routine drugs updated								
<i>8. Monitoring</i>								
8a. Internal Transfer noted in the register? Form attached to the IPF chart?								
8b. Transfer Criteria applied.								
8c. Monthly report from last month filled in correctly								
8d. Monthly report sent on time								
8e. Charts kept securely in order by SAM No and registration No								
<i>9. Coordination</i>								
9a. Attend regular meetings with IMAM team								

9b. Good communication with OTPs								
9c. Transport arranged with the district for patients and products?								
Total								

CONCLUSION & ACTION TO BE TAKEN FOR THE NEXT MONTH

Date _____ Signature of person interviewed _____

Signature of Evaluator _____

ANNEX 23 – EXAMPLES OF RECIPES FOR F75, F100 AND RESOMAL USING CMV

Note that all these recipes give products that have a higher osmolarity than the commercial packaged products and are more likely to provoke refeeding diarrhoea. They can be used when there is no possibility of pre-packaged products being available and there are adequate kitchen facilities and expertise to make the diets - ALL the ingredients must be present.

*F75

Type of milk	Milk (g)	Eggs (g)	Sugar (g)	Oil (g)	Cereal powder (g)*	CMV** (red scoop=6g)	Water (ml)
Dry Skim Milk	25	0	70	27	35	½	Up to 1000
Dry Whole Milk	35	0	70	20	35	½	Up to 1000
Fresh cow milk	280	0	65	20	35	½	Up to 1000
Fresh goat milk	280	0	65	20	40	½	Up to 1000
Fresh buffalo milk	230	0	65	15	40	½	Up to 1000
Evaporated milk	110	0	65	20	40	½	Up to 1000
Whole Eggs	0	80	70	20	40	½	Up to 1000
Egg yolks	0	50	70	15	40	½	Up to 1000

* Cereal powder should be roasted (“puffed”) and then ground finely and the other ingredients should be added. Alternatively, “puffed” rice or roasted flour can be added to the mixture.

** CMV = Special Mineral and Vitamin mix adapted to severe acute malnutrition treatment

*F100

Type of milk	Milk (g)	Eggs (g)	Sugar (g)	Oil (g)	CMV** (red scoop=6g)	Water (ml)
Dry Skim Milk	80	0	50	60	½	Up to 1000
Dry Whole Milk	110	0	50	30	½	Up to 1000
Fresh cow milk	900	0	50	25	½	Up to 1000
Fresh goat milk	900	0	50	30	½	Up to 1000
Fresh buffalo milk	750	0	60	10	½	Up to 1000
EVAPORATED milk	350	0	50	30	½	Up to 1000
Whole eggs	0	220	90	35	½	Up to 1000
Egg yolks	0	170	90	10	½	Up to 1000

ANNEX 24 – RUTF SPECIFICATION

Ready to Use Therapeutic Food (RUTF)

Severely malnourished patients have specific nutrient requirements that are different from normal children. These are best supplied using specialised therapeutic foods, such as F75, F100, and RUTF. Ready to use therapeutic food (RUTF) is an essential component of OTP as it allows patients to be treated at home. RUTF is a complete food for the severely malnourished, with a specific nutrient composition equivalent to F100.

There are currently several commercial types of RUTF: lipid-based pastes and bars. Several countries are producing their own RUTF using the standard recipe so that these products that nutritionally equivalent to F100, and have been shown to be physiologically similar to both F100 and the commercial RUTFs. An important difference between F100 and RUTF is that RUTF contains iron (in the correct amount for the recovering severely malnourished patient) whereas F100 used in the recovery phase requires iron supplementation.

RUTF-paste is a ready-to-eat therapeutic spread usually presented in individual sachets or pots. It is composed

of vegetable fat, peanut butter, skimmed milk powder, lactoserum, maltodextrin, sugar, and a mineral and vitamin complex.

Instructions for use: Clean drinking water must be made available to children during consumption of ready-to-eat therapeutic food. The product should only be given to children who can ask for water. It is contra-indicated for children who are allergic to cow's milk, proteins, or peanuts and those with asthma or other allergic disease.

Recommendations for use: In the management of severe acute malnutrition in therapeutic feeding, it is recommended to use the product in phase 2 (two) in the dietetic management of severe acute malnutrition. In SCs for phase 1, use milk-based diet F75.

Storage of RUTF: Some commercial RUTFs (such as Plumpy'nut®) have a shelf life of 24 months from manufacturing date. Locally produced RUTFs that are not packed under nitrogen in a sealed container have a shelf life of 3 to 6 months. Keep stored in a cool and dry place.

Table: Mean Nutritional Value of RUTFs (based upon Plumpy'nut®)

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

RUTF- bars (based upon BP-100®)

RUTF-bars are a compressed food product for use in the rehabilitation phase (phase 2) of severely malnourished children and adults. The nutritional specifications are similar to therapeutic milk F100. As with the paste, the RUTF-bars also contain iron.

Whom to give RUTF-bars: children from 12 months old, adolescents, and adults who are severely malnourished in the rehabilitation phase (Phase 2) of the treatment. RUTF-bars should never be used for patients below 6 months old.

How to use RUTF-bars: they can be eaten as a biscuit directly from the pack together with sufficient drinking water (250ml to 300ml per bar), or crumbled into water and eaten as porridge. For children 12 to 24 months of age, the bars should always be given as porridge due to their problems demanding water when thirsty.

Storage of RUTF-bars: BP100® has a shelf life of 2 years in an unopened package. After breaking the aluminium foil bag, the product should be used within 1-2 weeks depending on the storage conditions. Porridge made of BP100® and water should be used within 3 hours.

Packaging: BP100® is compressed into tablets of 28.4g. Each package of BP100® (510g net) contains 18 tablets packed into 9 bars in grease-proof paper (1 bar = 2 tablets = 300 Kcal).

Local production of RUTF

The minimum required ingredients for RUTF are as follows:

Four basic ingredients of RUTF: sugar, dried skim milk, oil, and a vitamin and mineral supplement. In addition, up to 25% of the weight of the product can come from vegetable sources such as oil-seeds, groundnuts, or cereals such as oats provided that the nutrient density is the same as that found in F100.

In addition to good nutritional 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
- resistant to contamination by micro-organisms and a long shelf life without sophisticated packaging
- ingredients are low cost and readily available in developing countries

Recently WHO/UNICEF/WFP/SCN have produced DRAFT specifications for RUTF. They are as follows:

- o Ready to use therapeutic food.
- o High energy, fortified ready to eat food suitable for the treatment of severely malnourished children. This food should be soft or crushable, palatable and should be easy for young children to eat without any preparation. At least half of the protein contained in the product should come from milk products.
- o Nutritional composition:

Moisture content	2.5% maximum
Energy	520-550 Kcal/100g
Proteins	10 to 12 % total energy
Lipids	45 to 60 % total energy
Sodium	290 mg/100g maximum
Potassium	1100 to 1400 mg/100g
Calcium	300 to 600 mg/100g
Phosphorus (excluding phytate)	300 to 600 mg/100g
Magnesium	80 to 140 mg/100g
Iron	10 to 14 mg/100g
Zinc	11 to 14 mg/100g
Copper	1.4 to 1.8 mg/100g
Selenium	20 to 40 µg

Iodine	70 to 140 µg/100g
Vitamin A	0.8 to 1.1 mg/100g
Vitamin D	15 to 20 µg/100g
Vitamin E	20 mg/100g minimum
Vitamin K	15 to 30 µg/100g
Vitamin B1	0.5 mg/100g minimum
Vitamin B2	1.6 mg/100g minimum
Vitamin C	50 mg/100g minimum
Vitamin B6	0.6 mg/100g minimum
Vitamin B12	1.6 µg/100g minimum
Folic acid	200 µg/100g minimum
Niacin	5 mg/100g minimum
Pantothenic acid	3 mg/100g minimum
Biotin	60 µg/100g minimum
n-6 fatty acids	3% to 10% of total energy
n-3 fatty acids	0.3 to 2.5% of total energy

Reference document for F100 composition: *Management of severe malnutrition - a manual for physicians and other senior health workers*. WHO Geneva, 1999. Available at: http://www.who.int/nutrition/publications/en/manage_severe_malnutrition_eng.pdf

Note: iron is added to RUTF in contrast to F100.

- o Safety: The food shall be free from objectionable matter; it shall not contain any substance originating from micro-organisms or any other poisonous or deleterious substances like anti-nutritional factors, heavy metals, or pesticides in amounts that may represent a hazard to health of severely malnourished patients.
- o Aflatoxin level: 5 ppb maximum.
- o Micro-organism content: 10 000/g maximum
- o Coliform test: negative in 1 g
- o Clostridium perfringens: negative in 1 g
- o Yeast: maximum 10 in 1 g.
- o Moulds: maximum 50 in 1g.
- o Pathogenic Staphylococci: negative in 1 g.
- o Salmonella: negative in 125g

- o Listeria: negative in 25g
- o 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 mineral salts should be **water soluble**⁶⁶ and readily absorbed they 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.⁶⁷

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

⁶⁶ Many manufacturers use insoluble salts such as magnesium hydroxide, zinc oxide, ferrous fumarate, copper oxide, etc. This is unacceptable as although these salts are cheap and tasteless, they are not available for the malnourished child. Any RUTF made with these salts should be rejected by the purchaser as failing to conform with the generic specifications.

⁶⁷ The non-metabolisable base can be approximated by the formula: estimated absorbed mmols (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 25 – DRUG DOSES IN THE SEVERELY MALNOURISHED

2.1.1.1 ANTIBACTERIALS

Amoxicillin (first line antibiotic, routine treatment OTP and SC)						1) Dose not normally critical can be doubled. 2) Amoxicillin is supplied as sodium salt – care in case of sodium sensitivity 3) Resistance to amoxicillin is common. 4) May be adverse reactions with some viral infections (Epstein-Bar virus, CMV and possibly HIV)
Administer	dose	oral	oral	oral	oral	
	50 – 100 mg/kg/d	125mg/5ml	250mg/5ml	250mg	500mg	
Presentation		suspension	suspension	capsule	capsule	
3 – 5 Kg	125 mg * 2	5ml x 2	2.5ml x 2	½ x 2		
5 – 10 kg	250 mg * 2	10ml x 2	5ml x 2	1 x 2	½ x2	
10 – 20 kg	500 mg * 2	–	10ml x 2	2 x 2	1 x2	
20 – 35 kg	750 mg * 2	–	–	3 x 2	1½ x2	
> 35 kg	1000 mg * 2	–	–	4 x 2	2 x2	

Ampicillin (need for IV penicillin)		
Administer	IV, IM	1) IV preferred over IM: injection painful 2) Give by perfusion over at least 30mins, reduce dose with renal impairment 3) DO NOT give alongside Gentamicin (separate IV by at least one hour) or give gentamicin IM as it inactivates the gentamicin, 4) Presented as the Sodium salt – use as low a dose a possible in case of sodium sensitivity (especially in Kwashiorkor and heart failure). 5) In severe infections use second/third line antibiotics in view of widespread resistance and high sodium administration with large doses
	100-200 mg/kg/d	
Presentation	500mg /1g vials	
Times/day	4	
3 – 5 kg	250mg X 4	
5 – 10 kg	500mg x 4	
10 – 20 kg	1g X 4	
20 – 35 kg	2g x 4	
> 35 kg	3g x 4	

Gentamicin (first/second line, with signs of infection)				
Administer	5mg/kg/d once daily	IM/IV	IM/IV	1) IM or IV. IM preferred if Penicillins/cefotaxime given IV 2) May result in antibioma with poor absorption in severely wasted children 3) Approximately 5mg/kg/d once daily but young infants 3.5mg/kg 4) Danger of nephrotoxicity and ototoxicity. 5) Do not give IV at the same time as amoxicillin, ampicillin, cloxacillin, cefotaxime (separate by
Presentation		10 mg/ml	40 mg/ml	
		2ml vial	2ml vial	
<=3 kg	10mg	1 ml x1	0.25 ml x1	
3.1-5.0 kg	20mg	2 ml x1	0.5 ml x1	
5.1 – 10 kg	40mg	4 ml x1	1 ml x1	

10.1 –15 kg	60mg	6 ml x1	1.5 ml x1	at least one hour as they inactivate gentamicin) 6) in very severely oedematous children give by estimated oedema free weight. 7) Precaution - if magnesium sulphate is given by IM injection together with gentamicin may cause neuromuscular blockage - monitor respiratory function.
15.1 - 20 kg	80mg	8 ml x1	2 ml x1	
20-35 kg	140mg	14 ml x1	3.5 ml x1	
>35 kg	200mg	20 ml x1	5 ml x1	

Cefotaxime (first/second line, with signs of infection)

Administer	IM/ IV	1) Preferred to ceftriaxone particularly for gram-negative septicaemia. 2) Do not give in same infusion as gentamicin -separate by at least one hour; cefotaxime can inactivate the gentamicin. 3) IM injection is very painful use lidocaine containing diluent. 4) IV injection do not dilute with Lidocaine 5) May deplete vitamin K in liver, if prolonged usage considered give vitamin K. 6) In severe infections frequency can be increased to 4 times daily
Dose	50-100 mg/kg/d	
Presentation	250 mg/ vial	
	2 times/ day	
3 – 5 Kg	100 mg x 2	
5 – 10 kg	200 mg x 2	
10 – 20 kg	400 mg x2	
20 – 35 kg	800 mg x 2	
> 35 kg	1g x 2	

Ciprofloxacin (second line, septicaemia, septic shock)

Administer	Oral		IV
Dose	20 à 30 mg/kg/d (to give twice daily)		
Presentation	Tab 500mg		Bottle/Vial 200mg/100ml or 200ml
3 – 5 Kg	75 mg x 2	1/8 tabx2	
5 – 10 kg	125mg x 2	1/4 tabx2	
10 – 20 kg	50 mg x 2	1/2 tabx2	
20 – 35 kg	500mg x 2	1 tabx3-2	
> 35 kg	1500mg x 2	2 tab1/2x2	
1) Very well absorbed orally - give oral or by NGT on empty stomach if possible - IV reserved for vomiting and very severe infection. 2) ORAL Give at least one hour after food: 3) Absorption reduced by dairy products (e.g. F75, F100), antacids, calcium, iron and zinc salts - do not give with Zinc tablets. 4) Avoid giving with artemether + lumefantrine (coartem). 5) DO not give IM. 6) IV Infusion concentration not to exceed 2mg/ml 7) Infuse slowly over at least 60mins. 8) COMBINE with cefotaxime to prevent emergence of resistance			

Cloxacillin (staphylococcal infection)					
Administer	Dose	Oral	Oral	Oral	IM/IV
Presentation	100-200mg/kg/d	125mg/ml	500mg	1g	500mg/vial
	3 times/ day	suspension	capsule	capsule	Vial
3 – 5 Kg	62.5-250mg x3	2ml x 3	1/2 x 3	--	250mg x 3
5 – 10 kg	100-300mg x3	3ml x 3	1 x 3	1/2 x 3	500mg x 3
10 – 20 kg	250-750mg x3	8ml x 3	2 x 3	1 x 3	1g x 3
20 – 35 kg	1g - 1.5g x3	--	3 x 3	2 x 3	2g x 3
> 35 kg	2-6g x3	--	3 x 3	2 x 3	2g x 3

- 1) For suspected or diagnosed systemic staphylococcal infection (especially staph. Pneumonia)
- 2) Parenteral therapy preferred for severe infection.
- 3) Supplied as the sodium salt.
- 4) Do not give IV at the same time as gentamicin – separate by at least 1 hour and flush cannula

Metronidazole (small bowel overgrowth, amoebiasis, giardia)				
Administer	Dose	Oral	Oral	IV
Presentation	10-12 mg/kg/d	40 mg/ml	200 mg	500 mg
	1-2 time/ day	suspension	tablet	100 ml vial
3 – 5 Kg	30-60 mg x1	1 ml x 1		5 ml x 1
5 – 10 kg	60-100 mg x1	2 ml x 1	1/4 x 1	10 ml x 1
10 – 20 kg	120-200 mg x1	4 ml x 1	1/2 x 1	10 ml x 2
20 – 35 kg	250-350 mg x1	10 ml x 1	1 x 1	30 ml x 2
> 35 kg	400-500 mg x1	10 ml x 1	1 x 2	50 ml x 2

- 1) Very high bioavailability: oral route strongly recommended. Well absorbed rectally
- 2) Can give a double dose as the first loading dose.
- 3) Use suspension if possible
- 4) Do not give for more than 7 days.
- 5) WHO recommends reduction of standard dose (30mg/kg/d) to 1/3 with hepatic impairment - in SAM maximum dose is 10-12mg/kg/d by pharmacodynamics studies.
- 6) Take suspension before food and tablets with or after food.

2.1.1.2 ANTIFUNGALS

Nystatin (gastro-intestinal candidiasis)		
Administer	oral	1) Not for systemic candidiasis. For Oral, oesophageal, gastric and rectal candidiasis only. 2) Dose can be safely increased to 500,000 IU 4 times daily to treat severe gastrointestinal candidiasis 3) Give after meals
Dose	400,000 IU / d	
Presentation	4 times/ day	
3 – 60 Kg	100,000 x 4	

Fluconazole (systemic candidiasis and fungal infection)				
Administer	Dose	Oral	IV	1) Bioavailability of oral preparation is excellent.
Presentation	3-6mg/kg/d	50mg	2mg/ml	

	1 time/ day	capsule	Vial	
3 – 5 Kg	15mg/d	1/3 x 1	5ml x 1	2) Avoid giving with artemether +lumefantrine (coartem).
5 – 10 kg	30mg/d	1/2 x 1	10ml x 1	3) Oral preparation contains sodium benzoate.
10 – 20 kg	60mg/d	1 x 1	20ml x 1	4) IV preparation give by SLOW infusion over at least one hour.
20 – 35 kg	120mg/d	2 x 1	40ml x 1	5) A double dose can be given on the first day of treatment.
> 35 kg	200mg/d	4 x 1	50ml x 1	6) Young infants - give same dose but on alternate days

Miconazole (cutaneous ringworm, candidiasis and other fungal infections)		
presentation	Cream or ointment	1) Apply twice daily to dry skin lesions 2) Continue for at least 10 days. 3) Can be used for all ages. 4) Do not apply to ulcerated skin lesions or mucus membranes. 5) Supplied as the nitrate.
	2%	
	2 times/ day	
3 – 60 kg	topical x2	

ANTI MALARIALS

Artemether + Lumefantrine (Coartem) Oral Malaria treatment						1) Dispersible tablets 20mg/120 mg per tablet 2) 6-dose regimen = initial dose followed at 8, 24, 36, 48, and 60 hrs by further doses. 3) Avoid giving with ciprofloxacin, fluconazole, erythromycin. 4) Tablets can be crushed. 5) If dose is vomited within 1 hour repeat the dose 6) If coartem not available use artemether-amodiaquine tablets at the same dose (not recommended because of hepatotoxicity).
Administer	Initially	8h	24h	48hr	Total tablets	
3 – 5 Kg	1/2 tab	1/2 tab	1/2 tab x 2	1/2 tab x 2	3	
5 – 10 kg	1 tab	1 tab	1 tab X2	1 tab X2	6	
10 – 20 kg	2 tab	2 tab	2 tab X2	2 tab X2	12	
20 – 35 kg	3 tab	3 tab	3 tab x2	3 tab x2	18	
> 35 kg						
	4 tab	4 tab	4 tab x2	4 tab x2	24	

Artemether (IM - initial treatment for severe malaria)						
Administer		IM	IM		IM	IM
	day 1 only - loading dose			subsequent days (max 7)		
Presentation	dose	20mg/ml	40mg/ml	dose	20mg/ml	40mg/ml
	1 time/day	ampoule	ampoule		ampoule	Ampoule
3 – 5 Kg	10-15mg	0.7 ml X 1	0.4ml x 1	5-8mg	0.4ml x 1	0.2ml x 1
5 – 10 kg	15-30mg	1.2 ml x 1	0.6 ml x 1	8-15mg	0.6ml x 1	0.3ml x 1
10 – 20 kg	30-65mg	2.5ml x 1	1.2 ml x 1	15-30mg	1.2 ml x 1	0.6 ml x 1
20 – 35 kg	85-110mg	4.5ml x 1	2.2 ml x 1	30-65mg	2.2 ml x 1	1.1 ml x 1
> 35 kg	110-170mg	7.0ml x 1	3.5ml x 1	85-110mg	3.5 ml x 1	1.8ml x 1

1) Dose 3.2mg/kg initially then 1.6 mg/kg x1,

- until patient can take oral medication.

2) USE 1ml syringe to measure and give

- small doses.

3) NOTE there are 20, 40 and 80mg/ml

- preparations available,
- do not use the 80mg/ml for small children

4) Maximum length of treatment 7 days.

5) Always follow artemether with complete

- (6-dose) oral course of coartem

6) May affect plasma potassium levels

- and cardiac function.

7) AVOID use with ciprofloxacin, fluconazole and erythromycin.

8) The solution is made up in peanut oil.

Artesunate (initial treatment severe malaria)					
Administer	Rectal	Rectal	IM or IV	IM or IV	1) Rectal dose can be used initially 2) Rectal dose approx 10mg/kg for ill children. 3) NOTE IV/IM preparation prepared in 5% sodium bicarbonate solution 4) For IV use further dilution in 5% glucose before IV infusion 5) Use with caution in kwashiorkor and heart failure because of sodium content 6) IV give 2.4mg/kg at 0, 12, 24hr and then daily until oral treatment can be given. 7) Always follow with a full 6-dose course of coartem
presentation	50mg	200mg	60mg ampoule	60mg ampoule	
	Suppository	Suppository	day 1 0 and 12hr	daily	
3 – 5 Kg	1 sup	1/4 sup	10mg x 2	10mg x 1	
5 – 10 kg	1 sup	1/4 sup	20mg x 2	20mg x 2	
10 – 20 kg	2 sup	1/2 sup	40mg x 2	40mg x 1	
20 – 35 kg	4 sup	1 sup	60mg x 2	60mg x 1	
> 35 kg	6 sup	2 sup	100mg x 2	100mg x 1	

SCARBICIDE

Permethrin (scabies/lice - ectoparasites)			
Presentation	Cream	Lotion	1) Apply over whole body, wash off after 12 hours. 2) If washed with soap within 8 hours repeat. 3) Ensure webs between fingers and toes, wrists, axilla, perineum and buttocks are covered. 4) Do not apply to mucus membranes, or ulcerated skin 5) Same chemical as used in Impregnated bed nets
	5%	1%	
3 – 60 kg	once	Once	

Heart failure

Furosemide / Frusemide (only for use in heart failure)					
Administer	Dose	Oral	Oral	IV/IM	1) Only use for HEART FAILURE. 2) NEVER give for oedema mobilisation (it can exacerbate oedema which is related to potassium deficiency). 3) For children normal oral dose 0.5-1mg/kg, 4) Maximum oral dose 3 x 4mg/kg = 12mg/kg (80mg) per day 5) Normal IV dose 0.5-1mg/kg 6) Maximum IV dose 3 x 4 mg/kg. 7) Causes loss of potassium, magnesium etc as well as sodium and water 8) Not ever effective in Heart failure in SAM – can use higher doses.
Presentation	0.5-2 mg/kg/dose	suspension	tablet	10 mg/ml	
	2-3 times/ day	4 mg/ml	40 mg	2 ml ampoule	
3 – 5 Kg		2 ml	1/4	1 ml	
5 – 10 kg		5 ml	1/2	2 ml	
10 – 20 kg		10 ml	1	4 ml	
20 – 35 kg		15 ml	1	5 ml	
> 35 kg		20 ml	2	7.5 ml	

Alternate drugs that may be used when recommended drugs are unavailable

Ceftriaxone		
Administer	IM/ IV	1) Prefer cefotaxime if available. 2) CAREFUL: incompatible with Ringer Lactate and any calcium containing fluid - cefotaxime precipitates. 3) Very painful if given IM. 4) Can cause electrolyte disturbance, 5) Supplied as sodium salt 6) Gives false positive urinary glucose (reducing substances) and Coomb's test. 7) For children maximum dose 1g
Dose	50-100mg/kg/d	
Presentation	250mg/ vial	
	2 times/ day	
3 – 5 Kg	100mg x 2	
5 – 10 kg	200mg x 2	
10 – 20 kg	400mg x2	
20 – 35 kg	800mg x 2	
> 35 kg	1g x 2	

Amoxicillin + Clavulanic acid (Augmentin)					
Administration	dose	Oral	Oral	Oral	1) Exact dose not critical: can be doubled in case of severe infection with sensitive organisms. 2) Ratio is fixed at 1mg of amoxicillin with 0.25mg clavulanic acid. Dose expressed in terms of amoxicillin content 3) The risk of acute liver toxicity has been estimated to be about six times higher with amoxicillin + clavulanic acid than with amoxicillin alone. 4) The preparation contains sodium. 5) The pharmacology of clavulanic acid has not been ascertained in SAM
Preparation	25 - 50 mg/kg/d	125mg/5ml	250mg/5ml	500 mg	
	3 x per day	suspension	suspension	tablet	
3 – 5 Kg	62.5 mg x3	2.5 ml X 3			
5 – 10 kg	125 mg x3	5 ml X 3	2.5 ml x 3	1/4 x3	
10 – 20 kg	250 mg x3	10 ml X 3	5 ml X 3	1/2 X3	
20 – 35 kg	500 mg x3			1 x 3	
> 35 kg	750 mg x3			1 x 3	

Vitamin A systematic treatment

AGE	VITAMIN A IU ORALLY
6 to 11 months	One blue capsule (100,000IU = 30,000µg)
12 months and more	Two blue capsules or 1 red capsule (200,000IU = 60,000µg)

De-worming or anti helminth treatment

AGE	<1 YEAR	1 TO 2 YEARS	>= 2 YEARS
Albendazole 400mg	Not given	½ tablet	1 tablet
Mebendazole 500mg	Not given	½ tablet	1 tablet

Iron/folic acid supplementation

Children	Tablets (fortnightly)
<10 kg	1 tablet
>10 kg	2 tablets

ANNEX 26 – TSFP REGISTRATION BOOK

Serial No.	Register /SCOPE number	SAM Number (if any)	Childs Name	Caretaker Name	Address & Phone	Type of admission (New Adm, Relapse, Transfer in from TSFC, Read, Defiller, OTP follow Up.)	Sex F/M	DOB ddmmyy	Age mo	Date ddmmyy	Weight kg.g	Height/ Length cm	W/H Z	Critical Weight at -3Z: SAM	Admission Weight at kg.g / <2Z: MAM	Discharge Target Weight (-1,5 Z) kg.g	MUAC mm	Discharge Target MUAC mm	Ration
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

ANNEX 27 - RATION CARD

[illegible]

ANNEX 28 – TSFP MONTHLY REPORT

TSFP MONTHLY REPORT – MANAGEMENT OF MODERATE ACUTE MALNUTRITION

Logo of the MOH

Code TSFP

Name of the STRUCTURE
Type of the Structure

REGION

DISTRICT

OPENING DATE

Partner in charge
Report prepared by

PERIOD from DD/MM/YY

PERIOD to DD/MM/YY

Date of submission

Age Group	Beginning of the month	NEW ADMISSIONS		Readm. After defaulter	Transfer to another TSFP	Total Admissions	EXIT					Total EXIT	Total End of the month
		WHZ ≥ -3 & < -2 or MUAC ≥ 115 & < 125 mm or < 21 cm PW/LM	Relapses				CURED	DEAD	DEFAULTERS	NON RESPONSE MEDICAL REFERRAL	REFERRAL TO OTP	TRANSFER TO ANOTHER TSFC	
6-59 month													
PW & LM													
							%	%	%	%	%	%	%

Error of admission

number:

Specify type of error & month.....

Number of New admissions

Boys:

Girls:

Beginning of the Month	New Admissions	Re-admissions after defaulting	Transfer to another TSFP	Total admissions	EXIT			Total end of the Month
					End of follow up	Defaulters	Referral MAM	
OTP follow UP								

Commodity		Commodities In			Commodities Out			I. Closing Stock (D-H)
Batch Number	Waybill Number	B. Opening Stock	D. Total In Stock (B+C)	E. Distributed	F. Return to WFP	G. Losses	H. Total Out (E+F+G)	
5.1.1 Plumpy sup			0				0	0
5.1.2 CSB+			0				0	0
5.1.3 Veg Oil			0				0	0
5.1.5 Total		0	0	0	0	0	0	0

4 COMMUNITY HEALTH WORKERS (CHW) PERFORMANCES

4.1 Number of cases referred by the Community Health Worker to the TSFP site	
4.2 Number of cases referred by the Community Health Worker who actually came to the TSFP site	
4.3 Number of cases referred that constituted true cases of moderate malnutrition and were admitted for treatment	

ANNEX 29 – ADVANTAGES AND DISADVANTAGES OF DRY AND WET FEEDING

WET FEEDING

Advantages

- Useful when firewood and cooking utensils are so difficult to find that the household has difficulties in preparing meals.
- Beneficial when the security situation is so bad that the beneficiaries are put at risk when carrying supplies of food home or storing food at home.
- It is easier to ensure that the beneficiary receives the food s/he requires (less sharing of the food).
- It is easier to ensure that the ration is prepared correctly and that the hygiene is good.
- It is possible to use the mothers' time in the centre to do nutrition and hygiene education with them.

Disadvantages

- As the presence of the mother/caretaker and beneficiary is required at the centre every day for most of the day, it causes problems in the daily tasks of the household.
- There is an increased risk of transmission of diseases having malnourished children concentrated together all day.
- The centre requires many more staff than a dry centre.
- The centre requires more infrastructure than a dry centre.
- The capacity for rapid reaction to changes in the situation is lower.
- There is a possibility that the food in the centre will be used to substitute for the beneficiaries' share of food in the household defeating the purpose of the supplementary ration.

DRY FEEDING

Advantages

- Dry feeding requires fewer resources (personnel, structure) than wet feeding and there is no evidence to show that wet feeding is more effective than dry feeding.
- A greater number of beneficiaries can be supported.
- Less disruption of the family's rhythm as the distribution requires that the mother or caretaker is away from home for a shorter time leading to better coverage and lower defaulter rates.
- It keeps responsibility for preparation and feeding within the home.
- It is more appropriate for dispersed populations.
- Less risk of cross infections.
- It is quicker to put a dry feeding centre into place.

Disadvantages

- There is no guarantee that the beneficiary will receive the ration.
- Monitoring of the nutritional status of the beneficiary is less frequent.
- More difficult to do educational activities.
- Requires more food per beneficiary.

ANNEX 30 – NUTRIENT DENSITY FOR SUPPLEMENTARY FOODS USED FOR MAM

Nutrient	Unit	Per 100g		Per 1000 kcal	
		Minimum	Maximum	Minimum	Maximum
Energy	Kcal	350	400	1000	1000
Protein	G	8	12	23	35
Fat	G	14	18	40	52
Carbohydrate	G	any	any	any	any
Sodium (Na)	Mg		<300		<860
Potassium (K)	Mg	630	700	1800	2000
Magnesium (Mg)	Mg	120	150	340	430
Phosphorus (P)	Mg	370	500	1000	1500
Zinc (Zn)	Mg	9.5	13	27	37
Calcium (Ca)	Mg	400	500	1140	1430
Copper (Cu)	Mg	1	1.2	2.8	3.4
Iron (Fe)	Mg	8.5	13	24	37
Iodine (I)	µg	100	140	290	400
Selenium (Se)	µg	25	35	70	100
Manganese (Mn)	Mg	0.4	0.45	1.1	1.3
Thiamine (B1)	Mg	>0.50		>1.4	
Riboflavin (B2)	Mg	>1.50		>4.3	
Pyridoxine (B6)	Mg	>1.10		>3.0	
Cobalamin (B12)	µg	>2.30		>6.6	
Folate	µg	>240		>680	
Niacin (B3)	Mg	>15		>40	
Ascorbate (Vit C)	Mg	>50		>140	
Pantothenic acid	Mg	>2.3		>6.6	
Biotin	µg	>11		>30	
Retinol (Vit A)	µg	950	1100	>2700	3140
Cholecalciferol (D)	µg	10	20	30	60
Tocopherol (E)	Mg	>13		>35	
Phytomenadione (K)	µg	>30		>85	
n-6 fatty acid	% energy	3	10	3	10
n-3 fatty acid	% energy	0.3	2.5	0.3	2.5
The ratios of nutrients should always be within these limits					
Ca/P ratio	mol/mol	0.8	1.2	0.8	1.2
Zn/Cu ratio	mol/mol	5	15	5	15
Zn/Fe ratio	mol/mol	0.8	3	0.8	3
Total Fat	% energy	30	45	30	45

