



MANAGEMENT OF ACUTE MALNUTRITION

NATIONAL GUIDELINES 2017



REPUBLIC OF LEBANON
MINISTRY OF PUBLIC HEALTH

unicef  for every child

TABLE OF CONTENT

ABBREVIATIONS	I
FOREWORD & EXECUTIVE SUMMARY	II
ACKNOWLEDGEMENTS	III

CHAPTER 1 - INTRODUCTION 1

1/1 BACKGROUND	1
1/2 TARGET AUDIENCE FOR THE GUIDELINES	2
1/3 PURPOSE OF THE GUIDELINES	2
1/4 ORGANIZATION OF TREATMENT SERVICES	2

CHAPTER 2 - OVERVIEW OF MALNUTRITION 4

2/1 CAUSES AND CONSEQUENCES OF MALNUTRITION	4
2/2 PATHOPHYSIOLOGY OF ACUTE MALNUTRITION	6
2/3 TYPES OF MALNUTRITION	8
2/4 CLASSIFICATION OF ACUTE MALNUTRITION	9
2/5 OVERVIEW OF THE IDENTIFICATION AND TREATMENT OF ACUTE MALNUTRITION	10

CHAPTER 3 - PREVENTION OF MALNUTRITION 13

3/1 INFANT AND YOUNG CHILD FEEDING	13
3/2 MICRONUTRIENT DEFICIENCIES	14
3/3 PSYCHOSOCIAL ISSUES	15
3/4 WATER, SANITATION AND HYGIENE (WASH)	15
3/5 IMMUNIZATION	17
3/6 FOOD BASED DIETARY GUIDELINES	18

CHAPTER 4 - SCREENING AND REFERRAL 20

4/1 MAXIMIZING TREATMENT COVERAGE AND ACCESS TO SERVICES	20
4/2 SCREENING FOR ACUTE MALNUTRITION AT ALL PHC CENTERS	21
4/3 REFERRAL MECHANISMS	25
4/4 CHILDREN WHO ARE GROWTH FALTERING BUT NOT ACUTELY MALNOURISHED	25

CHAPTER 5 - DIAGNOSIS & TRIAGE 26

5/1 ASSESSMENT OF ACUTE MALNUTRITION IN CHILDREN AGED 6 - 59 MONTHS	26
5/2 ASSESSMENT OF ACUTE MALNUTRITION IN INFANTS AGED 0 - 6 MONTHS	30
5/3 ASSESSMENT OF ACUTE MALNUTRITION IN PREGNANT AND LACTATING WOMEN	32
5/4 SUMMARY OF CRITERIA FOR THE TREATMENT OF ACUTE MALNUTRITION	32

TABLE OF CONTENT

CHAPTER 6 - MANAGEMENT OF MODERATE ACUTE MALNUTRITION FOR CHILDREN AGED 6-59 MONTHS AT PHC CENTER	33
CHAPTER 7 - MANAGEMENT OF MODERATE ACUTE MALNUTRITION FOR CHILDREN AGED LESS THAN 6 MONTHS	38
CHAPTER 8 - MANAGEMENT OF UNCOMPLICATED SEVERE ACUTE MALNUTRITION FOR CHILDREN AGED 6-59 MONTHS AT PHC CENTER	42
CHAPTER 9 - MANAGEMENT OF ACUTE MALNUTRITION FOR PREGNANT & LACTATING WOMEN (PLW) AT PHC CENTER	49
CHAPTER 10 - MANAGEMENT OF COMPLICATED SEVERE ACUTE MALNUTRITION FOR CHILDREN AGED 6-59 MONTHS AT HOSPITAL	51
10/1 ADMISSION CRITERIA FOR INPATIENT CARE FOR CHILDREN AGED 6-59 MONTHS	51
10/2 EMERGENCY CARE ON ARRIVAL	52
10/3 STABILIZATION PHASE	53
10/4 TRANSITION PHASE FOR TRANSFER TO PHC CENTER	60
CHAPTER 11 - MANAGEMENT OF ACUTE MALNUTRITION IN CHILDREN AGED 0-6 MONTHS AT HOSPITAL LEVEL	64
11/1 ADMISSION CRITERIA FOR CHILDREN AGED LESS THAN 6 MONTHS	64
11/2 CHILDREN WITH A POSSIBILITY OF BEING BREASTFED	65
11/3 INFANTS AGED LESS THAN 6 MONTHS WITH NO POSSIBILITY OF BEING BREASTFED	68
CHAPTER 12 - MANAGEMENT OF CHILDREN WITH COEXISTENT CONDITIONS	72
12/1 CHILDREN LIVING WITH DISABILITIES	72
12/2 LACTOSE INTOLERANCE	74
12/3 CONGENITAL CARDIAC CONDITIONS	75
CHAPTER 13 - PSYCHOSOCIAL SUPPORT FOR INFANTS AND CHILDREN WITH ACUTE MALNUTRITION	77
13/1 INTERVENTIONS TO PROMOTE PSYCHOSOCIAL SUPPORT OF INFANTS AND CHILDREN WITH ACUTE MALNUTRITION	78
CHAPTER 14 - MONITORING AND REPORTING	80
14/1 INDIVIDUAL MONITORING	80
14/2 HEALTH FACILITY REPORTING	84
14/3 PROCEDURES WHEN A CHILD / PLW FAILS TO RESPOND TO TREATMENT	84
14/4 SERVICE PERFORMANCE INDICATORS	87
CHAPTER 15 - MANAGEMENT OF ACUTE MALNUTRITION IN EMERGENCIES	88

3	FIGURE 1: OVERVIEW OF CMAM SERVICES
5	FIGURE 2: UNICEF CONCEPTUAL FRAMEWORK FOR MALNUTRITION (1990)
6	FIGURE 3: THE MALNUTRITION CYCLE
8	FIGURE 4: TYPES OF MALNUTRITION
9	FIGURE 5: CLASSIFICATION OF ACUTE MALNUTRITION
22	FIGURE 6: MUAC TAPE FOR CHILDREN AGED 6 TO 59 MONTHS WITH COLOUR CODING
29	FIGURE 7: DECISION TREE FOR TRIAGE OF CHILDREN AGED 6 - 59 MONTHS
31	FIGURE 8: DECISION TREE FOR TRIAGE OF INFANTS AGED LESS THAN 6 MONTHS
66	FIGURE 9: DEMONSTRATION OF SUPPLEMENTARY SUCKLING TECHNIQUE
85	FIGURE 10: PROCEDURE FOR FAILURE TO RESPOND TO TREATMENT
15	TABLE 1: SCHEDULE FOR MULTIPLE MICRONUTRIENT SUPPLEMENTATION
17	TABLE 2: IMMUNIZATION SCHEDULE FOR CHILDREN AGED 0 TO 6 YEARS IN LEBANON
18	TABLE 3: EXAMPLES OF FOODS RICH IN IRON, FOLIC ACID, VITAMIN B12 AND VITAMIN D
23	TABLE 4: CLASSIFICATION OF ACUTE MALNUTRITION BY ANTHROPOMETRIC CRITERIA
23	TABLE 5: EXAMPLES OF CLASSIFICATION ACCORDING TO WORST CASE CRITERIA
28	TABLE 6: APPETITE TEST FOR RUTF
33	TABLE 7: CRITERIA FOR TREATMENT OF CHILDREN AGED 6 TO 59 MONTHS WITH MAM AT PHC CENTER
34	TABLE 8: AMOUNT OF RUSF TO GIVE TO CHILDREN AGED 6 TO 59 MONTHS WITH MAM
36	TABLE 9: CRITERIA FOR DISCHARGE AS CURED
37	TABLE 10: CATEGORIES OF DISCHARGE FOR CHILDREN NOT CURED
38	TABLE 11: CRITERIA FOR TREATMENT OF INFANTS AGED LESS THAN 6 MONTHS WITH MAM AT THE PHC
40	TABLE 12: CRITERIA FOR DISCHARGE AS CURED FOR INFANTS AGED LESS THAN 6 MONTHS
42	TABLE 13: CRITERIA FOR TREATMENT OF UNCOMPLICATED SEVERE ACUTE MALNUTRITION AT PHC
43	TABLE 14: ROUTINE ANTIBIOTICS FOR CHILDREN AGED 6 TO 59 MONTHS WITH UNCOMPLICATED SAM
44	TABLE 15: AMOUNT OF RUTF TO GIVE BASED ON WEIGHT
46	TABLE 16: CRITERIA TO TRANSFER THE CHILD TO HOSPITAL DURING RECOVERY FROM SAM
47	TABLE 17: CRITERIA FOR DISCHARGE CURED
47	TABLE 18: CATEGORIES OF DISCHARGE FOR CHILDREN NOT CURED
49	TABLE 19: CRITERIA FOR ENROLMENT IN TREATMENT FOR PREGNANT & LACTATING WOMEN
49	TABLE 20: ROUTINE MEDICAL PROTOCOLS FOR PREGNANT & LACTATING WOMEN
50	TABLE 21: ROUTINE NUTRITIONAL PROTOCOLS FOR PREGNANT & LACTATING WOMEN
50	TABLE 22: CRITERIA FOR DISCHARGE FOR PREGNANT & LACTATING WOMEN
51	TABLE 23: ADMISSION CRITERIA FOR INPATIENT CARE FOR CHILDREN AGED 6 TO 59 MONTHS
53	TABLE 24: ROUTINE ANTIBIOTICS IN STABILISATION PHASE IF COMPLICATIONS ARE NOT PRESENT
54	TABLE 25: ROUTINE ANTIBIOTICS IN STABILISATION PHASE IF COMPLICATIONS ARE PRESENT
55	TABLE 26: VITAMIN A SCHEDULE FOR THE INPATIENT TREATMENT OF SAM
59	TABLE 27: CRITERIA FOR UPGRADE FROM STABILIZATION PHASE TO TRANSITION PHASE
60	TABLE 28: AMOUNT OF RUTF TO BE GIVEN IN THE TRANSITION PHASE
62	TABLE 29: CRITERIA FOR TRANSFER FROM TRANSITION PHASE IN HOSPITAL TO THE PHC
64	TABLE 30: ADMISSION CRITERIA FOR CHILDREN AGED LESS THAN 6 MONTHS
67	TABLE 31: CRITERIA FOR DISCHARGE FROM HOSPITAL TO PHC
69	TABLE 32: CRITERIA FOR TRANSFER TO TRANSITION PHASE FOR CHILDREN AGED LESS THAN 6 MONTHS
71	TABLE 33: CRITERIA FOR NON-BREASTFED INFANTS AGED LESS THAN 6 MONTHS FOR DISCHARGE FROM HOSPITAL TO THE PHC
87	TABLE 34: SERVICE PERFORMANCE INDICATORS FOR EXPECTED DISCHARGE OUTCOMES
89	TABLE 35: SUMMARY OF THE ROLE OF VARIOUS ACTORS IN A NUTRITIONAL EMERGENCY IN LEBANON
18	BOX 1: KEY RECOMMENDATIONS FOR UNDERWEIGHT INDIVIDUALS
28	BOX 2: THE IMPORTANCE OF THE APPETITE TEST
34	BOX 3: READY TO USE SUPPLEMENTARY FOOD (RUSF)

39	BOX 4: ASSESSMENT OF APPROPRIATE BREAST MILK SUBSTITUTE FEEDING PRACTICES
43	BOX 5: WHO RECOMMENDATIONS ON ROUTINE ANTIBIOTICS FOR SAM CASES AT PHC CENTER
44	BOX 6: READY TO USE THERAPEUTIC FOOD (RUTF)
45	BOX 7: USING RUTF WITH OTHER FAMILY FOODS
56	BOX 8: PREPARATIONS OF F75 AND ALTERNATIVES
57	BOX 9: VARIATION IN THE NUMBER OF FEEDS IN STABILIZATION PHASE
57	BOX 10: APPROPRIATE FEEDING TECHNIQUE
58	BOX 11: INDICATIONS FOR USING A NASOGASTRIC TUBE (NGT)
60	BOX 12: REFEEDING SYNDROME
61	BOX 13: FEEDING COMBINATIONS OF RUTF AND F75 IN TRANSITION PHASE
62	BOX 14: WHO RECOMMENDATIONS ON TRANSITION FROM F75 TO RUTF
65	BOX 15: SUPPLEMENTAL SUCKLING TECHNIQUE (SST)
68	BOX 16: SPECIFIC CONDITIONS NEEDED IF INFANT FORMULA FEEDS ARE TO BE GIVEN SAFELY TO INFANTS
73	BOX 17: USE OF RUSF / RUTF FOR CHILDREN WITH CEREBRAL PALSY AND RELATED DISORDERS
75	BOX 18: WHO RECOMMENDATION ON CHILDREN PRESENTING WITH PERSISTENT DIARRHEA



ABBREVIATIONS

CBO	COMMUNITY BASED ORGANIZATION
GAM	GLOBAL ACUTE MALNUTRITION
HFA	HEIGHT FOR AGE
IYCF	INFANT AND YOUNG CHILD FEEDING
MAM	MODERATE ACUTE MALNUTRITION
MOPH	MINISTRY OF PUBLIC HEALTH
MOSA	MINISTRY OF SOCIAL AFFAIRS
MUAC	MID UPPER ARM CIRCUMFERENCE
MMU	MOBILE MEDICAL UNIT
PHC	PRIMARY HEALTH CARE [CENTER]
PLW	PREGNANT & LACTATING WOMEN
RUSF	READY TO USE SUPPLEMENTARY FOOD
RUTF	READY TO USE THERAPEUTIC FOOD
SAM	SEVERE ACUTE MALNUTRITION
UNHCR	UNITED NATIONS HIGH COMMISSIONER FOR REFUGEES
UNICEF	UNITED NATIONS CHILDREN'S FUND
UNWRA	UNITED NATIONS RELIEF AND WORK AGENCY FOR PALESTINE
WFA	WEIGHT FOR AGE
WFH	WEIGHT FOR HEIGHT
WHO	WORLD HEALTH ORGANIZATION

FOREWORD AND EXECUTIVE SUMMARY

The government of Lebanon, through the Ministry of Public Health (MoPH) recognizes the importance of preventing, screening and treating acute malnutrition and is, to that end, committed to delivering the appropriate services.

The purpose of these guidelines on the management of acute malnutrition is to provide the required minimum standards for delivering a comprehensive set of nutrition interventions aimed at preventing and managing the treatment of acute malnutrition in children under five and pregnant and lactating women in various service delivery points such as Primary Health Care (PHC) Centers and within the communities. These guidelines start-off with providing an overview of malnutrition; its' common underlying causes, pathophysiology, types and classification as well as a brief overview on identifying and treating acute malnutrition. The guidelines also stress the importance of preventing malnutrition through adopting optimal infant and young child feeding practices, preventing micronutrient deficiencies, ensuring good Water Hygiene and Sanitation (WASH) practices as well as ensuring up-to-date immunization and optimal dietary intake.

The prevention of acute malnutrition is not always successful or feasible. However, it is important to identify and treat it as soon as possible to reduce its negative consequences. Therefore, the guidelines provide detailed guidance on the screening for, and diagnosis of acute malnutrition for both children under 5 and pregnant and lactating women, as well as directions for service providers on referral mechanisms to ensure that identified cases of acute malnutrition are adequately referred to the appropriately equipped treatment centers.

The guidelines are expected to help service providers improve the quality of nutrition service delivery and the health outcomes in children under the age of 5, pregnant and lactating women and other beneficiaries of PHC centers. These guidelines have been developed through a consultative process with local and external technical experts and will be updated as need arises in order to incorporate emerging evidence and issues.

The MoPH requires all service providers at the facility and community levels involved in delivering health and nutrition services to adhere to these guidelines. The MoPH is further appealing to managers, such as hospital directors, district health officers, and development partners, to support operationalization of these guidelines.

ACKNOWLEDGEMENTS

The Ministry of Public Health would like to thank the United Nations Children's Fund (UNICEF) for the technical support and the Government of United States of America for the financial support provided towards the development of the national guidelines for the management of acute malnutrition in Lebanon

Sincere gratitude is extended to Dr. Nahla C Houalla from the American University of Beirut and the rest of the reviewers for their input and technical expertise during the inception and formulation of these guidelines through all processes, including the editing and refining up to the final stages. The process has been labor intensive and it would not have succeeded without the untiring efforts and commitment of these individuals.

Special recognition goes to the Primary Health Care department at the Ministry of Public Health, led by Dr Randa Hamadeh, for the guidance and support in formulating these guidelines and to Ms. Rima Shaya for her thorough follow up.

In addition, recognition goes to "Valid International" for the consultancy work provided in the formulation of the guidelines.

Finally, the Ministry of Health wishes to thank all stakeholders not mentioned by name, who in one way or another, either individually or collectively, contributed to the development and finalization of these guidelines.

In order to prevent the short term and long term consequences of malnutrition in all its forms, coordinated and multi-sectoral efforts are required from all stakeholders to commit to adopting nutrition specific and nutrition sensitive interventions highlighted in these guidelines, such as maternal and child nutrition, especially for the most disadvantaged.

MoPH therefore calls upon all stakeholders involved in the management of malnutrition to apply these guidelines and integrate the recommendations into their respective programs.

The National Guidelines for the management of Acute Malnutrition for Lebanon are based on World Health Organisation guidelines for the treatment of infants and children with acute malnutrition and conform to international standards of care for primary health care and hospital-based treatment. Protocols of care have been adapted so as to be suitable for the Lebanese context.

Some figures and information have been reproduced with permission from copyrighted material of Professor Michael Golden and Dr Yvonne Grellety.

CHAPTER 1 - INTRODUCTION

1/1 BACKGROUND

Lebanon is a middle income country of about 4.5 million people and currently hosting about 1.1¹ million displaced Syrian population, spread across 1500 localities and contributing to about a quarter of the country total population, in addition to pre-existing Palestinian refugees, making it the country with the highest refugee caseload per capita globally².

The sudden and dramatic increase in population has exerted a lot of pressure on the country's infrastructure and institutions including the health system. A World Bank assessment estimated the cumulative loss in government revenue during the 2012 to 2014 period stood at US\$1.5 billion, as a result of decreased economic activity².

Despite the Syrian crisis, the Lebanese health system still displays considerable resilience considering that during this protracted crisis it has maintained population access to healthcare services, prevented outbreaks, and kept morbidity and mortality outcomes at desirable levels, lowering maternal and child mortality, leading to the achievement of Millennium Development Goals (MDGs) 4 and 5 while ensuring long-term sustainability². In addition, health financing and delivery at the primary, secondary and tertiary levels have been maintained for Lebanese, while primary and secondary care services were expanded to cover Syrians as well.

The primary health care sector counts more than 800 health centers comprising around 200 Primary Health Care (PHC) centers under the network of the Ministry of Public Health (MoPH). Each PHC center has a defined catchment area with an average of 20,000 inhabitants, varying between 15000 in rural areas with sparse population to nearly 30000 in urban high-density population areas. The rest of the primary care outlets are dispensaries run by the Ministry of Social Affairs (MoSA), municipalities or Non-Governmental Organizations (NGOs).

All PHC centers are committed to providing a comprehensive package of services including health assessments, immunization, chronic and non-chronic essential drugs, cardiology, pediatrics, reproductive health, mental health and oral health as well as screening and treating non-communicable diseases. The PHC centers also play an important role in school health, health education, nutrition, environmental health and water control.

The MoPH considers the PHC centers as the cornerstone for achieving Universal Health Coverage and offers considerable support to this network through the development of health education materials, training activities, purchasing and distribution of free of charge vaccines and medications, and developing National Guidelines, including the protocols for the management of acute malnutrition. These guidelines have been developed to guide nutrition actors to design and implement cost effective and sustainable quality nutrition interventions through the existing primary healthcare network in Lebanon.

¹ <http://data.unhcr.org/syrianrefugees/country.php?id=122>

² <http://www.moph.gov.lb/AboutUs/strategicplans/Documents/MOPH%20Health%20Response%20Strategy-2015.pdf>

1/2 TARGET AUDIENCE FOR THE GUIDELINES

These guidelines are primarily for the use of health-care providers including health facility managers, physicians, nurses, midwives, nutritionists and dietitians. The guidelines should be implemented in PHC centers and hospitals where the required levels of resources, training and supervision support them to deliver the service in a safe and effective manner.

Non-Governmental Organizations (NGOs), UN agencies (and their partners) and other nutrition actors or providers of health and nutrition services should also use these guidelines when implementing programs that address acute malnutrition in Lebanon.

1/3 PURPOSE OF THE GUIDELINES

These guidelines provide standardized guidance to health care workers in the screening, referral and treatment of infants and children aged less than five years and pregnant & lactating women (PLW) with acute malnutrition based on WHO definitions and growth standards.

The systematic screening of children for acute malnutrition at every visit also serves to act as a growth check for children at regular intervals until the age of five years, and to ensure the pregnant mother and breastfeeding child are well nourished. The guidelines should not be used for children who are growth faltering (i.e. have a low weight for their age) but are not acutely malnourished (see Chapter 2.3).

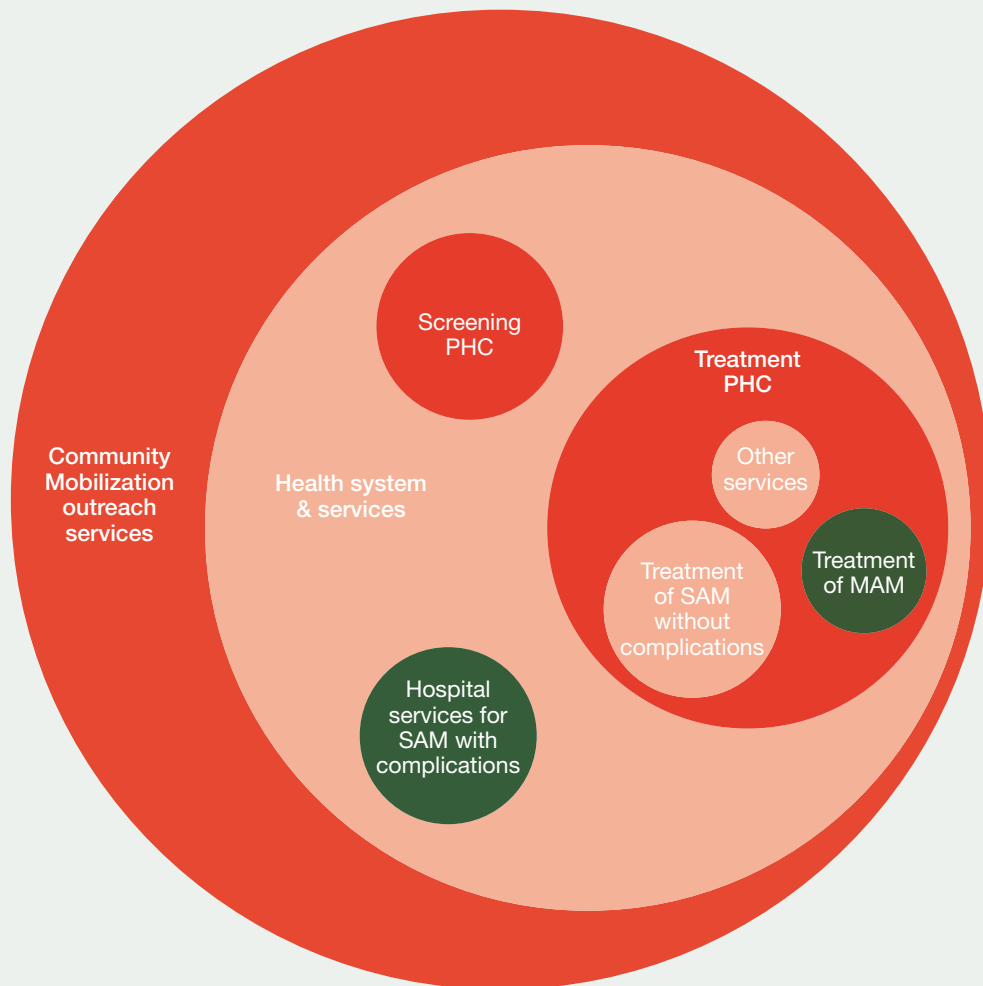
The data gathered through this systematic screening also serves as surveillance data, which makes possible the early detection of any emerging problems with malnutrition of public health significance. The provision of screening services throughout the network of PHC centers, and treatment services at Treatment PHC centers, provides preparedness for issues that may arise in the future.

1/4 ORGANIZATION OF TREATMENT SERVICES

Acute malnutrition is a silent disease and is an underlying factor that influences the effects of other common diseases. Early detection through screening and prompt treatment is essential to prevent the development of complications which, left untreated, may lead to morbidity and eventually mortality. The early detection of malnutrition is done through systematic screening at all PHC centers, for every child and pregnant or breastfeeding woman with a child aged less than 6 months, at every visit.

The majority of PHC centers will offer screening services only (Screening PHC centers) while others will provide services to screen and treat acute malnutrition (Treatment PHC centers). PHC centers that are only equipped for screening of acute malnutrition should refer their cases to other PHC centers in the region that are equipped for treatment of acute malnutrition. Furthermore, designated Governmental Hospitals will act as referral centers for infants and children with acute malnutrition that cannot be treated at PHC center level due to the development of complications requiring specialized care. It is essential to maintain the continuity of care and ensure strong referral mechanisms between the different health facilities. Figure 1 below gives an overview of the services for screening and treating acute malnutrition.

FIGURE 1 OVERVIEW OF CMAM SERVICES



CHAPTER 2 - OVERVIEW OF MALNUTRITION

It is important when treating acute malnutrition (see Chapter 2.3 for definitions) to have an understanding of the underlying medical and social causes so that, once cured, the child or PLW does not relapse in the future with further episodes of acute malnutrition. This chapter gives a brief overview of the underlying factors contributing to the development of malnutrition and of the physiological consequences of it. The classification of acute malnutrition and the protocols for treating it are based on this abnormal physiology. The chapter ends with an overview of how the abnormal physiology and classification of acute malnutrition is translated into the services provided by the MoPH to treat it.

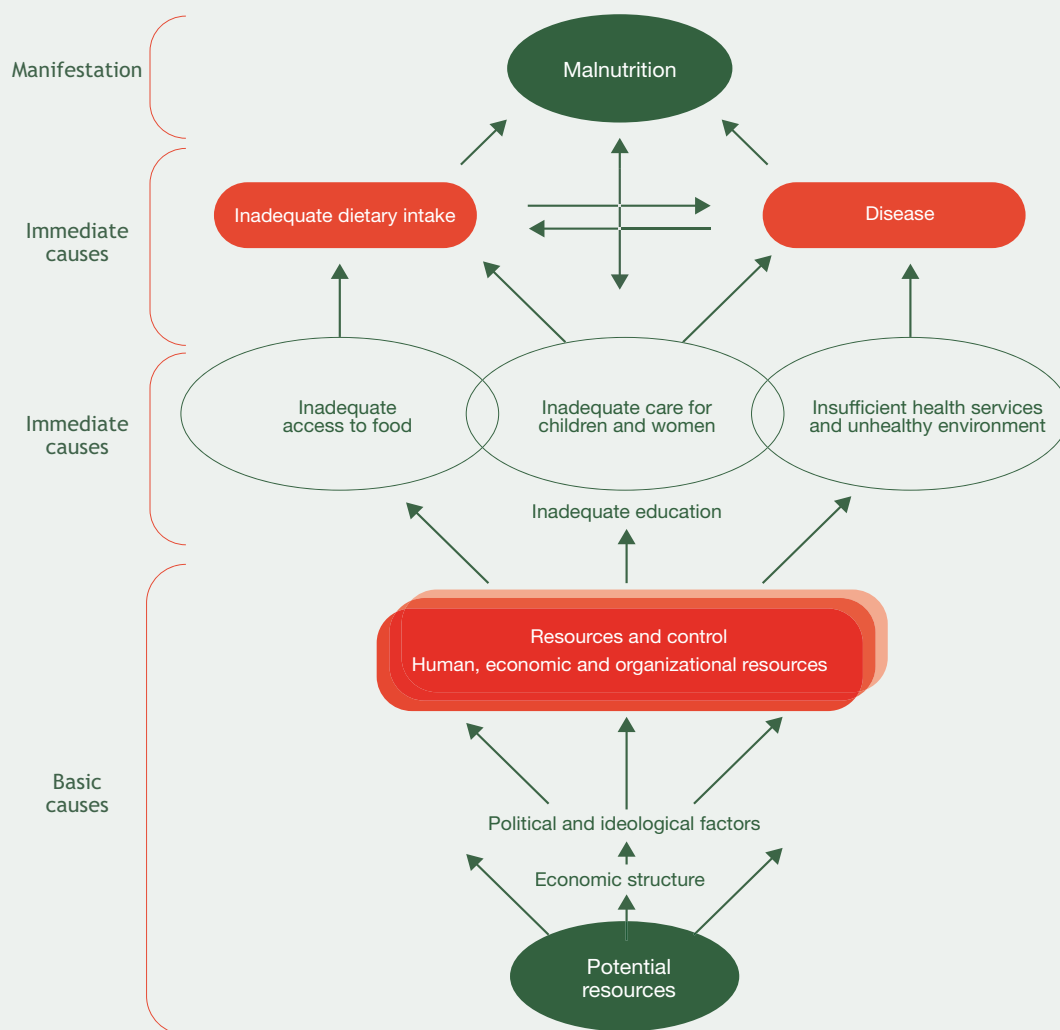
2/1 CAUSES AND CONSEQUENCES OF MALNUTRITION

The UNICEF conceptual framework for malnutrition (see figure 2) describes the direct and underlying causes of malnutrition. Malnutrition is often caused by the interaction of several factors, both medical and social. It is important to consider the factors that contribute to the development of acute malnutrition in order to give appropriate advice to individual children and women treated under these guidelines to prevent malnutrition in the future.

The consequences of malnutrition include;

- Increased morbidity and mortality in childhood
- Impaired cognitive, motor, social and emotional development
- Impaired school performance and learning capacity
- Reduced adult stature
- Impaired work capacity and productivity
- Increased development of non-communicable disease in adult life

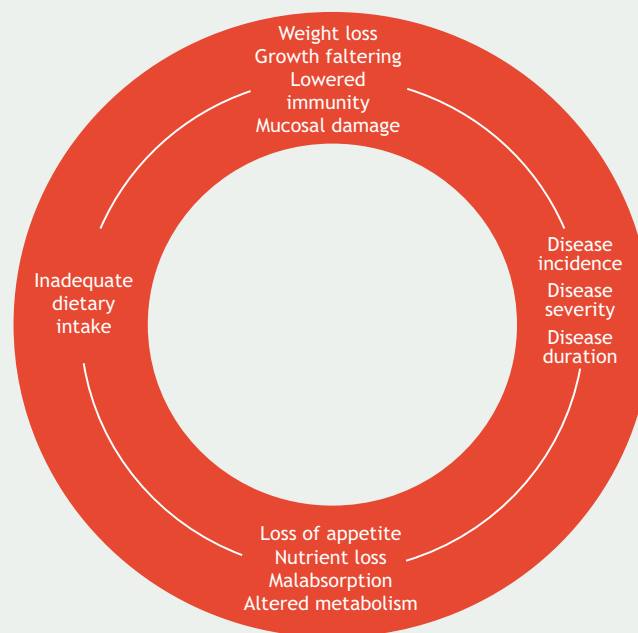
FIGURE 2 UNICEF CONCEPTUAL FRAMEWORK FOR MALNUTRITION (1990)



Adapted from UNICEF 1990

An immediate cause of malnutrition is disease or an inadequate dietary intake. The intake may be of inadequate quality, quantity and/or frequency to maintain healthy growth and development. Poor dietary intake may make disease worse and vice versa to create a vicious malnutrition cycle (see Figure 3 below).

FIGURE 3 THE MALNUTRITION CYCLE



The inadequacy of the diet and the development of disease may occur due to other underlying factors such as inadequate access, availability and/or utilization of food, inadequate care for women and children or lack of access to health services or living in an unclean environment.

These underlying causes may occur due to a lack of knowledge, for example regarding age appropriate feeding practices for infants and young children, good hygiene and sanitation practices essential for safe food preparation and/or due to a lack of knowledge regarding appropriate preventative care such as immunization and growth monitoring for children or antenatal visits for pregnant women.

These guidelines address the treatment of acute malnutrition through the direct provision of nutrient and energy rich foods together with medicines to treat disease when appropriate. In addition, the treatment of acute malnutrition must be supported by counseling, which targets the underlying social causes of the acute malnutrition. This may be through education in infant and young child feeding practices, ensuring routine attendance for growth monitoring or ensuring the child is fully immunized, for example.

2/2 PATHOPHYSIOLOGY OF ACUTE MALNUTRITION

To maintain healthy growth and development as well as an active life, the body requires a constant supply of energy, protein and a wide range of micronutrients (vitamins and minerals). These nutrients contribute to growth, building and repairing cells and maintaining normal cellular and organ functions.

Inadequate dietary intake of micronutrients over a period of time will result in micronutrient deficiencies that may

be hard to detect depending on the type. Micronutrients can be classified as either type I or type II depending on how the body responds to a deficiency of a particular nutrient. Type I micronutrient deficiency is characterized by a specific physical/clinical symptom of the deficiency, for example Bitot spots with vitamin A deficiency or goiter with iodine deficiency. A type II micronutrient deficiency is characterized by reduced growth or weight loss, for example zinc which will stop growth followed by weight loss.

When a small deficiency occurs in the (micro or macro) nutrients involved in growth, the rate of growth slows down. This may not be immediately obvious but over time the child will grow more slowly and become shorter for their age than normal. The greater the nutritional deficiency, the greater the reduction in growth will be. Since this occurs over a long period of time it is essential to do regular growth checks on the developing child, particularly during the first 1000 days of life when the child is most vulnerable to nutrient deficiencies.

As the deficiency of nutrients becomes greater, the growing child adapts to the shortage by undergoing a process called 'reductive adaptation'. The body adapts to the shortage by reducing the demand for nutrients and the activity level of the child and the functioning of organs is affected and the child loses weight. When the deficiency is mild or moderate, growth is affected but the physiology remains relatively normal. If the deficiency is severe, weight loss is greater, and cellular and organ functions are severely affected. Every organ in the body is affected by these changes (see Annex 1). For example;

- The liver loses its capacity to metabolize and detoxify protein
- Reduction in transferrin synthesis resulting in increased free iron
- The heart loses its ability to respond to increased fluid load
- The kidney loses its ability to regulate urine production
- The stomach has reduced acidity and the intestine reduced motility
- The immune system is impaired and less able to respond to infection

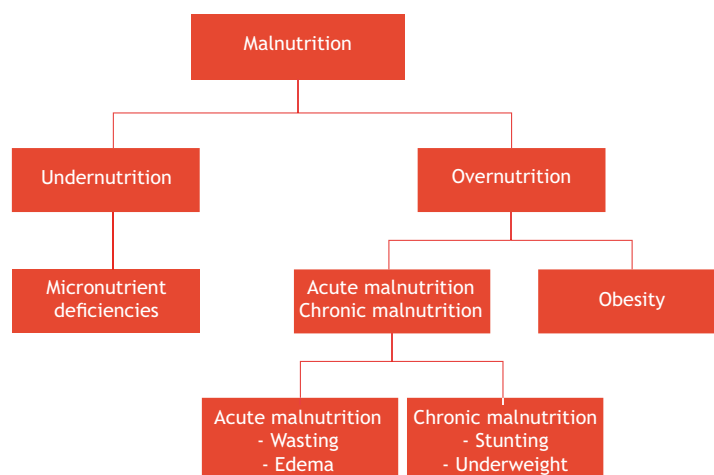
At a cellular level, the functioning of cell membranes and active transport systems are affected and electrolytes become abnormally distributed. The deterioration in organ function leads eventually to a loss of appetite. This is an important clinical indicator since without an appetite sufficient to eat the foods given for recovery in the PHC center, the child must be transferred to hospital for specialized treatment. This specialized treatment is aimed at the slow correction of abnormal cellular functions through appropriate nutrition and the treatment of any medical complications. Excessive protein or energy at this stage can rapidly lead to heart failure and death through refeeding syndrome (see Box 1).

The medical treatment of children with acute malnutrition is different from children who are normally nourished, even at the PHC center. Care must be exercised to diagnose acute malnutrition through systematic screening to ensure the condition is treated appropriately.

2/3 TYPES OF MALNUTRITION

Malnutrition is a general term that includes ‘overnutrition’ and ‘undernutrition’. Overnutrition is important in childhood and adulthood, as it is a cause of obesity and consequent non-communicable diseases. These guidelines are primarily concerned with undernutrition and particularly with identification and treatment of acute malnutrition. Figure 4 below describes an overview of the types of malnutrition.

FIGURE 4 TYPES OF MALNUTRITION



2/3/1 Chronic malnutrition

Chronic malnutrition is a form of malnutrition in which malnutrition occurs over a long period of time, unlike acute malnutrition, and children who suffer from it fail to grow to their full genetic potential, both mentally and physically. Forms of chronic malnutrition include stunting and underweight.

Stunting is a measure of linear growth and is measured by ‘height for age’. The height of the child is measured and compared to a chart of normal growth in height for children according to age. The growth charts are based on international standards for growth produced by the World Health Organization (WHO³). A child who is stunted or chronically malnourished often appears to be normally proportioned but is actually shorter than normal for his/her age.

Underweight is a measure of ponderal growth (related to weight) and is measured by ‘weight for age’. The weight of the child is measured and compared to a chart of normal growth in children based on WHO standards. A child may be underweight for their age because they are too short for their age or are too thin. It is therefore a ‘composite index’.

2/3/2 Acute Malnutrition

Acute malnutrition is seen in two different forms, wasting and edema.

Wasting is assessed by measuring either the mid-upper arm circumference (MUAC) or by measuring the child’s weight and height, then comparing those measurements to a chart of normal weight according to the height or length of the

³ Accessible through the following internet link: <http://www.who.int/childgrowth/en/>

child based on international standards for growth produced by the World Health Organization (WHO). This is referred to as the weight for height (WFH) (used for older children) or weight for length (WFL) (used for younger children). WFL and WFH are expressed in z-scores, which is a measure of the 'normality' of growth. Moderate wasting is defined as a MUAC between 11.5 and less than 12.5 cm or a WFL or WFH between -2 and -3 Z-score. Severe wasting is defined as a MUAC < 11.5 cm or a WFL or WFH less than -3 Z-score.

An older term for wasting is 'marasmus', which is still referred to in some textbooks but is falling into disuse.

Bilateral Pitting Edema is a form of acute malnutrition that is not commonly seen in Lebanon. Edema resulting from malnutrition is always bilateral (on both sides of the body) and is always seen in the feet first. In more severe forms, the edema spreads to the lower legs and hands on both sides. In the most severe form of edema there is swelling around the eyes (periorbital edema) and face. When the edema in the feet, legs or hands is pressed firmly but gently with the thumbs for three seconds, small pits are left behind when the thumb is taken away. This is referred to as bilateral pitting edema. An older term for the edema seen in malnutrition is 'kwashiorkor'. Kwashiorkor is sometimes still used in some textbooks but is a term that describes a syndrome, in which edema is one of the signs. Bilateral pitting edema is the sign that defines acute malnutrition (others signs of kwashiorkor are not definitive) and is the preferred term for classifying malnutrition.

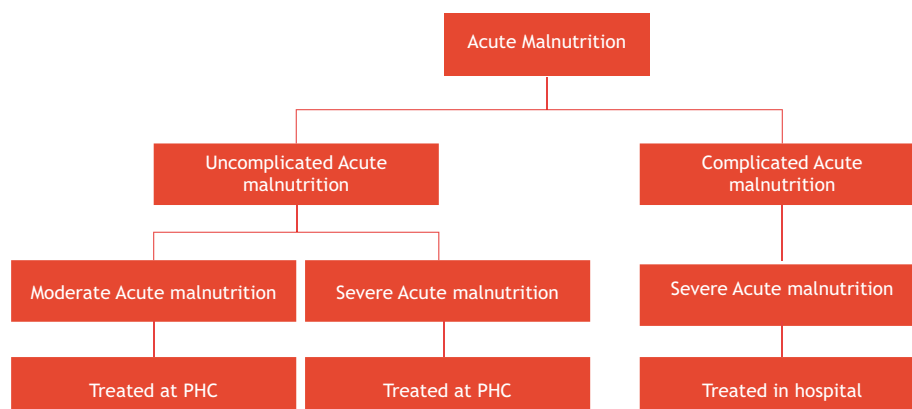
A combination of wasting and edema is sometimes seen and is a very poor prognostic indicator. An older term for this combination of forms of acute malnutrition is 'marasmic-kwashiorkor'.

The term 'protein energy malnutrition (PEM)' is sometimes seen in textbooks and refers to acute malnutrition. Protein energy malnutrition is a term that is falling out of use since acute malnutrition is not only the result of a deficiency of protein or energy. Therefore the terminologies are not synonyms but rather the terminology 'acute malnutrition' is a more comprehensive description of acute malnutrition.

2/4 CLASSIFICATION OF ACUTE MALNUTRITION

Acute malnutrition is classified on the basis of the anthropometric status and on the clinical condition. Based on anthropometry, acute malnutrition is classified as 'moderate' or 'severe'. If there are no other medical complications that need hospital treatment then this is called 'uncomplicated acute malnutrition'. If clinical complications or a lack of appetite are present, this is called 'complicated acute malnutrition'. Complications or a lack of appetite, which need hospital treatment, are normally only seen in severe acute malnutrition. The classification of acute malnutrition (see Figure 5) is a functional one and describes where the treatment may be given.

FIGURE 5 CLASSIFICATION OF ACUTE MALNUTRITION



Uncomplicated acute malnutrition can be treated at the PHC center while complicated acute malnutrition requires transfer to hospital or specialized treatment.

2/5 OVERVIEW OF THE IDENTIFICATION AND TREATMENT OF ACUTE MALNUTRITION

The early identification and treatment of acute malnutrition is composed of four main components of care:

- Screening and referral services
- Outpatient treatment of moderate acute malnutrition at the PHC center
- Outpatient treatment of uncomplicated severe acute malnutrition at the PHC center
- Inpatient treatment of complicated severe acute malnutrition at the hospital

2/5/1 Screening and referral services

The early identification and treatment of acute malnutrition means the malnutrition is easier to treat, the development of complications is much less likely, and treatment is more cost effective.

The primary point of contact for screening services is the PHC center. Every child aged less than five years and pregnant or breastfeeding woman with an infant aged less than six months undergoes screening for acute malnutrition at every visit to the PHC center. Some PHC centers will offer screening services only, and when a case of acute malnutrition is identified the woman or child is referred to a Treatment PHC center. Screening for acute malnutrition for women and children should be integrated whenever possible into outreach activities which are conducted by the PHC center.

When conducting public health awareness campaigns, Screening and Treatment PHC centers should include messages that raise the public's awareness of acute malnutrition and where treatment services are located. An example of a simple message is given in Annex 2.

2/5/2 Treatment of moderate acute malnutrition at the Treatment PHC Center

If acute malnutrition is identified at an early stage when it is only 'moderately acute', the routine treatment includes giving a supplementary food, which supplements the usual diet of the child or pregnant & lactating woman (PLW) who are the primary targets for this treatment. Typically, the woman and/or child will attend every two weeks for a check-up to see that treatment is progressing well. Treatment may last for a period of approximately eight weeks, sometimes longer.

Treatment is always supported by counseling on appropriate child feeding practices, immunization, dietary practices for adults and general health advice as appropriate.

2/5/3 Treatment of uncomplicated severe acute malnutrition at the Treatment PHC

Children aged less than 5 years are the most vulnerable to nutritional deficiencies and acute malnutrition. For this reason they are the primary target group for the treatment of Severe Acute Malnutrition (SAM). The majority of children diagnosed with SAM do not have complications and can be treated as an outpatient at a Treatment PHC center. Routine care includes a therapeutic food (high energy and nutrient dense food that is specifically designed for the treatment of acute malnutrition), that contains the specific balance of nutrients required for recovery (the amount given is based on the weight of the child), along with routine antibiotics and other medicines as needed for the treatment of underlying disease. Antibiotics are given routinely because illnesses may be present, which may not always be symptomatic in the severely malnourished child. Typically, the child will attend on a weekly basis for

a check up to determine if the treatment is progressing well. Treatment may last for 4-8 weeks, sometimes longer, depending on the severity of the acute malnutrition. A child with a very low MUAC or a very low WFH or WFL may receive treatment for 3-4 months before full recovery.

2/5/4 Treatment of complicated severe acute malnutrition at the hospital

Children with complicated severe acute malnutrition are treated initially at the hospital. Hospital based treatment may also be given to children who have been receiving treatment at the PHC center but who are either not getting any better, not gaining weight non responders, or whose condition is deteriorating.

Hospital based treatment involves the use of specialized therapeutic milks and routine intravenous or intramuscular antibiotics for complicated cases. Typically, the child remains in hospital until the condition is stabilized and they are well enough to be discharged back to the PHC center to continue nutritional rehabilitation until full recovery. This stabilization phase may last from 2 to 4 days with a further period of 'transition' when the child is prepared for discharge back to the PHC center of 1 to 3 days. The child may require longer treatment, prior to discharge to PHC center, depending on the severity of their clinical condition.

2/5/5 Key considerations for achieving service quality

The implementation of screening and treatment services for acute malnutrition requires attention to some key issues in order to make sure services are of the highest quality.

2/5/5/1 Integration

The protocols and care practices described by these guidelines should be integrated into the routine service provision of the health network in Lebanon. The treatment of acute malnutrition sometimes requires the referral or transfer of infants, children and PLW between health facilities. Standard referral forms and systems are used and, where possible, the linkage between health facilities should be strengthened to ensure continuity of care. The integration of public awareness campaigns for acute malnutrition and the integration of screening into PHC center outreach activities should ensure that cases of acute malnutrition can be detected early and that any cases which exist in Lebanon can be treated. Program performance indicators for the screening and treatment of acute malnutrition are already integrated into the health information system, and captures the total number of discharged individuals which is made up of all who have recovered, died, defaulted or are non-responding.

2/5/5/2 Training

Screening, referral and treatment of acute malnutrition will require specific training depending on the responsibilities of each PHC center in screening and treatment. Most PHC centers will be designated as 'Screening PHC centers' while some will be designated as 'Treatment PHC centers'. All health care providers involved in the screening or treatment of acute malnutrition, including outreach staff involved in screening as part of outreach activities, should be trained on the relevant chapters of these guidelines. Health care providers already trained in screening and treatment should support newly recruited staff with in-service training.

2/5/5/3 Supervision

Adequate supervision is an important factor in ensuring the delivery of quality screening and treatment services. In particular supervision should ensure that screening is conducted systematically on all children and PLW with an infant aged less than 6 months. The treatment outcomes at each treatment PHC center should be verified by the PHC center Director to ensure the recorded outcome is done according to protocol and reported appropriately. The supervisor should resolve any issues that may arise with protocol implementation.

⁴ Various types of therapeutic milk with differing nutritional compositions may be prescribed according to the age and severity of the medical condition of the child.

Where further technical advice is required, the Nutrition Focal Person at the PHC department of the Ministry of Health should be consulted.

2/5/5/4 Early diagnosis

The early diagnosis of acute malnutrition results in lower mortality risk for the individual child and more cost effective service delivery. Adequate human and equipment resources should be supplied for systematic screening to be integrated into routine service delivery in every department that comes into contact with children aged less than five years and PLW. As a minimum this requires at least one member of staff trained in the use of a MUAC tape and the provision of child and adult MUAC tapes.

2/5/5/5 Compliance with treatment

Compliance with treatment is important from the point of view of the patient and of the health care providers delivering the service. Complying with the protocols should ensure that the patient is able to remain in treatment until cure and prevent or reduce the risk of possible relapse in the future. Many of the protocols for the treatment of acute malnutrition differ from those for normally nourished individuals and health care workers should be encouraged to adhere to the guidelines in order to ensure safe care delivery.

CHAPTER 3 - PREVENTION OF MALNUTRITION

Children are at their most vulnerable during a period of rapid growth and development in the first 1000 days following conception (during pregnancy and up to 2 years of age). Counseling for caregivers on optimal Infant and Young Child Feeding (IYCF) practices is an important and cost-effective measure to prevent infant and child malnutrition. IYCF should never be considered as a stand-alone intervention but should be promoted along with psychosocial assessment and counseling, promotion of good hygiene practices and childhood immunization. In addition, it is important to emphasize a healthy, varied diet for both the caregiver and children over 6 months (exclusive breastfeeding for 0-6 months) in order to prevent micronutrient deficiencies.

3/1 INFANT AND YOUNG CHILD FEEDING

IYCF programming aims to protect and support optimal infant and young child feeding practices and typically encompasses:

- Early initiation of breastfeeding within 1 hour of birth
- Exclusive breastfeeding (only breastmilk) for the first 6 months of life
- Continued breastfeeding until 2 years of age
- Introduction of safe and age-appropriate complementary foods from 6 months of age

Optimal IYCF also seeks to protect the non-breastfed child by:

- Seeking safer alternatives to artificial feeding e.g. wet nursing, re-lactation, using breastmilk from breastmilk-banks
- Minimizing risks of artificial feeding e.g. cup feeding.

The period during pregnancy and a child's first two years of life are considered a "critical window of opportunity" for prevention of growth faltering. IYCF programming therefore considers maternal nutrition to be essential for the healthy development of the fetus. Eating the appropriate varied diet during pregnancy with attention to the use of foods rich in iron and folate may reduce the risk of iron deficiency and anemia during pregnancy potentially positively affecting the health of the mother and fetal development. Examples of food items rich in Iron and Folic Acid are depicted in Table 3 below. The usual diet of PLW in particular may be supplemented with micronutrients on the advice of the physician and may include the use of iodized salt.

Early initiation of breastfeeding within one hour of birth is followed by exclusive breastfeeding for the infant for the first 6 months. Bottle-feeding and the use of infant formula should be discouraged unless recommended by trained medical staff (i.e. for medical reasons). Breastfeeding should be continued up to 2 years progressively and other foods introduced to the diet from the age of 6 months. When an alternative to breastfeeding is either medically indicated or preferred by the caregiver, counseling should be given on the correct/safe preparation of breastmilk substitutes and milk feeding frequency.

It is important for the health care provider to provide counseling on the appropriate dietary diversity, meal frequency and amount which should be offered to young children of various ages between 6 months and 2 years.

Annex 3 provides a very brief overview of some of the key messages on IYCF practices for counseling caregivers, however these are not a replacement for appropriate training in IYCF and reference should be made to the Guidelines for Health Workers in PHC center for further details.

3/2 MICRONUTRIENT DEFICIENCIES

Micronutrient deficiencies of public health significance in Lebanon include iron, iodine and vitamin D, leading to iron deficiency anemia, goiter and osteoporosis respectively. For example, in Lebanon, the prevalence of anemia among women of childbearing age (15-49 years) was noted as being 21% in a national survey⁵, while more recently, another survey suggests that this may be as high as 36% (29% of Lebanese women vs. 44% of Syrian women) in some regions⁶. Iron deficiency anemia is one of the most common and widespread deficiency disorders in the world and can negatively affect⁷:

- the cognitive performance, behaviour, and physical growth of infants, preschool and school-aged children
- the immune status and morbidity from infections of all age groups
- the use of energy sources by muscles and thus the physical capacity and work performance of adolescents and adults of all age groups.

During pregnancy iron deficiency anemia:

- increases perinatal risks for mothers and neonates
- increases overall infant mortality.

Iodine deficiency disorder (IDD) is a public health risk to cognitive development in children and can result in impaired mental health in children. During pregnancy, IDD can result in stillbirth spontaneous abortion, and congenital abnormalities such as cretinism, a grave, irreversible form of mental retardation⁸.

Vitamin D deficiency is also considered a global public health problem with higher prevalence in places with limited sun exposure. Evidence has shown that adequate levels of vitamin D may prevent multiple bone disorders such as rickets in children; and osteoporosis in adults.

In many cases deficiencies are sub clinical and not easily diagnosed. The prevention of micronutrient deficiencies in children and pregnant or breastfeeding women may be achieved through the promotion of a healthy, adequate and varied diet for the pregnant or breastfeeding caregiver, good IYCF practices for the infant and young child and through an adequate and varied diet for older children⁹.

Chapter 3.6 gives some basic guidance on eating a varied diet for adults; however reference should be made to the National Food based Dietary Guidelines¹⁰.

When micronutrient deficiencies are suspected or diagnosed in children aged greater than 6 months or in pregnant and breastfeeding women, the diet should be supplemented with micronutrient supplements. Giving multiple micronutrients to pregnant women may reduce the risk of low birth weight and small size for gestational age compared with iron and folic acid supplementation alone.

⁵ Hwalla, N., Adra, N. and Jackson, R., (2004), Iron deficiency is an important contributor to Anemia Among Reproductive Age Women in Lebanon Ecology of Food and Nutrition, 43: 1-2, 77-92.

⁶ Report on the study on anemia among women of child bearing age in Akkar and the Bekkar regions

⁷ World Health Organization (2001); 'Iron Deficiency Anaemia, Assessment, Prevention, and Control - a guide for programme managers'

⁸ World Health Organization 2016; 'micronutrient deficiencies - iodine deficiency disorders' accessed on 14th June 2016 through

<http://www.who.int/nutrition/topics/idd/en/>

⁹ Branca & Ferrari (2002): Impact of micronutrient deficiencies on growth: Stunting syndrome. Ann Nutr Metab, 2002; 46 (suppl 1): 8-17

DOI: 10.1159/000066397

¹⁰ Food Based Dietary Guidelines: Egypt, Iraq, Jordan, Lebanon, Palestine, Somalia, Sudan and Syria. Adopted by MoPH 2014.

Two types of Multiple Micronutrient Supplement are currently available and can be procured from the MoPH. Each of the supplements gives the equivalent of the recommended daily micronutrient intake. Table 1 below gives the dosages of multiple micronutrient supplementation for children aged 6 to 59 months and PLW.

- Multiple Micronutrients Supplement for PLW
- Multiple Micronutrient Supplement for children aged 6 to 59 months

TABLE 1 SCHEDULE FOR MULTIPLE MICRONUTRIENT SUPPLEMENTATION

TARGET GROUP	DOSE
Pregnant or Lactating Women	1 tablet per day
Children aged 6 to 59 months	1 sachet micronutrient powder per day

Note: If pregnant and lactating women are being treated for MAM or a child is being treated for MAM or SAM according to the protocols in these guidelines, they should not receive any additional micronutrient supplementation. The nutrition treatments given at the PHC center are formulated to provide all of the micronutrients required for recovery. See Chapters 6 and 8 and formulation of RUTF in Annex 14.

Micronutrient supplementation for children and pregnant and lactating women may be continued at the discretion of the physician after they have been discharged from the treatment of acute malnutrition.

3/3 PSYCHOSOCIAL ISSUES

Chapter 13 of these guidelines discusses psychosocial issues in relation to the assessment of caregivers of infants and children with acute malnutrition. Psychosocial problems either from post-natal depression or failure to form proper attachment to the infant make the caregiver and infant more vulnerable to malnutrition. If this continues, non-responsive feeding practices (e.g. looking into the eyes of the infant or child) and a lack of emotional stimulation may lead directly to malnutrition, which in turn lowers the esteem of the caregiver creating a vicious cycle.

Assessment of psychosocial issues and counseling is an important part of pre-natal and post-natal check-ups and should be carried out routinely as a preventative measure.

Older children may show behavioral problems, which may be related to a lack of attachment to the caregiver and/or lack of emotional stimulation. Health care providers should be observant of behavioral problems and recognize this as an indication that psychosocial assessment of the caregiver and child may be needed.

3/4 WATER, SANITATION AND HYGIENE (WASH)

Poor sanitation and hygiene is globally a major underlying factor in the development of acute and other forms of malnutrition. Health care providers should provide counseling on all aspects of sanitation and hygiene so as to prevent malnutrition, or in addition to treatment for malnutrition in order to prevent future relapses.

3/4/1 Handwashing

Handwashing prior to the preparation of food, eating food and after using the lavatory is essential to prevent the

spread of diarrheal diseases. Handwashing with soap reduces the risk of diarrheal disease. The caregiver should make sure that the child's hands are clean before eating.

3/4/2 Access to clean water

Drinking water should be obtained from a safe water source. This may include bottled water, public tap or protected well. When water is not obtained from a safe source it should be boiled, filtered and cooled before drinking.

3/4/3 Food preparation

Food preparation should always be done after washing hands and using clean utensils. Cooking of the food should (especially flesh foods) ensure it is cooked thoroughly enough to prevent transmission of diseases. Vegetables can be stir fried to reduce the risk of bacterial contamination while preserving the micronutrient content of the food.

3/4/4 Disposal of excreta

The excreta of children should be disposed of hygienically, away from the house and any sources of drinking water. Handwashing should be done after handling any excreta. Ideally disposal should be in a container with a lid (to prevent flies), which can later be collected and disposed of.

References for Lebanon on Water, Sanitation and Hygiene (WASH) should be consulted for further guidance and reference materials.^{11/12}

¹¹ INTER-AGENCY Water, Sanitation and Hygiene (WASH) working group - Lebanon: WASH strategy for 2014

¹² WASH - Water, Sanitation and Hygiene in schools: Guidelines for Lebanon

3/5 IMMUNIZATION

Disease prevention through immunization is an important mechanism in the prevention of malnutrition. The health care provider should assess infants and children attending any health facility for their immunization status during every visit. Table 2 below outlines the childhood vaccination schedule in Lebanon.

TABLE 2 IMMUNIZATION SCHEDULE FOR CHILDREN AGED 0 TO 18 YEARS IN LEBANON

عمر الطفل	اللقاح	الجرعة
عند الولادة (خلال الساعات الأولى في المستشفى)	صفيرة «ب» Hepatitis B	جرعة صفر (في المستشفى)
شهران	شلل عضلي IPV خماسي (شاهوق، خانوق، كزاز، هـ، انفلونزا ب، صفيرة ب)	جرعة أولى
٤ أشهر	شلل فموي OPV خماسي (شاهوق، خانوق، كزاز، هـ، انفلونزا ب، صفيرة ب)	جرعة ثانية
٦ أشهر	لقاح المكورات الثوية المقترن PCV13 شلل فموي OPV خماسي (شاهوق، خانوق، كزاز، هـ، انفلونزا ب، صفيرة ب)	جرعة أولى جرعة ثالثة
٩ أشهر	لقاح المكورات الثوية المقترن PCV13	جرعة ثانية
١٢ شهراً	الحصبة حصبة، حصبة المانية، أبو كعب (MMR) لقاح المكورات الثوية المقترن PCV13	جرعة صفر جرعة أولى جرعة تذكيرية
١٨ شهراً	شلل فموي OPV خماسي (شاهوق، خانوق، كزاز، هـ، انفلونزا ب، صفيرة ب) حصبة، حصبة المانية، أبو كعب (MMR)	تذكير أول جرعة ثانية
٤-٥ سنوات	شلل فموي OPV ثلاثي (شاهوق، خانوق، كزاز)	تذكير ثاني
١٠-١٢ سنة	شلل فموي OPV ثنائي (خانوق، كزاز)	تذكير ثالث
١٦-١٨ سنة	شلل فموي OPV ثنائي (خانوق، كزاز)	تذكير رابع

3/6 FOOD BASED DIETARY GUIDELINES FOR ADULTS

Malnutrition in PLW can be prevented in part by eating a healthy, balanced and varied diet. The Food Based Dietary Guidelines for Lebanon describe the basic requirements for a healthy and varied diet for adults¹⁰. A PLW requires additional food intake to the normal adult diet, Annex 3 provides some basic guidance in maternal nutrition. The Guideline for Health Workers in PHC should also be consulted for further details.

Annex 4 provides an overview of the recommendations for the amounts of food to be eaten from various food groups for adults. In addition individuals who are at risk of micronutrient or acute malnutrition should be encouraged to eat additional calories and/or foods with particular micronutrient content.

BOX 1 KEY RECOMMENDATIONS FOR UNDERWEIGHT INDIVIDUALS

Key recommendations

- Maintain a healthy body weight
- Eat frequent meals and snacks each day
- Increase your energy intake (10-30% above current consumption)

- Drink healthy high calorie drinks (e.g. fresh fruit juices, whole milk)
- Add dried fruits or unsalted nuts to meals and snacks
- Choose foods high in protein (e.g. milk, cheese, eggs, meat, fish, poultry and beans)

The health care provider may provide tips for increasing the intake of certain foods to boost specific micronutrient intakes. Table 3 below indicates various foods that are rich in various micronutrients.

TABLE 3 EXAMPLES OF FOODS RICH IN IRON, FOLIC ACID, VITAMIN B12 AND VITAMIN D

IRON	FOLIC ACID	VITAMIN B12	VITAMIN D
Organ Meats	Liver	Mollusks	Salmon
Pumpkin & Squash	Spinach	Liver	Tuna fish
seed kernels	Asparagus	Salmon	Sardines
White beans	Green peas	Beef	Milk (fortified with Vit. D)
Lentils	Broccoli	Yogurt	Eggs
Spinach	Lettuce	Tuna	Liver
Kidney beans	Turnip greens	Egg	Cheese
Sardines	Cantaloupe	Chicken breast	
	Papaya		
	Banana		

Pregnant women should be advised to avoid foods potentially containing listeria, for example;

- Soft cheeses with unpasteurized milk
- Cold meat cuts
- Chilled cooked meats in takeaway food (e.g. chicken sandwiches)
- Stored salads
- Raw seafood
- Smoked seafood
- Unpasteurized milk (or any dairy product made from it)

3/6/1 Safe food storage & preparation for the prevention of food-borne communicable disease.¹³

The proper storage and preparation of food can reduce the risk of transmission of food-borne communicable diseases. Advice given to PLW and other caregivers should include;

- Keep clean: wash hands and sanitize equipment used for food preparation, and keep people with symptoms of disease away from food preparation areas.
- Separate raw and cooked food and never use same equipment for raw foods and foods that are ready-to-eat, unless such equipment has been sanitized.
- Cook thoroughly until food is steaming hot, and eat cooked food immediately.
- Keep food at safe temperatures, refrigerate or keep very hot - do not leave cooked food at room temperature for more than two hours.
- Use safe water and raw materials preferably cook vegetables and peel fruits that are eaten raw, discard damaged (flooded), spoiled or mouldy food.
- Do not allow sick animals or animals found dead to enter the food chain.

“COOK IT - PEEL IT - OR LEAVE IT”

¹³ Communicable disease risk assessment and interventions: Middle East Crisis; Lebanon. July 2006. Communicable Disease Working Group on Emergencies, WHO/HQ=Division of Communicable Disease Control, WHO Regional Office for the Eastern Mediterranean

CHAPTER 4 - SCREENING AND REFERRAL

While acute malnutrition is relatively rare in Lebanon (2.2% GAM for Syria refugee children in Lebanon) it is important to ensure that pregnant or breastfeeding women or children with acute malnutrition are identified and treated as early as possible and that every individual has access to treatment.

4/1 MAXIMIZING TREATMENT COVERAGE AND ACCESS TO SERVICES

Maximizing access and coverage requires that key factors be addressed;

- Raising awareness of acute malnutrition among the public and health professionals
- Raising public awareness that screening for acute malnutrition is available at all PHC centers²
- Raising public awareness that treatment is available at selected Treatment PHC centers¹⁴
- Maximizing the integration of screening into PHC outreach activities
- Maximizing opportunities for self-screening and referral

Step 1: Raise awareness of acute malnutrition

Acute malnutrition should be understood by the public and health professionals as a silent disease and is a serious condition that increases the risk of death for infants and children and increases the risks of low birth weight for the fetus, and malnutrition for the breastfeeding infant. All health care workers should receive in service training on the screening and referral of acute malnutrition. At Treatment PHC centers, training will also include the treatment of acute malnutrition.

Public health information campaigns and PHC outreach activities should integrate activities that raise public awareness through health education sessions and the use of media (radio, TV or newspapers) for example. Awareness campaigns may also be integrated into other activities aimed at vulnerable groups such as refugees or children with disabilities. Awareness campaigns should include information such as:

- What acute malnutrition is
- What causes acute malnutrition
- What acute malnutrition looks like (signs and symptoms)
- The risks of illness, complications and death from acute malnutrition

Step 2: Raise public awareness of screening and treatment

A list of PHC centers offering screening and treatment of acute malnutrition are available from the MoPH website (see footnote). Health professionals and other professionals who may come into contact with vulnerable groups

² <http://www.moph.gov.lb/AboutUs/strategicplans/Documents/MOPH%20Health%20Response%20Strategy-2015.pdf>

¹⁴ A list of Screening and Treatment PHC centers is available here (Treatment PHC centers are highlighted in blue):
<http://www.moph.gov.lb/Prevention/PHC/Pages/HealthCenters1.aspx>

should be made aware of where to access the information on screening and treatment PHC centers and make this information available to the public.

- The target groups for screening and treatment services
- How the need for treatment is diagnosed (using MUAC, edema and WFH/L)
- What treatment is given and how long it will last
- Where to access treatment and how much it will cost

An example of a simple sensitization message is given in Annex 2, however this should be adapted for the specific context.

Step 3: Maximizing integration of screening into PHC center outreach activities

The screening for acute malnutrition using MUAC and checking for edema is a simple procedure (see chapter 4.2) which should be integrated into all outreach activities offering services to infants, children and PLW with a breastfeeding infant aged less than 6 months, for example, medical mobile units (MMUs) offering;

- Vaccination services
- Antenatal care services
- Family planning services
- Growth monitoring services
- Medical consultations for common acute illnesses¹⁵

Step 4: Maximizing opportunities for self-screening and referral

Health-care providers at the PHC center and involved in PHC center outreach activities can train others to measure MUAC and check for edema. Research suggests that mothers can perform measurements of MUAC as well as some community health workers¹⁶. Training mothers of children thought to be at risk of acute malnutrition could screen their children more frequently than would be possible through MMU services. Screening activities could, with training and the supply of a MUAC tape, be undertaken by other community based individuals and organizations;

- Staff of social development centers
- Staff of refugee support agencies (UNHCR, UNWRA, NGOs)
- Mothers attending MMU services
- Local NGOs or CBOs
- Religious centers

4/2 SCREENING FOR ACUTE MALNUTRITION AT ALL PHC CENTERS

Health-care providers should do screening for acute malnutrition systematically on every visit to the health facility by an infant or child aged less than 5 years or a pregnant or lactating woman. This includes all Screening and Treatment PHC centers.

4/2/1 Screening children aged 6 to 59 months

Screening for acute malnutrition includes:

1. Measuring MUAC
2. Checking for bilateral pitting edema
3. Measuring weight for height / length

¹⁵ Physicians working in medical mobile units should be aware of medicines that should not be given to children when SAM has been diagnosed. See Chapter 8.

¹⁶ Blackwell N, Myatt M, Allafort-Duverger et al.: Mothers Understand and Can do it (MUAC): a comparison of mothers and community health workers determining mid-upper arm circumference in 103 children aged from 6 months to 5 years. Archives of Public Health (2015) 73:26

Each of these measures is an independent criterion for enrolment in treatment. The child needs to satisfy only one of the criteria explained below to be identified as having acute malnutrition and be enrolled in treatment.

Step 1: Measure Mid-Upper Arm Circumference (MUAC)

The circumference of the middle of the upper arm is measured using a MUAC tape. The standard MUAC tape used for children in Lebanon is color-coded and is divided into centimeters and millimeters (see figure 6 below). The health care worker should ensure the correct type of MUAC tape is used. The method for measuring the MUAC is given in annex 5. The MUAC is measured to the nearest millimeter and recorded in the patient record. The MUAC is only suitable for children aged from 6 to 59 months. It is not suitable for children aged less than 6 months. An adult version of the MUAC tape for measuring adults is also available and is used for measuring the MUAC of PLW.

For the MUAC tape for children:

- **GREEN MUAC** (Greater than 12.5cm): This indicates that the child does not have acute malnutrition according to MUAC and is at no increased risk of death
- **YELLOW MUAC** (between 11.5 and less than 12.5cm): This indicates the child has Moderate Acute Malnutrition (MAM) according to MUAC and has a moderate increase in the risk of death
- **RED MUAC** (Less than 11.5cm): The child has Severe Acute Malnutrition (SAM) according to MUAC and is at a greatly increased risk of death

FIGURE 6 MUAC TAPE FOR CHILDREN AGED 6 TO 59 MONTHS WITH COLOUR CODING

MUAC

SAM

- MUAC < 11.5cm (<115mm)



MAM

- MUAC 12.5cm - 11.5cm (125 -115mm)

Step 2: Check for bilateral pitting edema

The method for checking for bilateral pitting edema is detailed in Annex 6. The presence of edema always indicates Severe Acute Malnutrition. The feet are checked first since this is where nutritional edema will occur first. Both feet are checked simultaneously since nutritional edema is always bilateral. If there is edema of one limb only then this is not nutritional edema and may have another localized cause such as infection.

The severity of the edema is graded according to where the edema is present:

- +1 (+) edema: Occurs in the feet only
- +2 (++) edema: Occurs in both feet, both lower legs and may also involve both hands
- +3 (+++) edema: Occurs in both feet, both lower legs, both hands and around the eyes

Step 3: Measure weight-for-height or length

The index of weight for height or length (WFH or WFL) is also used to classify the child's nutritional status. The methods for measuring weight and height are detailed in Annexes 7 and 8. After measuring weight and height or length, a chart (see Annex 9) is used to identify the WFH or WFL, which are measured in Z-scores.¹⁷

- WFH or WFL from 0 (median) to -2 Z-scores:

This is a normal range for WFH or WFL.¹⁸ The child does not have acute malnutrition

- WFH or WFL from less than -2 Z-scores to -3Z-scores:

This range of values indicates MAM according to the WFH or WFL criterion. The risk of death is moderately high

¹⁷ A 'z-score' is a unit of the standard deviation from the median of a given parameter according to WHO growth standards. This may be weight for height, height for age or weight for age.

¹⁸ A 'normal' range for WFH or WFL is from -2 z-scores to +2 z-scores. Above +2 z-scores is 'overweight'. While overweight and obesity are public health problems, they are not the focus of these guidelines.

(approximately 1.5 times greater than the risk of a normally nourished child).

- WFH or WFL less than -3 Z-scores:

The child has SAM and is at a greatly increased risk of death (approximately 4-10 times higher than the risk of a normally nourished child¹⁹).

Step 4: Classify the acute malnutrition

The child's measurements should be noted on the treatment record and the acute malnutrition classified according to the anthropometric criteria (see table 4 next page).

TABLE 4 CLASSIFICATION OF ACUTE MALNUTRITION BY ANTHROPOMETRIC CRITERIA

MALNUTRITION	MUAC	WFH/L	EDEMA
Normal	≥ 12.5 cm	≥ -2 Z-score	Absent
MAM	< 12.5 to 11.5 cm	< -2 Z to -3 Z-score	Absent
SAM	< 11.5 cm	< -3 Z-score	Present (+, ++ or +++)

The classification is based on the worst-case criteria. Examples of the worst-case criteria being used for classification are given below in Table 5.

TABLE 5 EXAMPLES OF CLASSIFICATION ACCORDING TO WORST CASE CRITERIA

MUAC	WFH/L	EDEMA	CLASSIFICATION
13.5 cm	> -2 Z-score	Absent	Normal
13.5 cm	-3 to < -2 Z-score	Absent	MAM (WFH/L)
12.2 cm	> -2 Z-score	Absent	MAM (MUAC)
12.2 cm	< -3 Z-score	Absent	SAM (WFH/L)
11.2 cm	> -2 Z-score	Absent	SAM (MUAC)
13.5 cm	> -2 Z-score	Present (+, ++, +++)	SAM (edema)*

* The presence of bilateral pitting edema is always classified as Severe Acute Malnutrition

If the child has been screened at a Screening PHC or during outreach activities, any measurement that indicates MAM or SAM should be referred to a Treatment PHC for further assessment and triage (see chapter 5).

¹⁹ WHO Growth Standards and the identification of severe acute malnutrition in infants and children: A Joint Statement by the World Health Organisation and the United Nations Children's Fund (2009).
http://www.who.int/nutrition/publications/severemalnutrition/9789241598163_eng.pdf

4/2/2 Screening infants 0 to 6 months

Infants aged less than 6 months (with a minimum length of 45 cm) can be assessed for acute malnutrition using WFL or edema and other clinical criteria. MUAC is not suitable for use in children in this age group.

Step 1: Measure Weight for Length

The weight and length of the infant should be measured according to the methodologies detailed in detailed in Annexes 7 & 8. The WFL can be identified using the weight for length charts in Annex 9.

- WFL can be measured for any child with a length of 45 cm or greater. Children with a length of less than 87 cm should be measured lying down. WFL is categorized using z-scores in the same way as for older children.

Step 2: Check for edema

- The presence of bilateral pitting edema is always an indication of SAM and is graded +, ++ or +++ as for older children (see annex 6).

Step 3: Assessment of medical & psychosocial status

- Any serious clinical condition or complication requiring hospital care
- Any recent weight loss
- Any failure to gain weight since the last measurement
- Any medical or social issues requiring more detailed assessment or intensive support (e.g. disability, depression of the caregiver or other social circumstance)

Step 4: Assessment of breastfeeding

In addition to anthropometric criteria some clinical indicators are also important screening criteria for children aged 6 months or less. The infant should be screened for the following by direct observation for a period of up to 20 minutes;

- Proper attachment during breastfeeding
- Proper positioning during breastfeeding
- Effective suckling

Step 5: Screen the breastfeeding mother

The MUAC of the breastfeeding caregiver must be checked when screening the infant. The following Chapter describes the screening of breastfeeding women with an infant aged 6 months or less. It is important for the breastfeeding infant that the mother is well nourished.

4/2/3 Screening Pregnant & Lactating Women (PLW)

Pregnant or breastfeeding mothers with an infant aged less than 6 months are screened for acute malnutrition using an adult MUAC tape.



Sometimes a child's MUAC tape may be long enough to measure an adult arm, however the health care worker must take care to apply the correct cut-off point for diagnosing acute malnutrition

- MUAC less than 23 cm = Acute malnutrition
- MUAC 23 cm or greater = No acute malnutrition

Weight for Height or Body Mass Index (BMI) are not suitable for screening the pregnant or lactating woman for acute malnutrition since changes in weight due to pregnancy can give misleading results.

Any pregnant or lactating woman with an infant or child aged less than five years should be encouraged to bring the infant / child when they attend the PHC center for their next visit.

If edema is diagnosed in a pregnant or lactating woman, they should be referred immediately to the physician for a full assessment. While edema is common during pregnancy, it may also be a sign of preeclampsia, a serious condition that results in poor outcomes for the mother and the fetus.

4/3 REFERRAL MECHANISMS

Following identification of acute malnutrition through screening or other pathways, adequate referral to a treatment PHC center or hospital should take place. Referral of women and children with acute malnutrition may occur between the community and health facility or between health facilities. It is important in all cases to ensure continuity of care.

Referral pathways for cases of acute malnutrition may be:

- From community to PHC center
- From Screening PHC center to Treatment PHC center
- From Treatment PHC center to a Treatment hospital

Referrals to and from each health facility are done using standardized referral forms; these need to be updated to the new format (see Annex 10).

The referral system should be strengthened through follow up phone calls where possible. This may be particularly required when transferring children between PHC center and hospital.

- Complete the appropriate referral form indicating the findings of any assessment and detailing any medical treatment given already
- Follow up the referral with a phone call to the receiving health facility. Indicate the nature of the referral and the responsible physician and document the phone call
- Ensure that health care workers in reception areas / emergency rooms are knowledgeable in the protocols which require referral (and acceptance) of children with acute malnutrition (chapter 5)
- Ensure that caregiver is aware of the need and agrees to the referral or transfer (e.g. consent of caregivers)

4/4 CHILDREN WHO ARE GROWTH FALTERING BUT NOT ACUTELY MALNOURISHED

During screening it may be found that the measurements of MUAC, WFH or WFL of some children are close to the criteria for treatment of acute malnutrition (e.g. MUAC 12.6 cm) but are not yet classified as acutely malnourished. Any child with borderline measurements should:

- Be examined by a physician for underlying medical illnesses
- Have a full growth check including weight for age and height for age
- The caregiver should receive counseling on IYCF practices
- The caregiver should receive a psychosocial assessment
- The child should attend the PHC monthly for routine growth checks
- The child's immunization status should be checked and updated

Any child with an illness requiring medical treatment (e.g. fever, cough, diarrhea or vomiting) should be referred for medical treatment and reassessed for their nutritional status within 1 - 2 weeks to make sure there is no deterioration into acute malnutrition.

CHAPTER 5 - DIAGNOSIS & TRIAGE

Screening for malnutrition may take place in the community or at the Screening PHC center, however the diagnosis and triage²⁰ for treatment of children aged 6 to 59 months occurs only at Treatment PHC centers. Anthropometric measurements are repeated and a full clinical assessment is undertaken to decide on the most appropriate health facility (PHC center or hospital) for treating the acute malnutrition.

5/1 ASSESSMENT OF ACUTE MALNUTRITION IN CHILDREN AGED 6 - 59 MONTHS

Step 1: Check anthropometric measurements

The health care provider should repeat the anthropometric measurements of MUAC, WFH/L and check for edema if these were previously made in a screening PHC. The acute malnutrition should be classified and the results recorded on the patient's treatment record. Refer to chapter 4 for details of screening and classification of acute malnutrition. If acute malnutrition is confirmed, proceed to step 2, otherwise assess for the need for other medical or psychosocial interventions.

Children with the following anthropometry measurements must be transferred to hospital irrespective of whether complications are present or not and irrespective of whether the child has appetite or not;

- +3 (+++) edema
- A combination of wasting (MUAC < 11.5cm or WFH/L < -3 Z-score) and edema of any grade

Step 2: Take a recent medical history

Taking the medical history helps to identify the immediate and/or underlying causes of the acute malnutrition. It is an important step since this will guide further treatment and counseling to promote cure and prevent relapse. The physician should:

- Ask why the caregiver brought the child to the PHC
- Ask about the usual diet of the child before illness occurred
- Ask what recent changes have occurred in the child's diet or feeding practices
- Ask how long the child has been thin or had swollen feet
- Ask if there has been any recent vomiting and how frequent
- Ask about urine frequency and color
- Ask if there has been any diarrhea. Check the frequency, color and consistency
- Ask about other issues such as social problems, living conditions or depression
- Ask about the caregiver's coping mechanisms if child has physical or mental disabilities

²⁰ Triage: The process of deciding which patients should be treated first based on how sick they are; patients requiring urgent care should be seen first. Patients receive treatment appropriate to their condition.

Step 3: Physical examination of the child

The appropriate triage of cases depends on a full physical assessment to determine the clinical condition of the child. The assessment follows the normal physical assessment for acute illness given to any child and should include;

- Examine neurological status
- Examine respiration rate and breath sounds
- Check pulse rate / heart rate
- Check temperature (ORAL or rectal)
- Examine hands and feet for signs of adequate circulation / possible sepsis
- Examine the conjunctivae and palms for signs of anemia
- Examine eyes for 'sunken' appearance²¹
- Check the severity of dehydration if present (skin pinch is unreliable in wasted children)
- Examine eyes, ears, nose and throat for signs of infection
- Examine mouth for sores, thrush or physical deformities
- Examine lymph nodes
- Examine for physical or mental disabilities (including current coping mechanisms)
- Examine for skin changes

Record findings in the patient treatment record. Determine if there are any illnesses requiring immediate transfer to hospital. If medical complications requiring hospitalization are present, the appetite test (Step 4) is not necessary and should not delay transfer.

Complications requiring transfer to hospital include;

- Respiration rate > 50 per minute (6 to 12 months) or > 40 pm (1-5 years)
- Difficulty breathing
- Fever > 39.0 Celsius (rectal temperature)
- Hypothermia < 35.5 Celsius (rectal temperature)
- Severe anemia (very pale palmar pallor, oropharynx, nail beds, conjunctivae)
- Unconscious, reduced level of consciousness, fitting, convulsions
- Persistent vomiting (unable to keep down any food or fluids)
- Extensive infection requiring IV / IM antibiotics
- Severe dehydration

For children with MAM, the next step, performing the appetite test, should be skipped.

Step 4: Perform the appetite test for children with SAM

The health care provider should perform the appetite test while the child is waiting for the consultation with the physician. The appetite test is a clinical indicator, which must be determined by direct observation and not from reports given by the caregiver. If the child cannot eat the Ready to Use Therapeutic Food (RUTF) that is required for nutritional recovery, they cannot be treated at the PHC and must be referred to hospital.

- Prepare for the appetite test. Have RUTF and clean drinking water available
- Counsel the caregiver regarding the appetite test procedure
- Ensure the caregiver and child wash hands before giving the appetite test
- Give sips of water to the child before giving RUTF
- Open the corner of the packet of RUTF and squeeze out a small amount of RUTF

²¹ Sunken eyes can occur as a result of the loss of fat behind the eye or due to acute dehydration. Sunken eyes with a recent history of fluid loss suggest dehydration.

- Ask the caregiver to encourage the child to eat the RUTF
- If the child eats the RUTF readily, encourage the caregiver to give the child at least 2-3 more mouthfuls (approximately 3 teaspoons in total). Give the child sips of clean water between mouthfuls
- If the child eats 3 teaspoons of RUTF under observation, then the child has 'passed' the appetite test
- If the child does not readily eat the RUTF or refuses completely, the caregiver should sit in a quiet corner and gently encourage the child to eat the RUTF for a period up to 1 hour
- If the child fails to eat at least 3 teaspoons of RUTF then they have 'failed' the appetite test
- If a child has 'failed' the appetite test the physician must confirm this finding

Any child who fails the appetite test must be transferred to hospital for specialized treatment. Box 2 below explains the importance of the appetite test

BOX 2 THE IMPORTANCE OF THE APPETITE TEST

Malnutrition changes the way infections and other diseases manifest and change the medical management of the child. Children with severe acute malnutrition frequently show no sign of disease due to impairment of immune system functions. However, the severe metabolic disruption caused by the disease process can lead to a loss of appetite. A poor appetite means that the child has a significant infection or a major metabolic

abnormality such as liver dysfunction, electrolyte imbalance, and cell membrane damage or damaged biochemical pathways. These children are at immediate risk of death. In addition, a child with a poor appetite will not take the RUTF at home and will continue to deteriorate without specialist intervention. If appetite has not been demonstrated under direct observation a child should never be sent home with RUTF

Table 6 below gives the criteria for 'passing' or 'failing' the appetite test.

TABLE 6 APPETITE TEST FOR RUTF

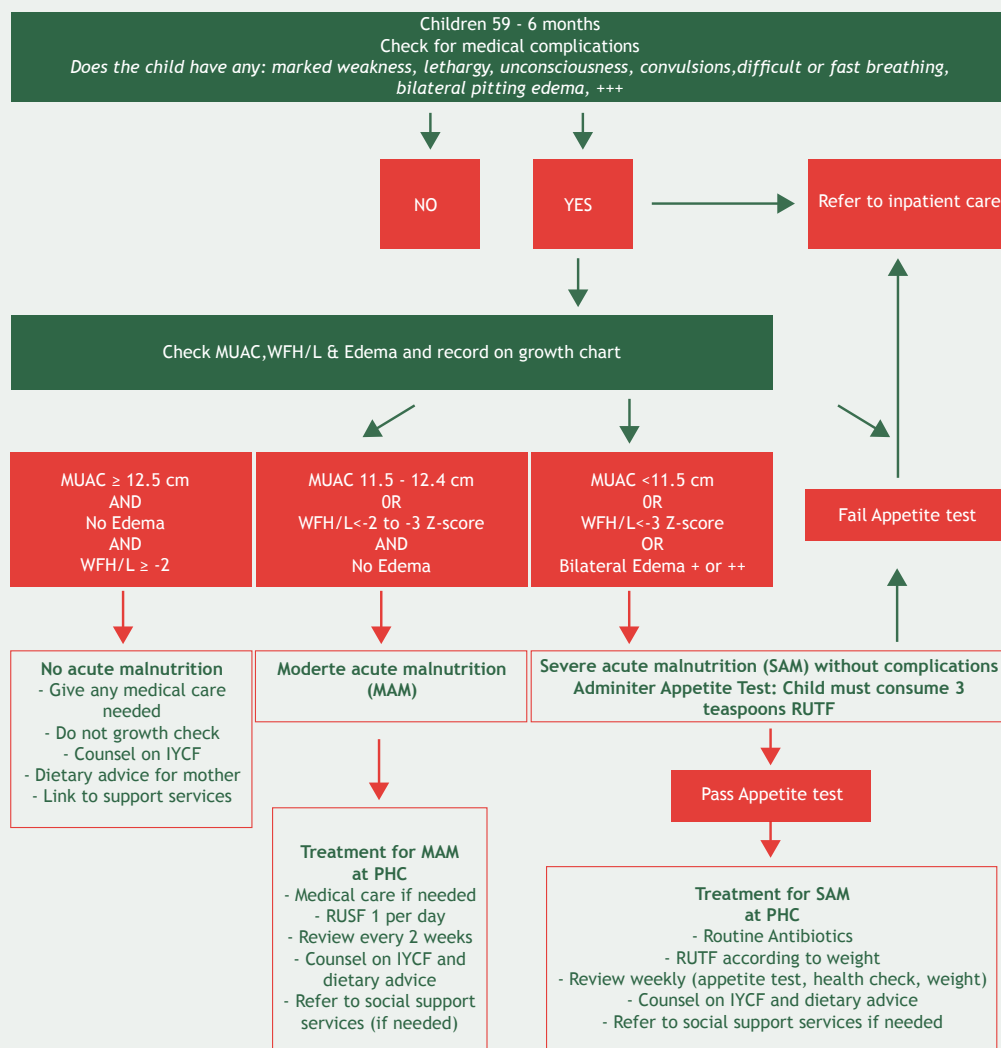
PASSES THE APPETITE TEST	FAILS THE APPETITE TEST
Eats at least 3 teaspoons of RUTF	Fails to eat at least 3 teaspoons of RUTF

Step 5: Triage of children aged 6 to 59 months

The child must be triaged so that they receive the appropriate treatment according to the severity of the acute malnutrition. Figure 7 below describes an algorithm to assist in determining the correct treatment based on the findings from steps 1 to 4 above. In summary,

- Children with MAM and no complications can be treated at the PHC
- Children with SAM and no complications and appetite for RUTF can be treated at the PHC
- Children with SAM and any complication or lack of appetite must be treated in hospital

FIGURE 7 DECISION TREE FOR TRIAGE OF CHILDREN AGED 6 - 59 MONTHS



Step 6: Start treatment at the PHC or ensure safe transfer to hospital

If the child has MAM, or SAM with no complications and good appetite for RUTF, treatment may commence at the PHC center (refer to chapters 6 and 8)

If a child has SAM with complications or no appetite for RUTF then safe transport must be arranged to the hospital;

- Give the first dose of oral antibiotics (Amoxicillin / Ampicillin 50mg /kg)
- Give 50 ml of 10% sugar water orally if child is conscious (1 teaspoon sugar in 50 ml)
- Advise caregiver to keep the child warm with skin to skin contact and keep child covered
- Arrange transport by ambulance. Do not send child to hospital by public transport
- Complete appropriate referral slip indicating reasons for transfer and medical care given
- If possible, telephone the emergency room medical staff and tell them of the transfer
- Ensure the contact details of the caregiver have been noted down for follow-up later

5/2 ASSESSMENT OF ACUTE MALNUTRITION IN INFANTS AGED 0 - 6 MONTHS

It is important to screen children aged less than 6 months for acute malnutrition. The criteria for the identification of acute malnutrition and the need for referral are different from those of older children.

Step 1: Check anthropometric measurements

If the infant has been referred from a screening PHC then repeat the checks for edema and measurements of weight for length as detailed in annexes 7 & 8. If infant is at least 45cm in length, then use weight for length charts (Annex 9) to determine WFL. MUAC should not be used in this age group.

Step 2: Determine recent medical history

Clinical history is obtained from the caregiver as for older children. The assessment should include a detailed history of infant feeding practices;

- Early initiation of breastfeeding (within 1 hr. of birth)
- Any prelacteal feeding (any other food or fluid given before breastfeeding was initiated)
- Any food or fluid given in addition to breastfeeding
- Amount and type of feed given if not breastfeeding

The medical history should also include;

- Any recent weight loss
- Any failure to gain weight

Step 3: Physical examination of the infant

A full physical examination should be done as for older children

Step 4: Assessment of breastfeeding

RUTF is not suitable for children aged less than 6 months. The infant should be assessed for the effectiveness of breastfeeding under direct observation for up to 20 minutes for;

- Proper attachment during breastfeeding
- Proper positioning during breastfeeding
- Effective suckling

Step 5: Triage of infants aged less than 6 months

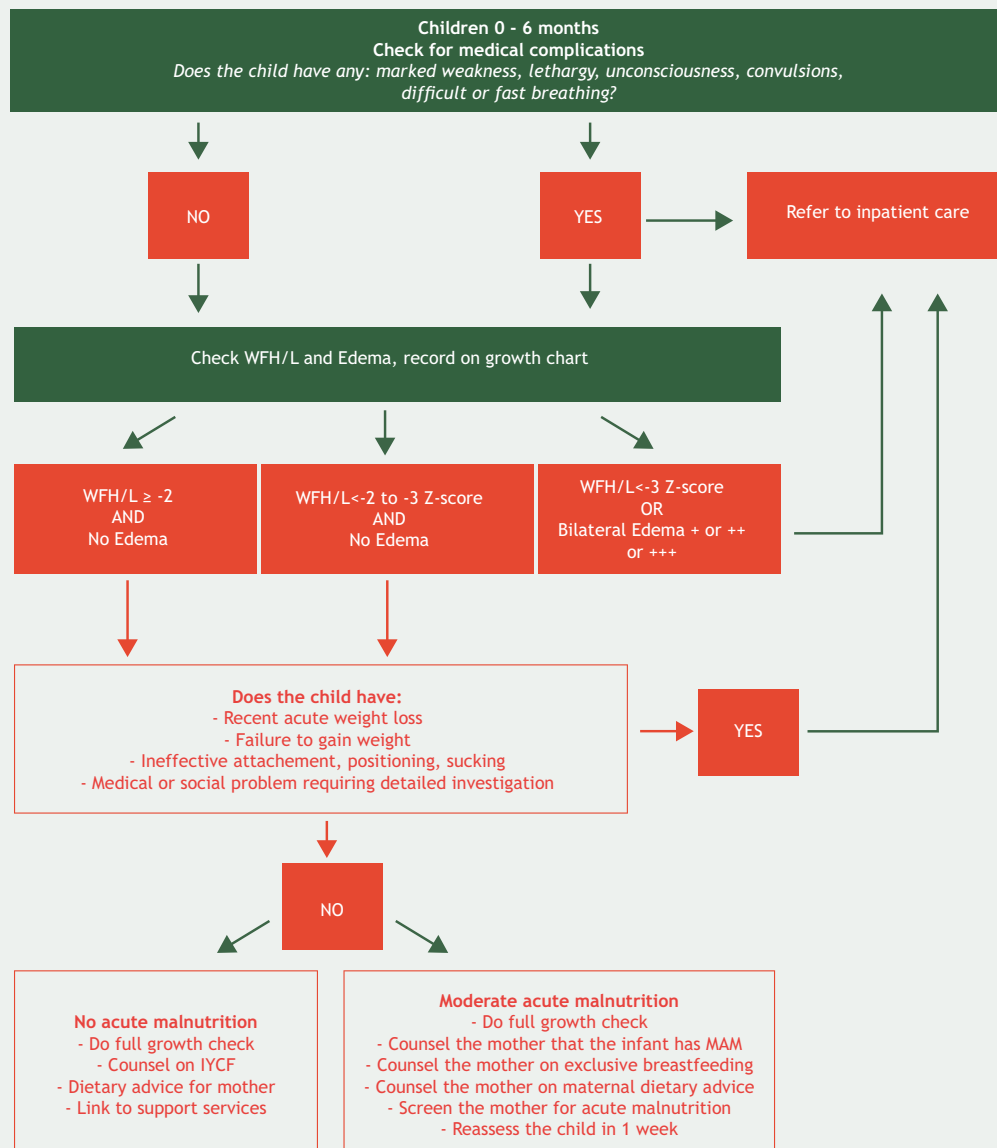
Infants aged less than 6 months must be triaged so as to ensure they receive the appropriate treatment.

For infants diagnosed with SAM by WFL or bilateral pitting edema or with:

- Any complication requiring hospital care (see chapter 4.2)
- A recent history of acute weight loss or failure to gain weight
- Ineffective breastfeeding

Transfer to hospital for specialized medical care. Figure 8 below describes a decision tree algorithm for infants aged 0-6 months.

FIGURE 8 DECISION TREE FOR TRIAGE OF INFANTS AGED LESS THAN 6 MONTHS



Step 6: Start treatment at PHC center or ensure safe transfer to hospital

If the infant has MAM with

- No history of recent weight loss or failure to gain weight
- No problems breastfeeding
- No complications requiring hospital care
- No medical or social issues requiring intensive assessment or support

The infant may be given any general medical care required together with counseling for the caregiver on IYCF practices as needed. Infants with MAM should be reviewed in 1 week to assess weight gain (see chapter 7 on MAM in infants).

If the infant has SAM, medical complications or other clinical or social condition requiring hospital transfer then safe transport must be arranged to the hospital;

- Give the first dose of oral antibiotics (Amoxicillin / Ampicillin 30 - 50mg /kg)
- Give 50 ml of 10% sugar water orally if child is conscious (1 teaspoon sugar in 50 ml)
- Advise caregiver to keep the child warm with skin to skin contact and keep child covered
- Arrange transport by ambulance. Do not send child by public transport
- Complete appropriate referral slip indicating reasons for transfer and medical care given
- If possible, telephone the emergency room medical staff and tell them of the transfer
- Ensure the contact details of the caregiver have been noted down for follow up later

5/3 ASSESSMENT OF ACUTE MALNUTRITION IN PREGNANT AND LACTATING WOMEN

Step 1: Check anthropometric measurements

If the pregnant or lactating woman has been transferred from a Screening PHC center to a Treatment PHC center, recheck the MUAC. Check the nutritional status of the infant or ask the caregiver to bring the infant for screening at the next visit.

Step 2: Confirm pregnancy or that breastfeeding infant is aged less than 6 months

- Pregnancy is visible (2nd or 3rd trimester) or
- Pregnancy is confirmed by a physician or midwife

Step 3: Medical and Psychosocial assessment

The pregnant woman should undergo routine antenatal examinations according to the schedule of the health package or PHC center routine. A routine medical examination should be done to identify any underlying cause for acute malnutrition.

A psychosocial assessment should be done to check for any psychosocial issues, for example:

- Depression of the caregiver (including postnatal depression)
- Assessment of breastfeeding practices
- Lack of emotional attachment to the infant

Step 3: Start treatment for acute malnutrition

See chapter 9 for treatment of acute malnutrition for pregnant and lactating women

5/4 SUMMARY OF CRITERIA FOR THE TREATMENT OF ACUTE MALNUTRITION

Annex 11 gives a summary of the criteria for enrolment in treatment for acute malnutrition for infants and children aged less than 5 years and pregnant and lactating women.

CHAPTER 6 - MANAGEMENT OF MODERATE ACUTE MALNUTRITION FOR CHILDREN AGED 6-59 MONTHS AT PHC CENTER

A child with MAM has a relatively normal physiology compared with a child with SAM. The physician should examine the child to identify any underlying medical or psychosocial causes for the acute malnutrition. Following the first consultation the child does not need to see the physician again unless there are medical problems reported by the caregiver or unless the child is not improving with the treatment for MAM.

Step 1: Confirm criteria for enrolment in treatment

Table 7 below gives the criteria for enrolment in treatment for MAM, for a child aged 6 to 59 months.

TABLE 7 CRITERIA FOR TREATMENT OF CHILDREN AGED 6 TO 59 MONTHS WITH MAM AT PHC CENTER

AGE	CRITERIA
6 to 59 months	MUAC < 12.5 cm to 11.5 cm or WFH/L < -2 to -3 Z-score AND Edema is absent AND No medical complications

Step 2: Give medications if required

No routine medications are prescribed for children with moderate acute malnutrition. Medicines may be prescribed for illnesses diagnosed on assessment.

Micronutrient supplements (including vitamin A, iron and zinc) are not required for a child who is being treated with Ready to Use Supplementary Food (RUSF).

Step 3: Give Ready to Use Supplementary Food (RUSF)

Children with MAM are treated with Ready to Use Supplementary Food (RUSF). RUSF is an energy dense paste (500 kcal per 92g sachet) that contains all of the macro and micronutrients required to supplement a child's diet. Box 4 below describes RUSF. If RUSF is not available or if the child doesn't like the taste, an alternative supplementary food such as BP 5 can be used.

If a child with MAM is being treated with RUSF (or its equivalent) then the child should not receive any additional micronutrient supplementation until after treatment with RUSF is completed.

BOX 3 READY TO USE SUPPLEMENTARY FOOD (RUSF)

RUSF is an energy dense mineral / vitamin enriched food which is recommended by WHO for the treatment of moderate acute malnutrition. It provides the appropriate balance of nutrients and electrolytes the child requires as a supplement to the age appropriate

complementary food or family diet. It is an oil-based paste and is microbiologically safe and can be kept for up to 2 years in simple packaging. With proper hygiene practices, RUSF can safely be used at home.



RECOMMENDATION FOR USE



Table 8 below indicates the amount of Ready to Use Supplementary Food to be given to children aged 6 to 59 months with MAM.

TABLE 8 AMOUNT OF RUSF TO GIVE TO CHILDREN AGED 6 TO 59 MONTHS WITH MAM

PRODUCT	AMOUNT	ENERGY
RUSF	1 Packet per day	500 kcal
BP5	2 bars per day	500 kcal

Ideally the child should receive just one type of product. If the caregiver reports problems with feeding the child with the supplementary food during follow up visits, the health care worker should assess how the product is being used and that other family foods are being given appropriately.

At the discretion of the health care worker, the products used can be mixed²² to provide variety, provided that the energy provided by the ration is at least 500 kcal per day.

RUSF and BP5 may be procured from the MoPH and should be stored in a cool, dry place where it is protected from insects and rodents. The maximum temperature for storage is 40 Celsius. When cold the RUSF may go hard. The RUSF can be placed in a warm pocket or under the arm to gently warm the sachet. Mix properly before giving to the child.

²² Mixed rations may only be used for children with moderate acute malnutrition. These products are not suitable for the treatment of children with severe acute malnutrition.



Step 4: Give nutrition counseling to caregivers

The caregiver should be given counseling regarding the proper preparation and use of the supplementary food products and age appropriate complementary feeding practices (See Annex 3). This should include attention to general hygiene practices and proper food preparation.

In addition, the caregiver should be given dietary advice to ensure the caregiver and the rest of the family is aware of good dietary practices (National Food-Based Dietary Guidelines, 2014)10.

RUSF / BP5

- These foods are NOT suitable for children aged less than 6 months
- This food (RUSF / BP5) is an extra food to give to your child each day in addition to the food they already eat. Do not share this product with other family members
- The food contains extra protein, vitamins and minerals to help your child gain weight
- The child should eat the amount prescribed each day (do not eat all of the packets at once)
- The caregiver and child should wash their hands before touching food
- RUSF can be eaten straight from the packet and should be given with plenty of clean water to drink
- Children can eat BP5 as biscuits if they are over the age of 2 years. For children aged 6 months to 2 years, the biscuits can be mixed with clean water (which has been boiled and cooled) to make a porridge
- Keep the product stored in a cool, dry place and covered to protect it from insects and rodents
- If the child has diarrhea, do not stop feeding. Ensure good hygiene and give extra food and clean water

Step 5: Two-weekly surveillance

The child should return to the PHC every 2 weeks for a check up to ensure the child is gaining weight and to investigate any possible causes if there is a lack of progress. Unless there is a reported illness, the child is not gaining weight or has deteriorated it is not necessary for the child to see the physician at every visit.

At each follow up visit at the PHC the health care provider reassesses the child:

- Ask the caregiver if there have been any illnesses since the previous visit
- Ask the caregiver if there have been any feeding problems since the previous visit
- Measure the MUAC
- Check for bilateral pitting edema of the feet
- Measure the weight
- Measure the height (this needs to be done every 4 weeks routinely)
- Calculate WFH or WFL (calculate using the most recent measurements of weight and height)

The health care provider should take anthropometric measurements at each visit (except for height which is done every 4 weeks).

- If a child is admitted by MUAC then it is not necessary to measure the height every 4 weeks or to calculate WFH or WFL at each visit.
- If the child was enrolled into treatment using WFH or WFL then WFH or WFL should be calculated at each visit until discharge.

If there is;

- No weight-gain on three consecutive weighings
- Weight loss on two consecutive weighings
- Development of edema
- Development of any clinical illnesses
- Failure to reach discharge criteria within 3 months (4 months)

The child should be referred to see the physician for further assessment. The health-care provider should also reassess;

- If the supplementary food is being dispensed and used appropriately
- If the caregiver is following age appropriate complementary feeding practices
- If the caregiver is following good hygiene practices
- If there are unrecognized social or psychosocial problems

If the child has deteriorated and now fulfills the criteria for a SAM child, they should be recorded as a discharge from MAM treatment as “Transfer to another service” (see step 7, ‘other discharge criteria’). The child should then be recorded as a “New Admission” as a case of SAM. As long as there are no complications the child may continue to be treated at the PHC using the protocols for the management of SAM.

If the child is absent from a scheduled follow-up visit, the health-care provider should contact the caregiver by phone or through a home visit, if possible, to encourage them to return to the PHC as soon as possible to collect supplies of RUSF and continue the treatment of the child.

Step 6: Assess the child for discharge as cured

At each visit the child should be assessed for discharge. Table 9 below gives the criteria for discharge cured.²³

TABLE 9 CRITERIA FOR DISCHARGE AS CURED

AGE	CRITERIA
6 to 59 months	MUAC $\geq$ 12.5 cm or WFH or WFL $\geq$ -2 Z-score AND Edema is absent AND Child is clinically well for 2 consecutive visits

Children should be assessed for cure according to the criterion used for enrolment in treatment (see footnote). Other possible reasons for discharge are described in chapter 14.

Other discharge criteria

If the child does not reach cure, they may be discharged for other reasons. Other categories of discharge are defined in Table 10 below (See also chapter 14 on monitoring and reporting).

²³ The child should be discharged according to the criterion with which they were enrolled in treatment. If the child was enrolled using MUAC, discharge with MUAC. If enrolled using WFH/L then use WFH/L for discharge.

TABLE 10 CATEGORIES OF DISCHARGE FOR CHILDREN NOT CURED

CRITERIA	DEFINITION
Defaulter	Child has been absent from follow-up visits on 2 consecutive occasions (4 weeks)
Death	Child has died (from any cause) during treatment
Transfer to another service	Child has been transferred to hospital or another PHC
Non responder	Child who has not reached discharge criteria after 4 months on the programme

Step 7: Follow up after discharge

The appropriate follow-up after discharge is described below.

Discharged cured

During the triage process (chapter 5) the reasons for acute malnutrition occurring in the individual child should, in most cases, been identified. Although relapse after cure is rare (around 1-2% of cured cases) it is important that the caregiver is given counseling during treatment and referred to ongoing social or welfare support after discharge to reduce the chances of the child relapsing with acute malnutrition in the future. For example;

- Counseling on IYCF feeding practices
- Counseling on dietary practices for older children and adults
- Counseling on appropriate hygiene practices
- Referral to growth monitoring programs
- Referral for psychosocial support services
- Referral for disability support services
- Referral to locally available health insurance / social welfare programs
- Referral to refugee support agencies (e.g. UNHCR, UNWRA and NGOs)

Discharged Defaulted, Died or Transfer to another service

Chapter 14 on monitoring and reporting describes the actions to be taken for discharges that are not cured.

CHAPTER 7 - MANAGEMENT OF MODERATE ACUTE MALNUTRITION FOR CHILDREN AGED LESS THAN 6 MONTHS

Acute malnutrition in infants is usually linked with some risk factor such as Low Birth Weight, persistent diarrhea, recurring infections or feeding problems. In most cases an infant with acute malnutrition will have suffered some illness or recent weight loss, which will require transfer to hospital. In a few cases where MAM is diagnosed without recent weight loss or other complications, the infant may be treated at the PHC center. The treatment focuses on assessment and counseling for improving breastfeeding practices or seeking safer alternatives than artificial feeding e.g. wet nursing, re-lactation, using breastmilk from breast milk-banks. If these alternatives are not possible or applicable and the infant cannot be breastfed, it is necessary to provide support to the caregiver in order to assess and improve the use of breast milk substitutes (BMS). The infant is given a medical check-up and any required medicines the same way as any other normally nourished infant.

RUSF, BP5, RUTF and other nutritional products used to treat acute malnutrition at the PHC are not suitable for children aged less than 6 months. If an infant is diagnosed with MAM s/he should be referred to a treatment PHC center directly as there should be healthcare providers appropriately trained in IYCF assessment and counseling and appropriate equipment available for following up and monitoring the infant.

Step 1: Confirm criteria for enrolment

Table 11 below gives the criteria for enrolment for treatment for infants aged less than 6 months with moderate acute malnutrition.

TABLE 11 CRITERIA FOR TREATMENT OF INFANTS AGED LESS THAN 6 MONTHS WITH MAM AT THE PHC

CATEGORY	CRITERIA
Infant aged less than 6 months	WFH/L < -2 to -3 Z-score AND No edema present AND - No history of recent weight loss or failure to gain weight - No problems breastfeeding or using infant formula - No complications requiring hospital care - No medical or social issues requiring intensive assessment or support
PHC criteria	Staff skilled in; Infant and young Child Feeding assessment and counseling, including; - Assessment of proper positioning and attachment - Assessment of effective suckling - Assessment of appropriate use of infant formula AND Appropriate tools and equipment for managing infants - Infant scales accurate to 20g* - Growth monitoring charts

* Mother and Baby scales accurate to 100g are not appropriate for managing infants aged less than 6 months

Step 2: Give medications if needed

Infants aged less than 6 months should receive the same general care as older children. There are no routine medicines to be given for the treatment of MAM.

- Review the infants immunization record
- Update the infant's immunization status (administer any appropriate immunizations)

Step 3: Counsel the caregiver on exclusive breastfeeding

It is recommended that infants aged less than 6 months should be exclusively breastfed. For caregivers who are breastfeeding;

- Give IYCF counseling on appropriate exclusive breastfeeding practices
- Counsel the caregiver regarding any problems with positioning, attachment or suckling
- Give counseling on handwashing and the safe disposal of excreta
- Give counseling on psychosocial issues as required
- The caregiver should also receive counseling on maternal nutrition

Step 4: Counsel the caregiver of non-breastfed infants

For caregivers who are not breastfeeding;

- Counsel the caregiver on exclusive breastfeeding
- Encourage re-lactation and exclusive breastfeeding
- Explore possibilities of 'wet nursing'²⁴
- Assess appropriate conditions for feeding of breast milk substitutes (see box 4)
- Assess appropriate practices in the preparation and feeding of infant formula
- Give counseling on maternal nutrition
- Give counseling on handwashing and the safe disposal of excreta
- Give counseling on psychosocial issues as required

BOX 4 ASSESSMENT OF APPROPRIATE INFANT FORMULA FEEDING PRACTICES

Caregivers should only give infant formula as a replacement for breastfeeding when specific conditions are met:

- Safe water and sanitation are assured at the household level and in the community
- The caregiver can reliably provide sufficient infant formula milk to support the normal growth and development of the infant

- The caregiver can prepare it cleanly and frequently enough so that it is safe and carries low risk of diarrhea and malnutrition
- The caregiver can, in the first 6 months, exclusively give infant formula
- The family is supportive of this practice
- The caregiver can access health care that offers comprehensive child health services.

Step 5: Weekly surveillance

The infant with MAM requires follow-up at the PHC on a weekly basis. At each follow up visit at the PHC the health care provider reassesses the infant;

- Check for bilateral pitting edema of the feet
- Measure the weight
- Assess weight gain (acceptable weight gain = 5g /kg per day or 35g /kg per week)
- Measure the length (this needs to be done every 4 weeks routinely)
- Calculate WFL (calculate using the most recent measurements of weight and height)

²⁴ 'Wet nursing' refers to breastfeeding given by a female relative other than the caregiver

Step 6: Assess the progress of the caregiver weekly

At each follow up visit the caregiver should be reassessed.

- Reinforce key messages on IYCF, maternal nutrition and hygiene practices
- Assess the progress of any psychosocial issues

If the caregiver was identified as acutely malnourished then;

- Measure the caregiver's MUAC and continue treatment according to chapter 9

If the caregiver is breastfeeding the infant;

- Assess positioning and attachment while breastfeeding
- Assess effectiveness of suckling
- Assess caregivers knowledge of appropriate IYCF practices

If the caregiver is feeding the infant with infant formula;

- Assess if generic infant formula is of an appropriate type
- Assess if caregiver is preparing the milk hygienically
- Assess if the preparation is of the appropriate dilution

Step 7: Assess the infant for discharge or transfer to hospital

If the infant;

- Has gained more than 35g per kg of body weight each week for 2 consecutive visits

Assess for discharge against discharge criteria. Discharge criteria are given in table 12 below.

TABLE 12 CRITERIA FOR DISCHARGE AS CURED FOR INFANTS AGED LESS THAN 6 MONTHS

CATEGORY	CRITERIA
Infant aged less than 6 months	Weight gain is greater than 5 g / kg / day AND WFL is ≥ -2 Z-score

If the infant has reached discharge criteria:

- Congratulate the caregiver
- Record the outcome in the register and treatment record
- Proceed to Step 8: follow-up after discharge

If the infant;

- Has gained weight in the first 7 days but
- Has not gained at least 35g per kg body weight in the previous week (5 g /kg /day)

Then;

Refer the infant to the physician for a full medical check-up. In the case of failure to respond the physician should consider;

- A detailed recent history
- Accuracy of previous record keeping
- Full medical examination and review of nutritional status
- Review previous medical and nutritional therapy
- Chest x-ray / laboratory investigations
- Use of un-prescribed medicines, food or food additives (e.g. salt)

- A review of the care environment (hygiene, milk preparation)
- Appropriate use and/or recalibration of measurement equipment
- Referral may be required to a specialist pediatric service

If the infant;

- Has failed to gain weight in the previous week
- Has lost any weight in the previous week
- Has become SAM
- Has developed any medical problems requiring hospital care

Transfer the infant to hospital.

- Give the first dose of oral antibiotics
- Give the infant breast milk if child is conscious (or sugar water if not breastfeeding - 50 ml of 10% sugar water orally. (1 teaspoon sugar in 50 ml)
- Advise caregiver to keep the infant warm with skin to skin contact and keep child covered
- Arrange transport by ambulance. Do not send child by public transport
- Complete appropriate referral slip indicating reasons for transfer and medical care given
- If possible, telephone the emergency room medical staff and tell them of the transfer
- Ensure the contact details of the caregiver have been noted down for follow up later
- Record the transfer in the register and treatment record

Step 8: Follow up after discharge

After discharge as cured the infant and caregiver should be followed-up on an intermittent basis to ensure the infant does not suffer relapse in the future:

- Enroll the child in a program of regular growth monitoring
- Counsel the caregiver on the introduction of age appropriate complementary feeding practices for infants and children up to 2 years of age
- Ensure immunizations are fully up to date on discharge and the caregiver complies with the childhood immunization schedule
- Refer the caregiver or infant for any continuing medical, social support services as required

CHAPTER 8 - MANAGEMENT OF UNCOMPLICATED SEVERE ACUTE

MALNUTRITION FOR CHILDREN AGED 6-59 MONTHS AT PHC CENTER

A child with SAM has an abnormal physiology (see Chapter 2 and Annex 1). Often the deterioration in physiological systems and organ function is not visible and illness or disease may not be symptomatic in the same way as well-nourished children. In this group, antibiotics are given routinely in addition to the nutrition therapy. In addition, the physician should examine the child to identify any underlying medical or psychosocial causes for the acute malnutrition.

Following the first consultation, the child does not need to see the physician again unless there are medical problems reported by the caregiver or unless the child is not improving with the treatment for SAM.

Step 1: Confirm the criteria for enrolment in treatment

TABLE 13 CRITERIA FOR TREATMENT OF UNCOMPLICATED SEVERE ACUTE MALNUTRITION AT PHC

AGE	CRITERIA
6 to 59 months	MUAC < 11.5 cm or WFH or WFL < -3 Z-score or Edema + or ++ AND No medical complications AND Passes Appetite Test for RUTF

Step 2: Give routine medication

All children with SAM receive routine antibiotics on enrolment for treatment. Community level resistance to antibiotics is a concern in Lebanon and globally. Box 5 below gives WHO recommendations on the prescribing of routine antibiotics in uncomplicated SAM cases treated at PHC level.

BOX 5 WHO RECOMMENDATIONS ON ROUTINE ANTIBIOTICS FOR SAM CASES AT PHC CENTER

Community level antimicrobial resistance is not a certain consequence of providing antibiotics to children as part of treatment at the PHC but will depend on factors that include the prevalence of uncomplicated severe acute malnutrition, the quality of health worker counselling and adherence to medications at home. The mechanism by which oral antibiotics may benefit children with uncomplicated severe acute malnutrition is unclear but may include reducing excessive proliferation of small bowel flora, translocation of gut bacteria into the bloodstream or modification of the microbiome. The reported reduction in mortality in children with uncomplicated severe acute malnutrition treated with antibiotics as outpatients (7.48% to 4.63%) is significant and justifies the recommendation for this intervention to this population group, even at the risk of increasing antimicrobial resistance in the community.

Source: WHO Update on the management of SAM in infants and children, 2013

Table 14 below gives the prescription of routine antibiotics for uncomplicated SAM.

TABLE 14 ROUTINE ANTIBIOTICS FOR CHILDREN AGED 6 TO 59 MONTHS WITH UNCOMPLICATED SAM

AGE	AGE OR WEIGHT	AGE OR WEIGHT	ADMINISTRATION
Amoxicillin	Less than 12 months (4 to 10 kg)	250 mg	1 dose on enrolment to treatment then twice per day for 5 days
	12 to 36 months (10 to 14 kg)	500 mg	
	36 to 59 months (14 to 19 kg)	750 mg	

The first dose of antibiotic should be given to the child by the health-care provider while demonstrating to the caregiver how to administer the antibiotics correctly. The caregiver should be counseled on the importance of complying with treatment and completing the course of antibiotics, even if the child appears to be well.

Step 3: Give Ready to Use Therapeutic Food (RUTF)

Children with SAM are treated with Ready to Use Therapeutic Food (RUTF). RUTF is an energy dense paste (500 kcal per 92g sachet) that contains all of the macro and micronutrients required to recover a child with SAM even if no other foods are eaten. In most cases the child also eats family foods during recovery as advised by the health care provider. The child being treated with RUTF should not receive any additional micronutrient supplementation until after the full treatment course with RUTF is completed.

RUTF is specially formulated with all of the nutrients required for rapid physiological recovery and weight gain. There are no homemade equivalents that give the same levels of nutrition in a small volume. RUTF is a low sodium, high quality protein food. If the child refuses to eat RUTF no other nutritional supplements such as RUSF or BP5 (higher sodium, lower quality protein content) should be given as a replacement. They are not equivalent to RUTF and are not appropriate substitutes.

RUTF can be procured from the MoPH. Box 6 below gives an overview of the properties of RUTF.

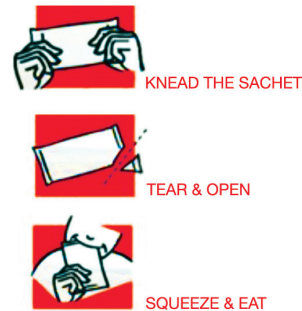
BOX 6 READY TO USE THERAPEUTIC FOOD (RUTF)

RUTF is an energy dense mineral / vitamin enriched food which is recommended by WHO for the treatment of severe acute malnutrition. It provides the appropriate balance of all of the nutrients and electrolytes the child requires for recovery. It is an oil-based paste and is

microbiologically safe and can be kept for up to 2 years in simple packaging. With proper hygiene practices, RUSF can safely be used at home. RUTF should be stored in a cool dry place and covered to protect from insects and rodents.



RECOMMENDATION FOR USE



RUTF should be stored in a cool dry place (less than 40 Celsius). The amount of RUTF given to the child is based on weight, as an average ration of 150 - 200 kcal /kg /day. If the child's weight increases during recovery, the amount of RUTF given increases according to weight. Table 15 below gives the ration of RUTF based on weight.

TABLE 15 AMOUNT OF RUTF TO GIVE BASED ON WEIGHT

WEIGHT OF THE CHILD/KG	PACKETS PER WEEK	PACKETS PER DAY
3.5-3.9	11	1.5
4.0-4.9	14	2
5.0-6.9	18	2.5
7.0-8.4	21	3
8.5-9.4	25	3.5
9.5-10.4	28	4
10.5-11.9	32	4.5
≥12	35	5

Step 4: Give nutrition counseling

RUTF is the only food a child needs to recover from SAM. In the first few weeks the child may only have a small appetite and may be satisfied with eating only RUTF. As the child recovers they may wish to eat other family foods in addition to the RUTF. This is fine as long as proper instructions are followed and the family foods do not interfere with the recovery of the child with RUTF. Box 7 below gives an overview on the use of family foods with RUTF.

BOX 7 USING RUTF WITH OTHER FAMILY FOODS

Other family foods may be given during recovery;

- Give the RUTF daily ration in divided doses at normal family mealtimes
- Give sips of breast milk or water before starting to feed RUTF
- Give RUTF in small mouthfuls (with plenty of breast milk or clean water)
- After eating RUTF wait at least 30 minutes before giving other family foods
- If after eating the whole ration of RUTF for that meal the child is still feeling hungry, they may be given other family foods to eat. Give small amounts of family food at first
- Use only family foods which are prepared without salt
- If the child is able to eat the whole ration of RUTF at the next meal time, then the same amount of family food may be increased to

satisfy hunger

- If the child does not eat the whole ration of RUTF at the next meal time, then the amount of family food given should be reduced until the whole amount of RUTF can be eaten

IMPORTANT: Family foods that are given to the child with SAM must contain no salt. Small amounts of salt substitute may be used as long as it does not contain sodium. Use only fresh ingredients and unprocessed foods. Avoid canned vegetables, bread (unless bread is salt free), and salted snacks such as nuts or crackers (use salt free snacks). Salt substitutes that use potassium instead of sodium may be used to flavour foods. Spices and herbs may also be used for flavouring.

The caregiver should be given counseling regarding the proper preparation and use of RUTF and age appropriate complementary feeding practices (See Annex 3). This should include attention to general hygiene practices and proper food preparation.

In addition, the caregiver should be given dietary advice to ensure the caregiver and the rest of the family is aware of good dietary practices (National Food-Based Dietary Guidelines, 2014).

Key messages for RUTF

- These foods are NOT suitable for children aged less than 6 months
- RUTF is the only food your child needs to recover from SAM.
- The food contains extra protein, vitamins and minerals to help your child gain weight
- The child should eat the amount prescribed each day (do not eat all of the packets at once)
- Do not share the RUTF with other family members. The prescribed amount is for the SAM child only. Sharing with others may result in the child with SAM not recovering properly.
- The caregiver and child should wash their hands before touching food
- RUTF can be eaten straight from the packet and should be given with plenty of breast milk or clean water to drink
- Keep the product stored in a cool, dry place and covered to protect it from insects and rodents
- If the child has diarrhea, do not stop feeding. Ensure good hygiene and give extra breast milk, food and clean water

Step 5: Weekly surveillance

The child with uncomplicated severe acute malnutrition should return to the PHC center each week²⁵ for a check-up and to ensure that s/he is gaining weight and to investigate the reason for any lack of progress.

Unless there is a reported illness, the child is not gaining weight or has deteriorated it is not necessary for the child to see the physician at every visit.

At each follow up visit at the PHC center the health care provider reassesses the child:

- Ask the caregiver if there have been any illnesses since the previous visit
- Ask the caregiver if there have been any feeding problems since the previous visit
- Measure the MUAC
- Check for bilateral pitting edema of the feet
- Measure the weight
- Measure the height (this needs to be done every 4 weeks routinely)
- Calculate WFH or WFL (calculate using the most recent measurements of weight and height)

The health care provider should take anthropometric measurements at each visit (except for height which is done every 4 weeks).

- If a child is admitted by MUAC then it is not necessary to measure the height every 4 weeks or to calculate WFH or WFL at each visit.
- If the child was enrolled into treatment using WFH or WFL then WFH or WFL should be calculated at each visit until discharge.

If the child is not progressing well or is not gaining weight, s/he should be referred to the physician for a medical check-up. In addition the caregiver should receive a psychosocial assessment and check on the understanding of:

- IYCF practices
- Key messages for the use of RUTF
- Key messages for the use of family foods with RUTF
- The use of good hygiene practices

If the child continues to deteriorate, s/he may require transfer to hospital for further investigation or specialized care. Table 16 below gives criteria that require the child with SAM to be transferred to hospital.

TABLE 16 CRITERIA TO TRANSFER THE CHILD TO HOSPITAL DURING RECOVERY FROM SAM

FACTOR	CRITERIA FOR REFERRAL TO INPATIENT CARE
Edema	Increase of or development of edema
Appetite	No appetite or unable to eat RUTF
Medical complications	Deterioration in medical condition which requires hospitalization
Weight changes	- Weight loss for 3 consecutive weighings - Static weight for 5 consecutive weighings

²⁵ Ideally children should visit every week for a check-up. In some cases, attending every week may be problematic for the caregiver. If the child is gaining weight consistently and there are no reported illnesses, then the child may return to the PHC every 2 weeks for a check-up. Two weekly follow up for children with uncomplicated severe acute malnutrition may be done only with the consent of the physician.

If the child is absent from a scheduled follow-up visit, the health-care provider should contact the caregiver by phone or through a home visit, if possible, to encourage them to return to the PHC as soon as possible to collect supplies of RUTF and continue the treatment of the child.

During recovery, the child's anthropometric status may indicate that they are 'MAM' rather than 'SAM'. This does not mean that the treatment of the child should be changed. The physiology of a child recovering from SAM is not the same as a child with MAM who was never diagnosed as SAM. Nutritional therapies used to treat MAM (RUSF, BP5 etc.) have not, at the time of writing these guidelines, been demonstrated to be safe in treating children recovering from SAM. Therapy with RUTF should be continued until discharged cured.

Step 6: Assess the child for discharge cured

A child should be assessed for cure according to the same criterion used for enrolment. i.e. if the child was enrolled using MUAC then discharge using MUAC. If the child was enrolled using WFH or WFL then discharge using WFH or WFL. (WHO recommendation, 2013)

Table 17 below gives the criteria for discharge cured for a child aged 6 to 59 months recovering from SAM.

TABLE 17 CRITERIA FOR DISCHARGE CURED

AGE	CRITERIA
6 to 59 months	MUAC $\geq$ 12.5 cm or WFH or WFL $\geq$ -2 Z-score AND Edema is absent AND Child is clinically well For 2 consecutive visits

Other discharge criteria

If the child does not reach cure, they may be discharged for other reasons. Other categories of discharge are defined in Table 18 below (See also chapter 14 on monitoring and reporting).

TABLE 18 CATEGORIES OF DISCHARGE FOR CHILDREN NOT CURED

CRITERIA	DEFINITION
Defaulter	Child has been absent from follow-up visits on 2 consecutive occasions (2 weeks)
Death	Child has died (from any cause) during treatment
Transfer to another service	Child has been transferred to hospital or another PHC
Non Responder:	Child who has not reached discharge criteria after 4 months

Step 7: Follow up after discharge

The appropriate follow-up after discharge is described below.

Discharged cured

During the triage process (Chapter 5) the reasons for acute malnutrition occurring in the individual child should, in most cases, been identified. Although relapse after cure is rare (around 1-2% of cured cases) it is important that the caregiver is given counseling during treatment and referred to ongoing social or welfare support after discharge to reduce the chances of the child relapsing with acute malnutrition in the future. For example;

- Counseling on IYCF feeding practices
- Counseling on dietary practices for older children and adults
- Counseling on appropriate hygiene practices
- Referral to growth monitoring programs
- Referral for psychosocial support services
- Referral for disability support services
- Referral to locally available health insurance / social welfare programs
- Referral to refugee support agencies (e.g. UNHCR, UNWRA and NGOs)

Discharged Defaulted, Died or Transfer to another service

See Chapter 14 on monitoring and reporting describes the actions to be taken for discharges that are not cured.

CHAPTER 9 - MANAGEMENT OF ACUTE MALNUTRITION FOR PREGNANT & LACTATING WOMEN (PLW) AT PHC CENTER

The aim of treating acute malnutrition for PLW is to improve the maternal nutritional status during pregnancy and breastfeeding. The benefit is not only for the caregiver but also for the fetus or breastfeeding infant. The physician should examine the PLW to identify any underlying medical or psychosocial causes for the acute malnutrition. Following the first consultation the PLW does not need to see the physician again unless there are medical problems reported or unless the woman is not improving with the treatment for MAM.

Step 1: Confirm criteria for enrolment

Table 19 below describes the criteria for the enrolment of a PLW with MAM in treatment.

TABLE 19 CRITERIA FOR ENROLMENT IN TREATMENT FOR PREGNANT & LACTATING WOMEN

CATEGORY	CRITERIA
Pregnant - 2nd or 3rd Trimester or - Pregnancy diagnosed by Midwife or physician Breastfeeding Mother - With infant aged < 6 months	MUAC < 23.0 cm

Step 2: Give routine medications

Medicines routinely prescribed for PLW are given in Table 20 below.

TABLE 20 ROUTINE MEDICAL PROTOCOLS FOR PREGNANT & LACTATING WOMEN

PRODUCT	WHEN	DOSE
Vitamin A	Within 4 weeks of delivery	200000 IU orally
Mebendazole	During 2nd Trimester	500 mg orally

Vitamin A supplements should not be given routinely to pregnant women. RUSF contains adequate amounts of vitamin A to supplement the diet.

Step 3: Give RUSF

Table 21 below gives the amount of RUSF to be given to the PLW during treatment.

TABLE 21 ROUTINE NUTRITIONAL PROTOCOLS FOR PREGNANT & LACTATING WOMEN

PRODUCT	AMOUNT	ENERGY
RUSF	1 Packet per day	500 kcal
BP5	2 bars per day	500 kcal

Step 4: Give nutrition counseling

Nutrition counseling is the same as the counseling given in Chapter 3 on the prevention of malnutrition and Chapters 6 and 7 on the management of infants and children with MAM.

Step 5: Two-weekly surveillance

The PLW with acute malnutrition should return for a check-up every 2 weeks.

- Measure MUAC
- Reinforce key messages on IYCF practices, use of RUSF, hygiene and maternal nutrition
- Assess progress with any psychosocial issues identified on enrolment

Step 6: Assess the PLW for discharge cured

Table 22 below gives the criteria for discharge

TABLE 22 CRITERIA FOR DISCHARGE FOR PREGNANT & LACTATING WOMEN

CATEGORY	CRITERIA
Pregnant Woman	MUAC $\geq$ 23.0 cm
Breastfeeding Mother	MUAC $\geq$ 23.0 cm or Infant > 6 months

Step 7: Follow-up after discharge

After discharge as cured the PLW and infant should be followed-up on an intermittent basis:

- Encourage the pregnant woman to attend the regular schedule of antenatal and postnatal check-ups
- Refer for continued counseling on IYCF practices including continued breastfeeding and the introduction of age appropriate complementary feeding practices for children up to 2 years of age
- Counsel the caregiver on healthy eating practices for adults (see chapter 3 and annex 4)
- Enroll the infant in a program of regular growth monitoring
- Ensure the infant's immunizations are fully up to date on discharge and the caregiver complies with the childhood immunization schedule
- Refer the PLW for any continuing health, psychosocial or disability support

CHAPTER 10 - MANAGEMENT OF COMPLICATED SEVERE ACUTE

MALNUTRITION FOR CHILDREN AGED 6-59 MONTHS AT HOSPITAL

Children who have developed SAM with complications or who are not recovering during treatment at the PHC center require treatment in hospitals where staff have been trained on the treatment of SAM. Hospital treatment focuses on the stabilization of the child, the correction of metabolic abnormalities and the treatment of complications.

After stabilization the child is prepared for transfer back to continue recovery at the PHC center. Good linkages between the hospital and the PHC center are vital to ensure the continuity of care for the child.

Stabilization is achieved using therapeutic milks or generic infant formula. Any formulations used should comply with WHO specifications on therapeutic milks for infants and with Lebanese law on the use of breastmilk substitutes. Annex 14 gives examples of the appropriate use of milk formulas and links to the WHO specifications.

10/1 ADMISSION CRITERIA FOR INPATIENT CARE FOR CHILDREN AGED 6-59 MONTHS

Table 23 below gives the admission criteria for children aged 6 to 59 months for admission to inpatient care.

TABLE 23 ADMISSION CRITERIA FOR INPATIENT CARE FOR CHILDREN AGED 6 TO 59 MONTHS

AGE	CRITERIA
6 to 59 months	Bilateral pitting edema +++
	MUAC less than 11.5 cm or WFH or WFL less than -3Z score or bilateral edema + and ++ With • Poor appetite for RUTF or any of the following medical complications: • High fever • Hypothermia • Persistent vomiting • Severe dehydration • Severe anemia • Not alert, very weak, apathetic, unconscious, convulsing • Moderate to severe skin lesions • Difficult or fast breathing Children 6-59 months referred from outpatient treatment for SAM Any of the following: • Deterioration in medical condition (has developed IMCI danger sign) • Loss of appetite for RUTF • Increase in bilateral edema • Weight loss for 3 consecutive weeks or static weight for 5 weeks

10/2 EMERGENCY CARE ON ARRIVAL

Step 1: Screen the child for SAM

If the child has arrived from PHC center with a referral slip, check the anthropometric criteria and reason for referral. If there is no referral slip, check the child's nutrition status using MUAC and check for edema. Do not use WFH or WFL measurement until the child's condition has improved enough to do so.

Step 2: Triage emergency cases and provide emergency care

- Assess vital signs and administer life-saving interventions according to Pediatric Advanced Life Support (PALS) Protocols. Some protocols may be modified for children with SAM (see annexes on treatment of complications)
- Immediately treat life threatening complications
- Annex 15: Treat / Prevent Hypoglycemia
- Annex 16: Treat / Prevent Hypothermia
- Annex 17: Fluid Management of children with SAM
- Annex 18: Treat Dehydration & Hypovolemic Shock
- Annex 19: Treat Hypernatremic Dehydration
- Annex 20: Treat Septic Shock
- Annex 21: Treat Severe Anemia
- Annex 22: Treat heart Failure
- Annex 23: Treat Absent Bowel Sounds & Intestinal Splash

Step 3: Start Stabilization Phase Protocols

- If stable, weigh the child (for drug dosages and therapeutic feeds)
- Give first line antibiotics
- Start feeding with F75 (unless contraindicated)
- Give 10 % sugar water or F75 to prevent hypoglycemia if the assessment is delayed
- Complete physical assessment and history taking from caregiver
- Document findings on the patient treatment record

Some children may be transferred from PHC center because they are not progressing well and may have already been eating RUTF during outpatient treatment. If a child is admitted already being treated with RUTF;

- Give the appetite test for RUTF
- If the child passes the appetite test, continue with RUTF (unless contraindicated)
- If the child fails the appetite test, start feeding with F75 therapeutic milk

Step 4: Orientation for the caregiver

The admission of a child into inpatient care is always a worrying time for the caregiver. Care should be taken to ensure that all the procedures and treatments their child will receive are explained properly, and the next stage of the child's treatment also explained. The opportunity should also be taken to ensure they receive proper nutrition counseling and care that facilitates their support for their child. Whenever possible care will be given so as to promote (or restore) age appropriate breastfeeding practices including breastfeeding overnight (particularly important in facilities not providing feeds during night-time)

General advice to the caregiver to be given by the nurse in charge;

- The mother should continue to breastfeed the child on demand. It is important to breastfeed the child BEFORE each feed of therapeutic milk
- The child is severely malnourished and needs medicines and a special therapeutic milk in order to aid recovery (be sure to distinguish the therapeutic milk from commercially available feeds, it is important to give messages which do not promote the use of artificial milk after discharge)
- Inform the mother of the importance of the therapeutic milk and its timely feeding to the child according to the

inpatient unit timetable

- The child does not need to eat any additional food during the Stabilization or Transition Phases. The diet provided is complete.
- If the child is bottle-feeding this must be stopped immediately. Bottles must be taken and disposed of.
- Unless contraindicated due to a critical illness the mother should interact frequently with the child through talk and play. Severe acute malnutrition affects the child psychologically and play is essential for the child's emotional recovery from illness
- For all caregivers and particularly those of infants less than 6 months of age IYCF messages should be discussed including those related to exclusive breastfeeding, timely introduction of complementary foods and continued breastfeeding until the child is aged 2 years or beyond.

In addition, some specific actions should be taken to care for the caregiver themselves in order to facilitate their support for the child;

- Assessment of the physical and mental health status of the caregiver with the provision of relevant treatment and ongoing support
- Other ward routines for meal times and attending to hygiene needs must be discussed as soon as possible after admission
- Counsel the mother on maternal nutrition and self-care
- Counsel the mother on good IYCF practices including, exclusive breastfeeding for children aged less than 6 months, continued breastfeeding until the child is at least 2 years of age and age appropriate complementary feeding (including meal frequency and food diversity)
- If the caregiver brought commercial milk formula with her, she may drink it herself to improve her own nutritional status or it should be discarded. It should NEVER be fed to the child during their time in inpatient care.
- The mother should receive multiple micronutrient tablets daily during admission if the child up to the age of 2 years is breastfeeding.

10/3 STABILIZATION PHASE

10/3/1 Routine medical protocols for children aged 6 to 59 months

Routine antibiotics are given to all admissions to inpatient routinely during the stabilization phase. The route of administration depends on the presence or absence of complications. If a child has previously received first line antibiotics in the PHC center during outpatient treatment the physician must decide on the appropriate therapy.

Step 1: Give routine 1st line antibiotics

Routine antibiotics to be given in the stabilization phase are described in tables 24 & 25 below.
If complications are NOT present:

TABLE 24 ROUTINE ANTIBIOTICS IN STABILISATION PHASE IF COMPLICATIONS ARE NOT PRESENT

MEDICATION	ROUTE	DOSE		PRESCRIPTION
Amoxicillin*	Oral / NGT	4 - 9.9 kg	250mg	On admission
Oral / NGT		10 - 13.9 kg	500mg	Twice daily for 5-7
		14 - 19 kg	750mg	Days

If indicated, Metronidazole (10 mg / kg / day) may be used to treat small bowel overgrowth of bacteria not responding to amoxicillin. Note that the dosage of metronidazole is reduced for children with SAM.

If complications ARE present:

TABLE 25 ROUTINE ANTIBIOTICS IN STABILIZATION PHASE IF COMPLICATIONS ARE PRESENT

MEDICATION	ROUTE	DOSE	PRESCRIPTION
Ampicillin*	IM/IV	50 mg / kg	On admission 6 hourly for 2 days
Followed by Amoxicillin	Orally / NGT	4 - 9.9 kg 250mg 10 - 13.9 kg 500mg 14 - 19 kg 750mg	Twice daily for 5 days

AND

Gentamycin	IM/IV	5 mg/kg	On admission Once daily for 7 days
------------	-------	---------	---------------------------------------

If the child does not improve within 48 hrs. or deteriorates within 24 hrs. add;

Ceftriaxone*	IM/IV	75-100 mg/kg	Once daily with Gentamycin
--------------	-------	--------------	-------------------------------

* Care must be taken in reconstituting and administering Ceftriaxone via the IM or IV route. Please refer to the product data sheet for precautions. Cefotaxime (100 mg / kg / day on 1st day followed by 50 mg / kg / day on subsequent days) may be preferred in septic shock.

Note: Chloramphenicol for children <1 year should be used with EXTREME caution. Risk for gray baby syndrome and death are associated with its use.

Step 2: give other medications as indicated

Additional medicines may be prescribed in the stabilization phase according to clinical presentation. Care should be exercised in dosages as the child with SAM may present with impaired gastrointestinal, hepatic and renal function.

Vitamin A

Vitamin A is present in F75 and RUTF in amounts greater than the normal daily requirement. Unless there is a specific indication for giving vitamin A or commercial formulas containing vitamin A are not available, vitamin A should not be given routinely.

A single dose of vitamin A is given on admission only if the child presents with;

- Clinical signs of vitamin A deficiency (xerophthalmia, Bitot spots)
- An active case of measles or
- If commercial F75 / F100 / RUTF is not available

For dosages of vitamin A see table 26 below.

TABLE 26 VITAMIN A SCHEDULE FOR THE INPATIENT TREATMENT OF SAM

MEDICATION	AGE	DOSE
Vitamin A	6 - 12 months	100,000 IU
	Greater than 12 months	200,000 IU

10/3/2 Medication NOT to be given in Phase 1

Anthelminthic: The burden of worm disease is low in Lebanon. Anthelminthic medications are not routinely prescribed unless specifically indicated. When prescribed, anthelmintics are given seven days after admission, in the Transition Phase or after discharge back to PHC

Zinc: Zinc is present in F75 and F100 therapeutic milks and in RUTF. Episodes of diarrhea should be treated with antibiotics and ReSoMal if indicated by the presence of dehydration. If commercially prepared F75 / F100 / RUTF is not available, then zinc should be used in the management of diarrhea

Iron: Iron is not given in Phase 1. Iron increases the risk of mortality through the increased risk of infection and sepsis. The RUTF used in the rehabilitation phase of treatment at the PHC contains iron and folate sufficient for the needs of the acutely malnourished child.

10/3/3 Routine Nutritional Protocols for children aged 6 to 59 months

For new admissions the therapeutic milk F75 is generally used for nutritional management in the stabilization phase. If the child has been admitted by referral from the PHC and has already been eating RUTF, then the RUTF can be used in conjunction with the medical therapy unless otherwise contraindicated. Contraindications to RUTF in the stabilization phase may include;

- Anorexia (child has failed the appetite test for RUTF)
- Blood transfusion (see Treatment of Anemia, Annex 21)
- Unstable medical condition and/or respiratory distress
- Physical deformity of the mouth or oropharynx with possible aspiration

Box 8 on the next page describes F75 and suitable alternatives.

BOX 8 PREPARATIONS OF F75 AND ALTERNATIVES

F75 is a low protein formulation (high protein at this stage increases the risk of death) containing the right balance of macro and micronutrients to stabilize the child's condition. F75 provides 75 kcal / 100 ml and allows micronutrient deficiencies to be corrected and the abnormal pathophysiology of the child to be restored. The F75 already contains all of the micronutrients required for stabilization. There is no need for additional micronutrient supplementation. F75 is also a low-lactose feed.

If F75 is not available, generic infant formula that satisfies the standards of the codex alimentarius and standards of composition as described by WHO may be used. F100 diluted

can also be used as a TEMPORARY substitute in an emergency if supplies are not available. (See annex 15 on milk formulas).

If commercial preparations are not available, recipes made by the health facility must ensure the addition of combined mineral and vitamin mix (CMV) to ensure an appropriate micronutrient profile.

Many commercial milk formulas may not a suitable substitute for therapeutic milks and if the caregiver brings a commercial formula with them to the hospital, they must be strongly advised NOT to use the formula for the child during the hospital stay.

Step 1: Calculate the quantity of F75 required

- Check the weight of the child daily
- Energy requirement in the stabilization phase is 100 kcal / kg / day
- The volume requirement of F75 in the stabilization phase is 130 ml / kg / day
- Prepare F75 according to F75 milk table in Annex 24

There is no expectation for weight gain with F75 in the stabilization phase. There may be some weight loss as edema starts to reduce. The amount of F75 given each day should be based upon the child's weight, which is measured each day and the amount of F75 recalculated.

It is the responsibility of the health care provider to ensure that the hygiene practices, the preparation of milk and the positioning of the child during feeding are safe and do not expose the child to potential harm.

Step 2: Give F75 in divided feeds

- F75 should ideally be given every 3-4 hours (6 - 8 feeds per day)
- If the frequency of feeds is changed, the amount of feed given each time must be adjusted to ensure the full amount is taken each day (see Box 9)

BOX 9 VARIATION IN THE NUMBER OF FEEDS IN STABILIZATION PHASE

Reducing the number of feeds per day is not ideal since sick children are often unable to drink large volumes of milk and when the number of feeds is reduced, the volume of each feed is increased. However, if for any reason the frequency of feeds (particularly during the evening or night shift) cannot be guaranteed (e.g. due to staff shortages) the volume of milk given must be recalculated, as it is preferable to feed the child the required amount of milk for the day over fewer feeds (to minimize the risk of hypoglycemia).

Note:

- The reduced number of feeds should be a temporary measure only while issues of staffing etc. are addressed. It should not be adopted as standard practice.
- Six feeds per day is the minimum, 8 - 12 feeds per day is the preferred frequency depending on the child's tolerance of feed volumes
- The time between the last feed of the day and the first of the following day should be minimized as much as possible (maximum 6 hrs.)
- It is essential that the prescription of milk be adjusted according to how many feeds can realistically be given per day.

The amount of feed, the timing and the total amount taken (or vomited) should be recorded on the treatment record.

Step 3: Ensure an appropriate feeding method is used

- Feeding should be done orally using a cup and saucer unless a nasogastric tube (NGT) is specifically indicated
- Breastfed children aged 6 to 59 months should always be offered breast milk on demand and always immediately before being offered a therapeutic milk feed
- The child should be positioned properly to avoid aspiration (see photo opposite). Children with SAM may have weak swallow and gag reflexes.



An appropriate feeding technique is described in Box 10 below.

BOX 10 APPROPRIATE FEEDING TECHNIQUE

- The child should ideally be sat upright on the caregiver's lap against her/his chest, with one arm behind his back
- The caregiver's arm encircles the child and holds a saucer under the child's chin (see photo above.)
- Any dribbles that fall into the saucer are returned to the cup
- The child should never be force-fed, have his/her nose pinched or lie back and have the milk poured into the mouth. (even with a spoon)
- Never give more therapeutic milk than what

- is prescribed for the child in Phase 1 even if the child cries for more food. The child may continue to breastfeed on demand
- Meal times should be sociable. The assistant should encourage the caregivers, talks to them, corrects any faulty feeding technique and observe how the child takes the milk
- The meals for the caregivers should not be taken beside the patient. It is almost impossible to stop the child demanding some of the caregiver's meal; the child should only take the prescribed diet in Phase 1

USE OF NASOGASTRIC TUBE

If the child is unable to take the required amount of feed orally a NGT may be indicated. Box 11 below describes some indications for using a NGT.

BOX 11 INDICATIONS FOR USING A NASOGASTRIC TUBE (NGT)

A NGT of the appropriate size should be used if the child:

- Is unable to consume at least 75% of the milk provided (the treatment record / chart should be designed to monitor percentage of each feeding consumed),
- Has pneumonia (rapid respiration rate) and/or has difficulties swallowing

- Has painful lesions of the mouth
- Has cleft palate or other physical deformity
- Shows disturbed level of consciousness / gag reflex

The use of a NG tube should not normally exceed three days and should only be used in the stabilization phase.

Step 4: Monitor progress

After every therapeutic milk feed;

- Record any breastfeeding taken before the therapeutic milk
- Record the amount of therapeutic feed taken²⁶ carefully on the therapeutic milk record sheet

Every 12 hours;

- Measure and record the child's temperature
- Measure and record the child's respirations
- Measure and record the child's pulse rate

On a daily basis

- Indicate the prescription for therapeutic milk
- Measure and record the weight²⁷
- Measure and record the level of edema
- Record symptoms such as cough, vomiting, diarrhea or fever
- Indicate if the child has a nasogastric tube

On a weekly basis:

- Measure MUAC

Where a child has a complication or is undergoing fluid rehydration the monitoring needs to be much closer and should be indicated by the physician on an individual patient basis (see Annexes 15-23).

²⁶ In order to correlate the nutritional treatment with clinical recovery and any change in the weight of the child, the therapeutic milk intake must be accurately monitored and recorded. This is a vital part of the child's medical and nutritional care

²⁷ To nearest 100g for children aged 6 to 59 months.

Step 5: Assess for upgrade to Transition Phase

Table 27 below gives the criteria for the upgrade of a child from the Stabilization Phase to Transition Phase.

TABLE 27 CRITERIA FOR UPGRADE FROM STABILIZATION PHASE TO TRANSITION PHASE

CATEGORY	CRITERIA
Child 6 - 59 months	Medical complications are resolved (or chronic conditions are controlled) AND Edema is subsiding (must have reduced to at least ++) AND Appetite is present (able to drink at least 90% of F75 milk orally)

The child must be taking 90% of the recommended diet orally in order to upgrade to Transition phase.

If the child shows signs of refeeding syndrome (see Box 12) during the Stabilization Phase, e.g.;

- Acute weakness or floppiness
- Lethargy
- Delirium
- Neurological symptoms
- Acidosis
- Muscle necrosis
- Liver or pancreatic failure
- Cardiac failure

Then;

- Treat any medical complications according to Annexes 15-23
- Check the correct diet is prescribed and administered to the child (this is especially important if caregivers are asked to make their own therapeutic milk)
- Ensure there is sufficient magnesium, potassium and phosphorous in the diet (milk should comply with the WHO standards for therapeutic milk - Annex 14)
- Reduce the diet by 50% of the recommended intake until all signs and symptoms have resolved, then,
- Increase the amount of diet given by 10% each day up to the recommended amount ensuring the child stays symptom free.

BOX 12 REFEEDING SYNDROME²⁸

Starting to eat again after a period of prolonged starvation appears to precipitate cardiac failure. In starvation the secretion of insulin is decreased in response to a reduced intake of carbohydrates. Instead fat and protein stores are catabolised to produce energy. This results in an intracellular loss of electrolytes, in particular phosphate. Malnourished patients' intracellular phosphate stores can be depleted despite normal serum phosphate concentrations. When they start to feed, a sudden shift from fat to carbohydrate metabolism occurs and secretion of insulin increases. This stimulates cellular uptake of phosphate, which can lead to profound hypophosphatemia. This phenomenon

occurs primarily within 4 days of starting to feed again. Phosphate is necessary for the generation of adenosine triphosphate from adenosine diphosphate and adenosine monophosphate and other crucial phosphorylation reactions. Serum phosphate concentrations of less than 0.5 mmol/l (normal range 0.85 - 1.4 mmol/l) can produce the clinical features of refeeding syndrome which include rhabdomyolysis, leucocyte dysfunction, respiratory failure, cardiac failure, hypotension, arrhythmias, seizures, coma and sudden death. Importantly, the early clinical features of refeeding syndrome are non-specific and may go unrecognised.

10/4 TRANSITION PHASE FOR TRANSFER TO PHC CENTER

The Transition Phase aims to prepare the child for transfer back to the Treatment PHC where nutritional rehabilitation continues as an outpatient. The child continues to be treated for any medical problems and the diet is changed to RUTF. This is done by gradually increasing the amount of feed provided by RUTF.

Step 1: Prepare the RUTF

Table 28 below gives the prescription for RUTF based on weight for the Transition Phase (average of 130 kcal / kg / day).

TABLE 28 AMOUNT OF RUTF TO BE GIVEN IN THE TRANSITION PHASE

WEIGHT (KG)	RUTF (G)	RUTF (SACHETS)
3.0 - 3.4	90	1
3.5 - 3.9	100	1
4.0 - 4.9	110	1.25
5.0 - 5.9	130	1.5
6.0 - 6.9	150	1.75
7.0 - 7.9	180	2
8.0 - 8.9	200	2
9.0 - 9.9	220	2.5
10 - 11.9	250	3

²⁸ Hearing S.D. Refeeding syndrome: is under-diagnosed and undertreated but treatable. BMJ. 2004 Apr 17; 328(7445): 908-909

- Prepare the correct quantity of RUTF and teach the caregiver how to give the RUTF in divided meals

Step 2: Feed RUTF to the child

Note: This procedure is equivalent to the appetite test and the child's appetite must be checked by direct observation by a health care provider rather than relying only on the caregiver's reports.

- The caregiver should be instructed to wash their hands
- Ask the caregiver to offer the child the RUTF (refer to description of how to administer RUTF during the appetite test - Chapter 8)
- Observe the child eating the RUTF
- After each mouthful, breast milk or a sip of water should be offered to the child²⁹
- If the child fails to eat the required amount of RUTF at each feed, the child should finish the feed by being offered F75 to drink in addition to any RUTF that has been eaten (see Box 13 below). The time taken to eat the RUTF and F75 (if necessary) should be no more than 1 hour.

BOX 13 FEEDING COMBINATIONS OF RUTF AND F75 IN TRANSITION PHASE

The total ration of food energy in Transition phase should be 130 kcal / kg / day. A full ration of F75 from Stabilisation Phase is 100 kcal / kg / day. Therefore, if the child eats some of the RUTF the amount of additional F75 should be adjusted accordingly.	If the child eats;
	> 90 % of the Transition Phase RUTF (130kcal/kg /day) then give no F75
	< 60 % of the Transition phase RUTF (approx. 78 kcal / kg / day) give 50% ration of F75
	< 30 % of the Transition Phase RUTF (approx.40 kcal/kg / day) give 100% of F75 ration

- Record the amount of both F75 and RUTF taken on the patient's treatment chart
- After each feed, the RUTF should be placed in a cool dry place, safe from insects and re-used at the next scheduled feeding time
- The process of offering both RUTF and F75 continues until the child is able to take the required amount for 24 hours (see below).

The child must NEVER be force-fed. It is vital to get a true indication of appetite so that the child can be safely transitioned to outpatient care. Options for transitioning from F75 to RUTF are given in box 14 below based on WHO recommendations.

²⁹ RUTF is a thick paste and plenty of clean drinking water should be available for the child to drink. Older children can ask for water when they are thirsty but young children must be offered the water regularly when taking RUTF. A thirsty child may refuse RUTF, which may be mistaken for poor appetite. Children over 6 months but with developmental delay in the motor skills associated with chewing food may have some difficulty manipulating the thick paste in the mouth, sips of water will help

BOX 14 WHO RECOMMENDATIONS ON TRANSITION FROM F75 TO RUTF

For children who are 6-59 months of age with severe acute malnutrition in inpatient settings where RUTF is provided as the therapeutic food in the rehabilitation phase (following F-75 in the stabilization phase), WHO recommends that once children are stabilized, have appetite and reduced edema and are therefore ready to move into the rehabilitation phase, they should transition from F-75 to RUTF over 2-3 days, as tolerated.

The recommended energy intake during this period is 100 - 135 kcal / kg / day. The optimal approach for achieving this is not known and may depend on the number and skills of the staff available to supervise feeding and monitor the children during rehabilitation.

Either;

1. Start feeding by giving RUTF as prescribed for the transition phase. Let the child drink water freely. If the child does not take the full prescribed amount of RUTF then top up the feed with F-75. Increase the amount of RUTF over 2-3 days until the child takes the full amount of RUTF

2. Give the child the prescribed amount of RUTF for the transition phase. Let the child drink water freely. If the child does not take at least half the amount of prescribed RUTF in the first 12 hours, then stop giving the RUTF and give F75 again. Retry the same approach after 1-2 days until the child takes the appropriate amount of RUTF

When the child is able to eat the Transition Phase ration of RUTF, increase the amount given up to the full outpatient PHC ration (200 kcal / kg / day). The amount to be given is shown in Table 15, Chapter 8, and Step 3).

Step 3: Assess for transfer to PHC

The criteria for transfer of the child from hospital to the PHC to continue nutritional rehabilitation as an outpatient are shown in Table 29 below. When at least 75% of the PHC ration of RUTF can be eaten and there are no problems observed in the following 24 hours, the child could be transferred to the Treatment PHC.

TABLE 29 CRITERIA FOR TRANSFER FROM TRANSITION PHASE IN HOSPITAL TO THE PHC

CATEGORY	CRITERIA
Child 6 - 59 months	Medical complications are resolved (or chronic conditions are controlled) AND Edema is subsiding (must have reduced to at least ++) AND Appetite is present (able to eat at least 75% of the PHC ration of RUTF)

If the child shows any deterioration during the transition from F75 to RUTF, the child must be transferred back to the Stabilization Phase until the problems are resolved.

Causes of deterioration may include:

- Refeeding syndrome (Annex 25)
- Reactivation syndrome (Annex 25)
- Osmotic diarrhea (Annex 25)
- Aspiration through improper feeding technique
- Nosocomial infection
- Inappropriate prescription of therapeutic feeds or medicines

REASSESSMENT OF CHILD'S CONDITION

In any case of failure to respond or deterioration of the child's condition in any phase, a thorough reassessment is needed. The physician should consider;

- A detailed recent history
- Accuracy of previous record keeping
- Full medical examination and review of nutritional status
- Review previous medical and nutritional therapy
- Chest x-ray / laboratory investigations
- Use of un-prescribed medicines, food or food additives (e.g. salt)
- A review of the care environment (hygiene, staffing, milk preparation)
- Appropriate use and/or recalibration of measurement equipment
- Referral may be required to a specialist pediatric service

Step 4: Transfer the child to PHC

Before the child is discharged from the hospital unit to a treatment PHC offering outpatient care for SAM the following should be done;

- Ensure the Treatment PHC is accessible to the caregiver on a weekly basis³⁰
- Explain to the caregiver that the child has recovered sufficiently to be discharged and congratulate them.
- An adequate supply of RUTF must be given to last until the next possible appointment in outpatient care
- The caregiver must understand (and repeat) the key messages for giving RUTF (chapter 8)
- The caregiver must understand (and repeat) instructions for medications to be continued after discharge from hospital
- Call the relevant PHC clinical staff to notify them of the child's transfer to outpatient care. PHC staff should coordinate with any MMU or outreach services for any community based follow up required
- Complete the appropriate referral form (annex 10) and give it to the caregiver. This should be presented to the staff of the PHC at the next appointment
 - Record the following on the referral slip;
 - Hospital registration / treatment number
 - MUAC (measurement)
 - Weight (measurement)
 - Height (measurement)
 - WFH or WFL Z score
 - Grade of edema
 - Ration of RUTF given (number of packets on discharge)
 - Medications received and medicines to be continued after discharge
 - Clinical condition on discharge
 - Record the child as a 'Discharged to another service' in the tally sheet / monthly report
 - Record the ration of RUTF given in the stock register
 - Complete other relevant clinical records and registers

In most circumstances children will be transferred to the PHC for nutritional rehabilitation after the Transition Phase. In rare circumstances where the child must continue nutritional rehabilitation in the hospital setting (for example for continuing detailed social or medical investigations) the appropriate therapeutic feeding protocols should be applied. The protocols for the Hospital based Rehabilitation Phase are detailed in Annexes 26 and 27.

³⁰ Children discharged from hospital following the treatment of complications or lack of appetite must be followed up weekly at the PHC for a minimum of 2 weeks after discharge from hospital and thereafter as directed by the physician at the PHC

CHAPTER 11 - MANAGEMENT OF ACUTE MALNUTRITION IN CHILDREN

AGED 0-6 MONTHS AT HOSPITAL LEVEL

11/1 ADMISSION CRITERIA FOR CHILDREN AGED LESS THAN 6 MONTHS

Assessment and admission procedures should be the same as for older children with the addition of an assessment of breastfeeding practice. This age group is also given the same general medical care as older children. Infants aged less than 6 months, admitted as inpatients, require different nutrition protocols than older children. This is because these infants have an immature physiology and feeding them the wrong diet may result in renal solute overload.

Table 30 below gives the admission criteria for children aged less than 6 months.

TABLE 30 ADMISSION CRITERIA FOR CHILDREN AGED LESS THAN 6 MONTHS

CATEGORY	CRITERIA
Child less than 6 months	WFL less than -3 Z-score Bilateral pitting edema of any grade Or - Recent acute weight loss - Failure to gain weight - Ineffective attachment, positioning or suckling despite counseling - Any medical or social problem requiring detailed investigation

NOTE: 'Visible wasting' is NOT used as an admission criterion in children aged less than 5 years.

It is usually preferable when an infant becomes malnourished to attempt to improve the breastfeeding practices or to re-establish them if possible if they have been discontinued. Inpatient staff should try to encourage the re-establishment of breastfeeding where this is a possibility. If relactation is not possible, wet nursing should be encouraged. During relactation, supplementary feeds may be given according to need using F75, Diluted F100 or generic infant formula. Undiluted F100 or RUTF must not be used at any time for children aged less than 6 months due to the risk of renal solute overload and hyponatremic dehydration.

Infants aged less than 6 months admitted to inpatient care may be treated and discharged according to two separate and distinct protocols. It is important to ensure that the infant follows the correct treatment plan and discharged according to the correct criteria

The two options for treatment are;

1. Children who are currently breastfeeding or will be breastfed on discharge
2. Children who will not be breastfed on discharge

Re-establishing effective breastfeeding requires skilled and patient counseling by trained providers (e.g. lactation nurses, lactation counselors, and peer support groups). It also requires adherence to and compliance with the principles and rules in Lebanon's breastfeeding legislation³¹. In the hospital setting, compliance with the accreditation standards set by the Mother-Baby-Friendly Hospital Initiative (MBFHI) and Lebanese law 47/2008 on International Marketing Code for Breast Milk Substitutes (IMCBS) is required, particularly with respect to the use of commercial milk formulas.

11/2 CHILDREN WITH A POSSIBILITY OF BEING BREASTFED

For these infants there are no separate 'Phases' of treatment. The amount of therapeutic milk the child receives decreases during treatment as the intake of breast milk improves while maintaining good progress in weight gain. Where mothers are not able to breastfeed successfully the next best option is to encourage 'wet nursing' by a female member of the family³². The aim of treatment is to stimulate breast-feeding and to supplement the child's diet with Diluted F100 therapeutic milk until breast milk is sufficient to allow the child to grow properly. The Supplemental Suckling Technique (SST) is most usually used to achieve this (see box 15) but should be complemented by other responsive infant feeding and care practices (Annex 3).

The same general orientation should be given to the caregiver as described in Chapter 10.2, step 4.

Step 1: Give routine medications

The same routine medical care is given to infants as for older children. Dosages should be adjusted for weight.

Step 2: Prepare the F75 or Diluted F100 milk feeds

RUTF and full strength F100 milk are not suitable for infants in this age group. F75 should be used for all infants who are admitted with bilateral pitting edema. Diluted F100 should not be given to infants with edema.

- Prepare the F75 or Diluted-F100 therapeutic milk according to the weight of the infant for use with SST according to Annex 28
- Ensure the correct dilution is used in preparation of the milk
- Ensure good hygiene practices are used during the preparation of the therapeutic milk

Step 3: Feed the infant using the Supplemental Suckling Technique (SST)

Box 15 below gives an overview of SST.

BOX 15 SUPPLEMENTAL SUCKLING TECHNIQUE (SST)

SST has proven to be an effective method to re-establish adequate breastfeeding (see Annex 29 for detail on the technique). However, it takes some patience and skill on the part of the health care provider and the mother to do so. It is important to put the child to the breast as

often as possible. As breastfeeding improves and the child gains weight the amount of therapeutic milk is gradually reduced and then discontinued. The infant is discharged when gaining weight on breast milk alone.

³¹ Lebanese law 47/2008: Organizing the Marketing of Infant and young Child Feeding Products and Tools.

³² It is possible for the grandmother or other female relative to re-establish breastfeeding with support and nurse the child until they reach 6 months of age. The mother or 'wet nurse' should always be encouraged to continue breastfeeding at least until the child reaches 2 years of age.

- Encourage the mother/wet-nurse to breastfeed on demand or offer breastfeeding every three hours till they feel that the child has emptied their breast, without frequent switching. More often if the child seems to want more; the infant should be breastfed as frequently as possible. The mother may assist the infant by expressing breast milk directly into the child's mouth if the child is unable to empty the breast fully³³ (Annex 30).
- 30 minutes to one hour after a normal breastfeeding session, give maintenance amounts of therapeutic milk using the supplemental suckling technique (see Annex 29).
- Provide F100-Diluted for infants with severe wasting at 130 ml/kg /day, distributed across eight feeds per day. F100-Diluted has a lower osmolality than F75 and thus is better adapted to immature organ functions. Also, the dilution allows for providing more water for the same energy with a better carbohydrate to lipid ratio³⁴ (see Annex 31 for preparation and quantities).
- Provide F75 for infants with bilateral pitting edema and change to F100-Diluted when the edema is resolved (Use the same quantities as shown in Annex 31 as for F100-Diluted).
- If space is available, infants should be nursed in a separate space from the older malnourished children. This can be a "breastfeeding corner". This area may be useful to bring breastfeeding mothers together for mutual support and counseling by staff.
- Give counseling and support for any issues identified during monitoring in relation to attachment and feeding of the infant (see Annex 3).
- If the supplemental suckling technique is problematic mothers can be supported to express their milk by hand either directly into the infant's mouth or give it via cup feeding (see Annex 30). Caution should be used in the feeding technique and positioning of the infant for cup feeding in order to avoid possible aspiration.

Figure 9 below gives an illustration of SST in practice.

FIGURE 9 DEMONSTRATION OF SUPPLEMENTARY SUCKLING TECHNIQUE



Step 4: Monitor progress daily

Infants receive the same general monitoring care as for older children (see chapter 10). In addition, the prescription of milk will change as the condition of the infant improves.

³³ Infant & Young Child Feeding: Model Chapter for Textbooks for Medical Students and Allied Health Professionals. Geneva: World Health Organization; 2009 ISBN-13: 978-92-4-159749-4

³⁴ Note: F100-Diluted has a lower osmolality than some readily-available infant formulae and thus has a lower risk of causing diarrhoea. Studies have shown that F100-Diluted and some infant formulae give similar results in terms of mortality and weight gain.

Once the infant is gaining weight at 20 g per day (absolute weight gain)

- Gradually decrease the quantity of F100-Diluted by one-third of the maintenance intake so that the infant gets more breast milk.
- If the weight gain of 10 g per day is maintained for two-to-three days (after gradual decrease of F100-Diluted), stop F100-Diluted completely.
- If the weight gain is not maintained, increase the amount of F100-Diluted given to 75 percent of the maintenance amount for two-to-three days, then reduce it again if weight gain is maintained.

Step 5: Assess the infant for transfer to PHC

The infant can be discharged to the nearest PHC (Screening PHC or Treatment PHC) for further follow up as an outpatient when they are gaining weight on breast milk alone. Table 31 below shows the criteria for discharge.

TABLE 31 CRITERIA FOR DISCHARGE FROM HOSPITAL TO PHC

CATEGORY	CRITERIA
Infant aged < 6 months	Child is gaining more than 5g / kg / day for 3 consecutive days on breast milk alone* AND Edema is absent AND Infant is clinically well AND Caregivers medical or psychosocial problems have been addressed

* All therapeutic milk must have been stopped. The weight gain must be entirely due to breast milk

Step 6: Transfer the infant to the nearest PHC for follow up

Before the child is discharged from hospital the following should be done;

- Explain to the caregiver that their child has recovered sufficiently to be discharged and congratulate them.
- The caregiver must understand (and repeat) any medications which must be given after discharge
- Complete other relevant clinical records and registers
- Check that the caregiver understands the importance of continued breastfeeding and timely introduction of appropriate complementary feeding
- Complete a referral slip (Annex 10) and advise the caregiver to attend the nearest PHC;
 - Record the child's registration number on all documentation
 - Record the WFH/L measurement on discharge
 - Record any continuing medications
 - Advise attendance at a growth monitoring program
 - Advise attendance at the PHC for further maternal, infant and child nutrition counseling
 - Refer the caregiver for continuing medical, psychosocial or disability support services
 - Telephone health care provider at the PHC to advise them of the referral

11/3 INFANTS AGED LESS THAN 6 MONTHS WITH NO POSSIBILITY OF BEING BREASTFED

When breastfeeding options are not available, the infant must be treated using therapeutic milk or generic infant formula. Before the decision is made to treat and discharge the infant using therapeutic milks or generic infant formula, specific criteria should be assessed first.

For these infants there are distinct Phases of treatment, as for older children, using modified criteria for each Phase. The amount of therapeutic milk the child receives increases in each phase. The major difference for infants is the use of Diluted F100 during all 3 phases unless the infant is admitted with edema in which case F75 is used until the edema has resolved.

- Stabilization Phase: Diluted-F100 at 100 kcal / kg / day (8 feeds per day)
- Transition Phase: Diluted-F100 at 130 kcal / kg / day (8 feeds per day)
- Rehabilitation Phase: Diluted-F100 at 200 kcal / kg / day (6 feeds per day)

The same general orientation should be given to the caregiver as in Chapter 10, step 4.

11/3/1 Stabilization phase for non-breastfed infants aged less than 6 months

Step 1: Give routine medications

The same routine medical care is given to infants as for older children. Dosages should be adjusted for weight.

Step 2: Assess suitability of discharging the infant on infant formula

The assessment as to whether it is feasible and safe to discharge the infant on infant formula should be done early in the admission. If it will not be safe and feasible (see Box 16 below) the caregiver should be counseled and the infant recovered through the supplementary suckling technique (Chapter 11.1) and should be discharged when breastfeeding has been re-established.

BOX 16 SPECIFIC CONDITIONS NEEDED IF INFANT FORMULA FEEDS ARE TO BE GIVEN SAFELY TO INFANTS

Caregivers should only give generic infant formula as a replacement for breastfeeding when specific conditions are met:

- Safe water and sanitation are assured at the household level and in the community
- The caregiver can reliably provide sufficient infant formula milk to support the normal growth and development of the infant

- The caregiver can prepare it cleanly and frequently enough so that it is safe and carries low risk of diarrhea and malnutrition
- The caregiver can, in the first 6 months, exclusively give infant formula
- The family is supportive of this practice
- The caregiver can access health care that offers comprehensive child health services.

Step 3: Prepare the Diluted-F100 (or F75) feed

RUTF and full strength F100 milk are not suitable for infants in this age group. Diluted F100 or generic infant formula is preferred for infants who do not have edema. If bilateral pitting edema is present, use F75.

- Prepare Diluted-F100 therapeutic milk according to annex 31 for the stabilization phase or
- Prepare F75 therapeutic milk for the infant with edema for the stabilization phase
- Ensure the correct dilution is used in preparation of the milk
- Ensure good hygiene practices are used during the preparation of the therapeutic milk

Step 4: Feed Diluted-F100 (or F75) to the infant

The same general care regarding feeding practices is given as for older children (see Chapter 8)

- Prepare and administer diluted F100 or F75 according to the infants weight (see Annex 31)
- Give the therapeutic milk daily divided over 8 feeds

Step 5: Ensure appropriate feeding method

The same general guidance on feeding methods is given as for older children (Chapter 10.3)

Step 6: Monitor progress daily

After every therapeutic milk feed;

- Record the amount of therapeutic feed taken³⁵ carefully (ideally on a therapeutic milk record sheet)

Every 12 hours;

- Measure and record the child's temperature
- Measure and record the child's respirations
- Measure and record the child's pulse rate

On a daily basis

- Indicate the prescription for therapeutic milk
- Measure and record the weight³⁶
- Measure and record the level of edema
- Record symptoms such as cough, diarrhea or vomiting
- Indicate if the child has a nasogastric tube

Where a child has a complication or is undergoing fluid rehydration the monitoring needs to be much closer and should be indicated by the physician on an individual patient basis (see Annexes 15-23).

Step 7 Assess the infant for transfer to Transition Phase

The criteria for transfer to transition phase for infants aged less than 6 months is given below in Table 32.

TABLE 32 CRITERIA FOR TRANSFER TO TRANSITION PHASE FOR CHILDREN AGED LESS THAN 6 MONTHS

CATEGORY	CRITERIA
Child 6 - 59 months	Medical complications are resolved (or chronic conditions are controlled) AND Edema is resolved completely AND Appetite is present*

*Able to drink at least 90% of Dilute F100 or F75 milk orally

³⁵ In order to correlate the nutritional treatment with clinical recovery and any change in the weight of the child, the therapeutic milk intake must be accurately monitored and recorded. This is a vital part of the child's medical and nutritional care

³⁶ To nearest 10 - 20g for children aged less than 6 months.

11/3/2 Transition Phase for infants aged less than 6 months

In transition phase the therapeutic milk used is Diluted-F100. Children initially fed with F75 due to the presence of edema may switch formulas (edema should all be resolved before transfer to the Transition Phase). The energy supplied through therapeutic milk is increased to 130 kcal /kg/ day.

Step 1: Calculate the quantity of therapeutic milk required

The amount of Diluted F100 feed required in Transition phase is given in annex 31.

Step 2: Give divided feeds of Diluted-F100

In Transition Phase the daily ration of therapeutic milk should be given in divided feeds 6-8 times per day.

Step 3: Ensure appropriate feeding method

The feeding method for the non-breastfeeding infant is the same as for older children (Chapter 10.3)

Step 4: Monitor progress daily

Progress is monitored as for non-breastfed infants in the Stabilization Phase (Chapter 11.2, step 6)

Step 5: Assess for Transition to the Rehabilitation Phase

If the infant has received Diluted-F100 at 130 kcal /kg /day and has had no problems such as:

- Refeeding syndrome (Annex 25)
- Reactivation syndrome (Annex 25)
- Osmotic diarrhea (Annex 25)
- Aspiration through improper feeding technique
- Nosocomial infection
- Inappropriate prescription of therapeutic feeds or medicines

The infant may be upgraded to the Rehabilitation Phase

11/3/3 Rehabilitation Phase

In the Rehabilitation Phase, the infant continued to receive Diluted-F100 milk. The energy ration is increased to 200 kcal /kg /day. The amount of diluted-F100 milk to be given is shown in Annex 31. Feeds should be given in divided feeds (6 to 8 times per day).

Daily monitoring is the same as for the Stabilization and Transition Phases for non-breastfed infants aged less than 6 months. The infant should be assessed for discharge on a daily basis while in the Rehabilitation Phase. Table 33 below indicates the discharge criteria for non-breastfed infants aged less than 6 months.

TABLE 33 CRITERIA FOR NON-BREASTFED INFANTS AGED LESS THAN 6 MONTHS FOR DISCHARGE FROM HOSPITAL TO THE PHC

CATEGORY	CRITERIA
Non-breastfed infants aged less than 6 months	Child is gaining more than 5g / kg /day OR WFH/L $\geq$ -2 Z-score For 3 consecutive days on generic milk formula AND Edema is absent AND Infant is clinically well AND Caregivers medical or psychosocial problems have been addressed
Non-breastfed infants aged less than 6 months	Safe water and sanitation are assured at the household level and in the community AND The caregiver can reliably provide sufficient infant formula milk to support the normal growth and development of the infant AND The caregiver can prepare it cleanly and frequently enough so that it is safe and carries low risk of diarrhea and malnutrition AND The caregiver can, in the first 6 months, exclusively give infant formula AND The family is supportive of this practice AND The caregiver can access health care that offers comprehensive child health services.

11/3/4 Transfer from hospital to PHC

Before the child is discharged from hospital the following should be done;

- Explain to the caregiver that their child has recovered sufficiently to be discharged and congratulate them.
- The caregiver must understand (and repeat) any medications which must be given after discharge
- Complete other relevant clinical records and registers
- Check that the caregiver understands the importance of breastfeeding if it's a possibility and if not, of introducing appropriate complementary feeding in a timely manner.
- Complete a referral slip (Annex 10) and advise the caregiver to attend the nearest PHC;
 - Record the child's registration number on all documentation
 - Record the WFL measurement on discharge
 - Record any continuing medications
 - Advise attendance at a growth monitoring program
 - Advise attendance at the PHC for further maternal, infant and child nutrition counseling
 - Refer the caregiver for continuing medical, psychosocial or disability support services
- Telephone health care provider at the PHC to advise them of the referral

CHAPTER 12 - MANAGEMENT OF CHILDREN WITH COEXISTENT CONDITIONS

12/1 CHILDREN LIVING WITH DISABILITIES

12/1/1 Children living with disabilities

Children with disabilities face particularly difficult circumstances in terms of their overall nutrition. The disability in itself may predispose to undernutrition and acute malnutrition while at the same time limiting access to proper care and treatment. Children with disabilities must be protected from discrimination and be provided with access to a range of support services that are designed to achieve their full potential³⁷. The difficulties faced by caregivers with a disabled child may also have detrimental effects on the health of the family and siblings. Frequently caregivers are stressed as they struggle to meet the needs of the child with disability³⁸.

In situations where children with disabilities may be at risk of undernutrition, local health authorities should:

- Identify and register children with disabilities and their families
- Ensure MMU services are made available through home visits if necessary
- Health staff are trained to counsel caregivers on meeting the nutrition needs of the disabled child and the family
- Provide equal access to health services and facilities which may include targeted, 'fast track' or modified delivery of nutrition services and supplies and specialized access ramps / elevators

Cerebral Palsy and related disorders

"Many children with CP have eating and drinking difficulties. These difficulties range from relatively minor, in coordination of oral movements causing eating to be slow and with excessive spillage, to severe incoordination of the swallowing mechanism, causing ill health and even life threatening conditions. Mealtimes may stretch up to 15 times longer than for other children and, even despite this lengthy eating time; the children often do not receive adequate nourishment. Approximately 20 per cent of the children with CP may be severely underweight or badly nourished due to eating and drinking problems. This represented half the children who had eating and drinking problems."³⁹

Children with cerebral palsy are predisposed to difficulties in proper food intake due to;

- Developmental delay in moving from suckling to proper chewing
- Decreased gag reflex and aspiration
- Problems with jaw control and lip, tongue and cheek mobility
- Inability to support the head
- Insensitivity to oral stimuli (nipple, food, touch around the mouth)
- Oversensitivity to oral stimuli leading to 'oral tactile defensiveness'
- Prolonged or exaggerated bite reflex
- Tongue thrusting

³⁷ UN General Assembly Resolution A/65/452 (13). 2010

³⁸ WHO, UNICEF. Early Childhood Development and Disability: A discussion paper. 2012

³⁹ Hinchcliffe A. Children with Cerebral Palsy: A Manual for Therapists, Parents and Community Workers. July 2003

Ideally, the treatment for an undernourished child with cerebral palsy should be a team approach. According to the individual child this may include a gastroenterologist, speech therapist, dietician, nurse or psychologist. The team should provide;

- A full oromotor assessment including the child's ability to suck, masticate, swallow and maintain head control
- Assess both pharyngeal and esophageal phases of swallowing
- An individualized plan for oromotor inputs such as sensitization (or desensitization) to food stimuli
- Use different food temperatures and textures to stimulate awareness of food
- Identify appropriate food density which enables the child to develop appropriate oral movements (e.g. chewing) and avoid aspiration
- Indicate appropriate methods for positioning, head support and support of jaw movements
- Stimulate the child to engage in self feeding (as far as this does not contribute to undernutrition)
- Provide daily micronutrient supplements and advise caregiver on making family foods energy dense

The team approach along with appropriate counseling for the feeding of RUSF / RUTF along with other family foods will likely predispose the child to faster recovery, reduce the stress of the caregivers and reduce the likelihood of relapse after treatment. The effectiveness of each type of intervention is variable.⁴⁰

For the child treated for acute malnutrition;

- Ensure child is properly positioned for feeding
- In many cases the density and texture of RUSF / RUTF is suitable for appropriate food manipulation and minimizing the risk of aspiration, however each child should undergo an individual assessment by a physician and/or speech therapist
- Take advice from a dietician or speech therapist on the use of thickened liquids to promote fluid intake
- Provide RUSF / RUTF in a method advised by the speech therapist to maximize stimulation for chewing and swallowing normally
- Only give daily micronutrient supplement after completing treatment with RUSF / RUTF
- Provide individual counseling for the caregiver regarding the available appropriate social services and on age appropriate infant and child nutrition and adult dietary guidelines

Box 17 below describes the use of RUSF / RUTF for children with eating difficulties.

BOX 17 USE OF RUSF / RUTF FOR CHILDREN WITH CEREBRAL PALSY AND RELATED DISORDERS

It is normally advised that RUSF and RUTF must not be mixed with other foods or fluids. For the child with specific eating difficulties the method of giving RUSF / RUTF should be modified in order to prioritise the intake of the prescribed ration and promote recovery. **The dilution or thickening of RUTF must be ordered by a physician or speech therapist following assessment and documented in the care notes.**

Advising the dilution or thickening of RUTF is unacceptable in any other circumstance. The method of thickening or dilution must avoid heating the RUSF / RUTF above 40C. Diluted or thickened of RUSF / RUTF must be used within 1 hour of preparation accompanied by counselling on appropriate hygiene for food preparation and the timely cleaning of utensils.

⁴⁰ Ferluga et al. Interventions for feeding and nutrition in Cerebral Palsy. Effective Health Care Program, Comparative effectiveness review. Number 94. March 2013.
http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0054978/pdf/PubMedHealth_PMH0054978.pdf

The health staff should help to promote the age appropriate and varied food of the child after discharge. Energy dense sources of food may include;

- Margarine, Oil on bread, vegetables, rice, pasta or hot cereals
- Powdered skimmed milk added to whole milk
- Wheat germ
- Raisins
- Puddings
- Peanut butter
- Cooked Eggs, Custards or thick shakes
- Cheese
- Ice cream

Multiple micronutrient supplement powders may be added to improve the nutritional value (after the course of treatment with RUSF / RUTF is completed). Other nutrient dense products may be available from drugstores or grocery stores if the caregiver can afford such products or may be available on prescription. The recommended foods should follow the principles of being affordable, accessible and sustainable for the caregiver and safe for the child based on their individual assessment.

In extreme cases where nutritional intake is insufficient despite counseling to maintain growth or where there is repeated aspiration or that the work required maintaining the child is excessive, the medical provider may recommend enteral tube feedings. The use of enteral feeding must take into account the individual situation of the child and family and their ability to safely care for the child in such circumstances.

12/2 LACTOSE INTOLERANCE

12/2/1 Lactose intolerance

Lactose intolerance is sometimes a concern when treating children with acute malnutrition with therapeutic nutrition products due to their milk content. In fact, the lactose content of therapeutic foods is lower than that of breast milk and continue to be recommended by WHO as the preferred treatment for acute malnutrition. Milk is an important source of type 2 nutrients and the high lactose content is likely to have a positive effect on growth. The fear of symptoms of lactose intolerance is likely to be overestimated as malnourished children seem to tolerate products with a high lactose content. The positive effects could be due to a prebiotic effect although other studies appear inconclusive in the use of prebiotics when added to the diet. In one study which lowered the milk content of RUTF from 25% to 10% there was a significant reduction in weight gain.

The possible causes of persistent diarrhea (i.e. 3 or more loose stools per day) in children include all of those which give rise to 'malabsorption syndrome' in all children, although in resource poor settings it may also be associated with enteric infection such as *Cryptosporidium*, *Giardia*, *Shigella* or *Salmonella*. Carbohydrate intolerance is usually the result of villous atrophy and small bowel overgrowth, which are common in acutely malnourished patients. In studies it was found that the gut lactase content improved during therapeutic feeding and the diarrhea sometimes observed, particularly in the first few days of therapy soon resolves and was not associated with dehydration or any deterioration in the child's condition. **In cases where lactose intolerance is confirmed the solution lies in smaller more frequent meals of therapeutic foods.**

BOX 18 WHO RECOMMENDATION ON CHILDREN PRESENTING WITH PERSISTENT DIARRHEA

WHO recommendation: Children with severe acute malnutrition who present with either acute or persistent diarrhea, can be given

ready-to-use therapeutic food in the same way as children without diarrhea, whether they are being managed as inpatients or outpatients.

Source: *Updates on management of SAM in infants and children, 2013*

In one study, giving a low osmolality therapeutic milk to malnourished subjects with diarrhea and high rates of lactose intolerance (in aboriginal children) were associated with better outcomes than using a partially hydrolyzed formula. Subjects using the low lactose formula showed less improvement in gut mucosal recovery. The study suggests that cow's milk protein intolerance does not contribute to greater diarrheal severity or enteropathy⁴².

12/3 CONGENITAL CARDIAC CONDITIONS

Growth in children with congenital heart disease (CHD) is often compromised. Cardiac malformations are undoubtedly responsible for malnutrition, which may range from mild to severe undernutrition. Different types of cardiac malformations and consequent interventions may have different effects on growth. Most treatment strategies aim to facilitate 'catch-up' growth, providing extra calories, protein and micronutrients.

Mechanisms linking CHD to malnutrition may be related either to:

- Decreased energy intake and/or to increased energy requirements.
- Decreased energy intake involving deficiencies of specific nutrients or total caloric intake

Feeding problems are caused directly by:

- Lack of coordination of breathing, sucking and swallowing
- Insufficient suckling (due to fatigue)
- Respiratory distress
- Gastro-Esophageal Reflux Disease (GERD)
- Aspiration

12/3/1 Treatment of acute malnutrition with CHD

In general, infants and children with acute malnutrition and CHD follow the same nutritional treatments as for infants and children without CHD. If the child is unable to take RUSF / RUTF at the PHC then s/he should be transferred to the hospital for treatment with therapeutic milk or generic infant formula.

- There may be a strong indication for NGT feeding during the early stages of recovery
- The caregiver should receive psychosocial assessment and counseling
- Refer for surgical correction of the defect
- Ongoing medical / social support should be arranged before discharge home

The infant or child should be discharged from nutritional care according to the same criteria as for infants and children without CHD. The infant or child may require transfer to another service to provide the necessary continuing support.

⁴¹ Solomons NW, Torun B, Caballero B, et al: The effect of dietary lactose on the early recovery from protein-energy malnutrition. I. Clinical and anthropometric indices. *Am J Clin Nutr* 1984;40:591-600

⁴² Kukuruzovic, R. and Brewster, D. (2002), Milk formulas in acute gastroenteritis and malnutrition: A randomized trial. *Journal of Pediatrics and Child Health*, 38: 571-577. doi: 10.1046/j.1440- 1754.2002.00044.x

12/3/2 Follow-up after discharge

An infant or child with CHD and their caregiver will require ongoing medical and psychosocial support after discharge from the treatment of acute malnutrition:

- Infants and children with CHD need 120 - 140 % of normal nutritional requirements
- The physician should advise on optimal IYCF and breastfeeding practices or, if deemed appropriate, advise on the correct type and amount of BMS (infant formula) for ongoing care
- For infants, care should be taken with formula prescription to avoid renal solute overload
- For children older than 6 months, energy dense foods to increase caloric intake could include the below, but will require modification to suit the age and ability of the child;
 - Margarine, Oil on bread, vegetables, rice, pasta or hot cereals
 - Powdered skimmed milk added to whole milk
 - Wheat germ
 - Raisins
 - Puddings
 - Peanut butter
 - Cooked Eggs, Custards or thick shakes
 - Cheese
 - Ice cream
- The energy density of foods and drinks can be increased with the addition of commercially available protein or glucose polymer additives on the advice of a physician
- Long term NGT, Gastric Tube or parenteral nutrition may be considered
- The infant or child should be enrolled in a growth monitoring program.

CHAPTER 13 - PSYCHOSOCIAL SUPPORT FOR INFANTS AND CHILDREN WITH ACUTE MALNUTRITION

The mother-infant relationship is vital for the proper health and development of the child. When this is compromised it is both a cause and consequence of malnutrition. Mothers need support to protect this relationship. Stimulation during and after treatment of malnutrition improves the development of severely malnourished children well into adolescence compared to non-stimulated children, even if development levels remain low.

Postnatal depression also has a negative impact on infant malnutrition and child development and may be explained by three different mechanisms:

- Contextual factors
 - Poverty
 - Endemic infections
 - Micronutrient deficiencies
 - Recent arrival in urban / unfamiliar environments
 - Breakdown of the family unit and other social groups / support
 - Resource constraints
- Maternal depression as a direct cause of malnutrition
 - Caregiver depression leads to fewer interactions and less stimulation of the infant / child
 - Infant / child has less access to health and nutrition services
 - Depression is an underlying factor in low birth weight / premature babies (suckling problems)
 - Breastfeeding more difficult thus tends to wean earlier
- Low birth weight as a cause of maternal depression
 - Low birth weight, difficulty suckling and crying is a risk factor for maternal depression

A malnourished infant or child should also alert the health care provider to potential psychosocial issues with the caregiver and/or infant or child that need to be addressed at the same time as giving treatment for malnutrition. Early identification of psychosocial issues through screening and early intervention is likely to lead to quicker and more positive outcomes (lower default rates and higher cure rates) from the treatment of acute malnutrition for both the caregiver and infant / child.

It is most important that health care providers understand the relationship between malnutrition and psychosocial problems and avoid at all costs any accusations of 'negligence' on the part of the caregiver.

13/1 INTERVENTIONS TO PROMOTE PSYCHOSOCIAL SUPPORT OF INFANTS AND CHILDREN WITH ACUTE MALNUTRITION

Some interventions promoting psychosocial support are common to all health care facilities while some may apply to specific types of health facility. Examples of interventions are described below.

13/1/1 Interventions common to all health facilities screening and treating acute malnutrition

Ensure staff are trained in psychosocial support at all Screening and Treatment PHC centers

All health care providers in contact with caregivers of infants and children with acute malnutrition should be trained in recognition of potential psychosocial issues including the assessment of age appropriate IYCF feeding practices. Where possible have a designated member of staff specializing in psychosocial support so that skilled intervention during treatment and linkage to other services is made after discharge.

Psychosocial evaluation of all caregivers

Psychosocial problems may be both a cause and a result of the child having acute malnutrition. Health care providers should be aware of the linkage and offer routine screening and support for psychosocial issues.

Provide an enabling environment for psychosocial support

Health facilities should consider the following;

- Availability of equipment and personnel to provide appropriate psychosocial support services
- Provide specialized staff trained in counseling for Post-Traumatic Stress Disorder
- Provide a breastfeeding corner for caregivers to breastfeed
- Provide education on age appropriate IYCF feeding practices
- Provide education on responsive feeding and emotional stimulation
- Provide health education on positive health practices including immunization
- Provide education on positive practices such as play and stimulation for infants and children
- Provide a colorful and stimulating environment where infants and children are treated
- Provide a selection of age appropriate toys in baby-friendly spaces
- Advocate and support the formation of community based Mother Support Groups

Specific interventions by health care providers

Annex 12 and 13 offers examples of interventions that aim to promote the psychosocial well-being of all infants and children with acute malnutrition. These include:

- Positive attitude towards the caregivers of infants and children with acute malnutrition
- Avoid any blame or accusations of negligence on the part of the caregiver
- Teach and encourage responsive feeding practices
- Teach and encourage mothers to continue lactation even if the infant / child is separated
- Teach and encourage emotional stimulation practices (e.g. play / massage)
- Support breastfeeding during periods when the infant / child is breastfeeding
- Encourage relaxation sessions for caregivers
- Avoid the promotion of breast milk substitutes

13/1/2 Interventions specific to hospitals

Provide an environment that meets the criteria of the Baby-Friendly Hospital Initiative

The Baby Friendly Hospital Initiative aims to provide an environment that promotes bonding between caregiver and infant, breastfeeding and the psychosocial development of the infant.

Annex 32 provides a brief overview of the 10 steps towards creating a baby friendly hospital environment. This initiative has recently been introduced as a policy requirement for hospital accreditation in Lebanon.

Systematic use of Supplementary Suckling Technique (SST)

Re-lactation through the use of SST should be promoted systematically in the hospital setting when infants are admitted with SAM. The re-establishment of breastfeeding provides not only health and nutritional benefits but promotes the psychosocial well-being of the caregiver and the infant.

The SST should be provided not only as a technical / mechanical nutrition intervention but be supported by interventions outlined above which promote responsive feeding and emotional stimulation.

Breastfeeding groups

Prior to giving therapeutic milk feeds (whether using SST or not), breastfeeding caregivers should be encouraged to breastfeed their infant / child in a breastfeeding corner along with other caregivers. Breastfeeding groups offer the opportunity for;

- Caregivers to provide mutual support while breastfeeding
- Caregivers recently admitted to see positive effects of breastfeeding / SST
- Providing education and mutual support for responsive feeding and emotional stimulation

Play corners

An infant and child safe play corner can provide an opportunity for caregivers, infants and children to play together.

In general;

- Play corners should offer brightly colored, safe play environments
- A range of age appropriate toys should be provided for infants and children
- Caregivers can be taught how to make cheap age appropriate toys (Annex 13)
- Caregivers can offer massage and play stimulation to the infant / child

Playtime offers an opportunity for caregivers to interact socially

See Annexes 12 and 13 for principles and examples of psychosocial support and examples of simple age appropriate toys for infants and children.

CHAPTER 14 - MONITORING AND REPORTING

In order to ensure the service treating acute malnutrition is effective for the individual and at health facility level, monitoring is essential. At the core of monitoring is the capacity to collect, manage and utilize key information. While the data collected is used directly to inform the treatment of the individual, secondary data can be collected for the purposes of local and national nutrition surveillance. It is therefore most important that the data is collected and reported accurately.

14/1 INDIVIDUAL MONITORING

Monitoring the individual is important to ensure they receive the correct care according to their condition. Where transfer between health facilities is arranged, links must be well managed to ensure the continuity of care.

Individual case review at the health facility should consider;

- Admission to treatment is done correctly according to protocols
- A MUAC < 10.0cm or edema > 2+ (++) has been identified as a critical incident (see 14.2)
- An effective individual numbering system for registering cases
- Medical checks have been done when necessary
- Psychosocial assessments of caregivers are routinely used
- Appropriate medications have been prescribed
- Appetite assessment is done correctly
- Appropriate nutrition products are dispensed in the right quantities
- The treatment record is properly completed and kept in a safe filing system
- Absence and default is followed-up to encourage compliance with treatment
- Any failure to respond to treatment is acted on in a timely manner
- Transfer between health facilities is done using standard referral forms
- Cases are discharged correctly according to treatment protocols
- Cases are appropriately referred for health or social follow-up care

The appropriateness of the treatment service can be monitored by;

- Analysis of the reasons for default from information collected on defaulter forms
- Interviews with caregivers attending treatment
- Costs of treatment to the caregiver are minimized (e.g. no unnecessary lab tests or investigations)

14/1/1 Registration numbers / ID

On admission each case is given a unique registration number;

- Screening PHC registration number
- Treatment PHC registration number
- Hospital registration number
- Refugee registration number

In each case, any numbers given to the individual should be recorded on all paperwork. The relevant numbers should be noted on transfer forms between health facilities, for example:

Transfer from Screening PHC to Treatment PHC: The Screening PHC assigns its own unique registration number to the case. When the case is transferred and enrolled for treatment at the Treatment PHC then the Treatment PHC will assign its own unique registration number but all registers and treatment records will keep a note of both registration numbers.

Transfer from Treatment PHC to Hospital: The unique registration number given by the Treatment PHC is noted on the standard referral form. At the hospital, a unique hospital number is assigned when the case is admitted and all registers and treatment records should keep a note of both registration numbers (hospital and Treatment PHC).

14/1/2 Admission categories

When a child is admitted for treatment it is important to distinguish a new episode of acute malnutrition from a continuing episode. For example, if a PHC and a hospital registers a child as a 'New Admission' then while this case is a new admission to each health facility it is only one case or one episode of acute malnutrition. When examining records for secondary data, this may appear to be 2 cases of acute malnutrition, which may lead to inaccurate analysis of the information.

In the register a note should be made of whether this is a 'new case' or 'old case'. The categories of admissions are explained below.

New Admission

A new admission is recorded at the Treatment PHC or the hospital and will be recorded as a new admission by the health facility that first offers treatment for acute malnutrition. If the child is then transferred to another health facility, that health facility will admit the child and give a unique registration number but will note the child as a 'transfer' from a hospital or PHC.

Return Defaulter

After a case defaults from treatment, if they return to treatment within 3 months of the date of the last visit for treatment, then they are re-enrolled into treatment. They are given the same registration number as previously used and a note is made in the register that the case is a 'return defaulter'. If they return to treatment more than 3 months after the date of their last visit for treatment they are registered as a new admission⁴³ and given a new registration number.

Transfer from Hospital or another PHC

A case that has already been admitted and is then transferred between Treatment health facilities is recorded as 'Transfer from hospital or another PHC'. This category is not used for children or PLW who have been screened at a Screening PHC and sent for further assessment at a Treatment PHC. This category applies only to cases already registered in treatment.

14/1/3 Discharge categories

On discharge each case treated for acute malnutrition is reported according to a specific discharge category, namely;

- Cured
- Defaulted
- Died
- Discharged to another service

⁴³ The average time to spontaneous recovery or death for a case of untreated acute malnutrition varies in different contexts. Most death after default occurs within 2-3 months. A cut-off of 3 months to define a new case is estimated for Lebanon based on lower disease burden and less food insecurity than other contexts. That is, after 3 months it is likely that the same individual is experiencing a new episode of acute malnutrition.

Each category is explained below. Within each category, the hospital or PHC can add further information in the treatment record to clarify information if required.

Discharge Cured

A child or PLW is discharged cured when they reach the cured criteria set out in these guidelines. The cured criterion refers to nutritional cure. In the case of a hospital transferring a child back to the PHC for continued nutritional rehabilitation the child is reported as a 'Transfer to Treatment PHC'.

Although the child is not yet 'cured' of acute malnutrition, a 'Transfer to Treatment PHC' after stabilization is considered a positive outcome for the hospital.

Discharged Defaulted

A defaulter is a child or PLW who is absent for two consecutive visits. Ideally the first time the child is absent from a scheduled visit they should be followed up either by phone or through a home visit to encourage them to return to treatment.

If the scheduled visits are weekly and a weekly ration of RUSF / RUTF has been dispensed then '2 consecutive visits' means 2 weeks. If the scheduled visits are every 2 weeks and 2 weeks ration of RUSF/RUTF was dispensed then '2 consecutive visits' means 4 weeks. The child or PLW is noted as being a 'defaulter' on the second absence.

A child or PLW may default from treatment for a variety of reasons. It is important to follow up defaulters whenever possible to;

1. Find out if they are truly a defaulter or whether the child has died
2. If the family still live locally and the child has not died, find out the reason for default

The caregiver should be contacted by telephone or followed up through a home visit to identify the reason(s) for default for each individual caregiver.

If possible, the health care provider should try to find ways of overcoming the reason for default and encourage the defaulter to return to complete the course of treatment. Over time the reasons for default can be evaluated to see if the service delivery needs to be modified in order to make services more accessible.

If the defaulter is unable or unwilling to return for continuing treatment, the health care provider should try to refer the caregiver to other ongoing support services as appropriate to the child's medical and social situation. If the child was referred from a Screening PHC, the Treatment PHC should notify the health care providers at the Screening PHC of the outcome of treatment.

Discharged Died

A child is recorded as a death for the purposes of reporting if the child dies at any time, from any cause during treatment. Any deaths while under treatment at the PHC should be reported to the physician and health facility supervisor.

If possible the caregiver should be followed up post-mortem to find out what happened between the last visit to the PHC and the time of death. The death should be noted in the medical record as either;

1. Non-violent, Non-accidental death⁴⁴ or
2. Death through violence or accident⁴⁵

Understanding the reasons for death can help to identify what, if any, corrective actions are needed to avoid deaths while enrolled in treatment in the future.

⁴⁴ Non-violent, non-accidental death may occur due to underlying medical or nutritional status

⁴⁵ Violent or accidental death may occur, for example, due to a road accident

Discharged Transferred to another service

In some cases the treatment of the child or PLW at one health facility may need to be terminated, for example;

- The child or PLW relocates to an area closer to another Treatment PHC
- The child may require transfer to a Treatment Hospital for stabilization
- The family chooses to relocate to an area away from any Treatment PHC
- The child cannot be cured without specialized medical or surgical intervention
- The physician decides to terminate treatment

These conditions are explained below. In each case the child is discharged according to the same discharge criterion (Transfer to another service), but in each case additional information should be recorded in the register and/ or treatment record.

Transfer to another Treatment PHC

The family of a child may decide to relocate and continue treatment at another Treatment PHC. The health care provider can facilitate this process by;

- Provide a discharge summary detailing the treatment received prior to transfer
- Provide a standard referral form for transfer to another PHC (Annex 10)
- Telephone the health care provider at the other PHC to tell them to expect the transfer
- Arrange a scheduled appointment (ideally within 7 days of transfer)
- Provide enough RUTF to last until the next appointment at the other PHC
- Provide the caregiver with any counseling or information required for transfer

Transfer to Treatment Hospital

A child may require transfer to hospital for any medical complications that may occur during treatment. The health care provider should

- Give the first dose of oral antibiotics (Amoxicillin / Ampicillin 50mg /kg)
- Give 50 ml of 10% sugar water orally if child is conscious (1 teaspoon sugar in 50 ml)
- Advise caregiver to keep the child warm with skin to skin contact and keep child covered
- Arrange transport by ambulance. Do not send child by public transport
- Complete appropriate referral slip indicating reasons for transfer and medical care given
- If possible, telephone the emergency room medical staff and tell them of the transfer
- Ensure the contact details of the caregiver have been noted down for follow up later

Transfer to a Non-Treatment Hospital

A child may require specialized medical or surgical interventions not available at the Treatment Hospital (e.g. correction of a congenital heart defect). If a child is transferred to a Non-Treatment hospital, the Treatment hospital and/or Treatment PHC should facilitate the continued nutritional support of the child as appropriate to the child's condition.

Transfer to another PHC or support service

A physician may decide to terminate treatment of acute malnutrition for ethical medical reasons (for example, further treatment is considered distressing or futile). In such a situation the child should be referred to ongoing support services as for children discharge as cured.

If the child has been referred from a Screening PHC the follow up care after discharge can be done through that PHC if it is more convenient for the caregiver and child. The child should be transferred back to the referring Screening PHC with the same transfer procedures used for 'Transfer to another treatment PHC' above except that RUTF is not dispensed.

14/2 HEALTH FACILITY REPORTING

Screening

The total number of children screened and the number of children or PLW with acute malnutrition are identified and reported on the PHC monthly reporting form (Annex 33).

It is intended that systematic screening at PHC centers and screening activities through outreach services will detect cases of acute malnutrition early. If the public awareness campaigns in combination with screening services are being effective, we should not expect to see children with a MUAC less than 10.0 cm or with advanced edema.

A critical incident should be noted when;

- A child is screened and has a MUAC less than 10.0cm
- A child has +3 (+++) edema

In cases of low MUAC or +++ edema;

- The caregiver should be interviewed to understand why the child hadn't attended the screening services until the acute malnutrition was at an advanced stage
- The effectiveness of public awareness campaigns should be reviewed
- The effectiveness of outreach screening strategies should be reviewed
- The effectiveness of systematic screening at health facilities should be reviewed

Discharge outcomes

The discharge outcomes of each case is totaled from the register each month and reported on the monthly report for the health facility. Each treatment outcome is calculated as a proportion of the total number of discharges after treatment for acute malnutrition.

Proportion Cured=Number of cured / Total number of cases discharged⁴⁶

Proportion defaulted=number of defaulted / Total number of cases discharged

Proportion died=Number of died / Total number of cases discharged

Proportion Transferred=Number of Transferred / Total number of cases discharged

14/3 PROCEDURES WHEN A CHILD / PLW FAILS TO RESPOND TO TREATMENT

A child or PLW under treatment for acute malnutrition may fail to respond to treatment at the PHC or at the hospital for a number of reasons. Typical criteria for identifying non-response in treatment of MAM are⁴⁷:

- not meeting discharge criteria after 4 months enrollment
- no weight gain after 6 weeks enrollment
- weight loss in the first 4 weeks of enrollment
- weight loss in excess of 5% while enrolled

Typical criteria for identifying non-response for in-patient treatment of SAM are⁴⁸:

- Failing to regain appetite within the first 5 days of enrollment
- Failing to start losing edema after 5 days OR edema is still present after 11 days

⁴⁶ Total number discharged = Total number cured + Total number defaulted + Total number died + Total number Transferred to another service

⁴⁷ Prof Mike Golden and Yvonne Grellety (2008). Failure to respond to treatment in supplementary feeding programmes. Field Exchange 34, October 2008. p23. www.enonline.net/fex/34/failure

⁴⁸ "Management of severe acute malnutrition in children under five - failure to respond": accessed through <http://motherchildnutrition.org/malnutrition-management/management-severe-acute-malnutrition/failure-to-respond.html> on 13-06-2016. The Mother and Child Health and Education Trust

- Not gaining more than 5g/kg/day within the first 11 days
- Not gaining more than 5g/kg/day for 3 successive days after the initial 11 days.

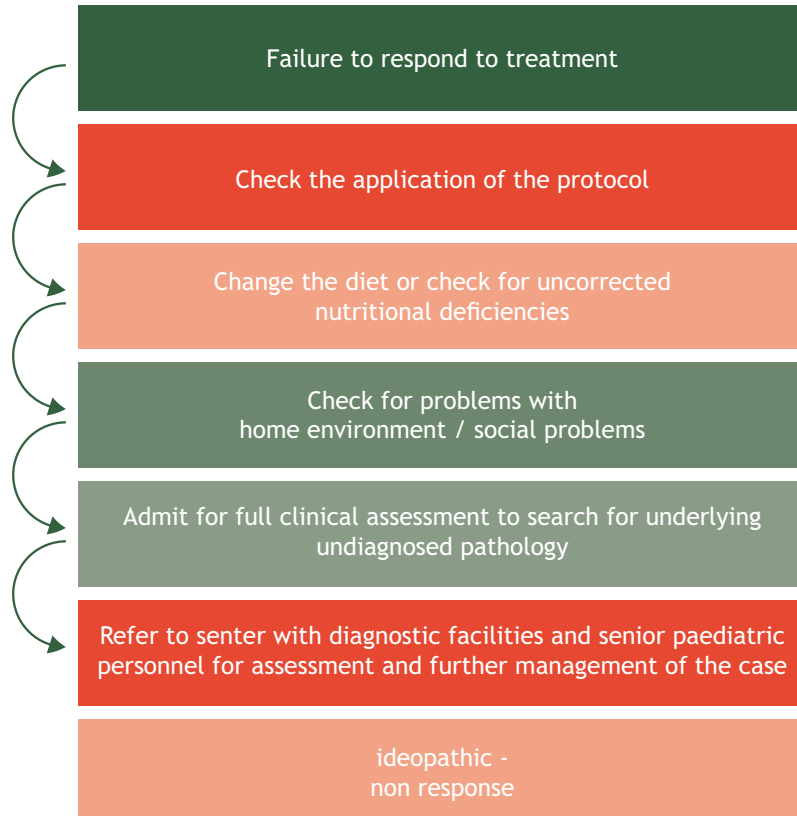
Typical criteria for identifying non-response for out-patient treatment of SAM are:

- Not gaining weight within the first 22 days (non-edematous children)
- Failing to start losing edema after 15 days OR edema is still present after 22 days
- Weight loss since enrollment (non-edematous children)
- Weight loss of 5% of body weight
- Weight loss for 2 successive visits
- Failing appetite test (at any visits to PHC center)
- Not gaining more than 2.5g/kg/day for 22 days (after loss of edema) OR after 15 days (wasting)

Children who do not respond to treatment should not be discharged without prior investigation into the likely causes of the non-response.

Figure 10 below illustrates the sequence of investigations for cases that fail to respond.

FIGURE 10 PROCEDURE FOR FAILURE TO RESPOND TO TREATMENT



Check the application of the protocol

The physician or responsible health facility supervisor should ensure that health care providers have been provided with training in these national guidelines and that protocols are applied correctly;

- Appropriate admission criteria are applied
- Appropriate medications are prescribed and administered
- Appropriate nutrition products are dispensed according to the type of acute malnutrition
- Action protocols are followed promptly when there is no weight gain or clinical deterioration

Check for uncorrected nutritional deficiencies

Commercial nutritional supplies ... from the MoPH (F75, F100, RUSF and RUTF) have the appropriate nutrient content to correct nutritional deficiencies provided it is used correctly. If nutritional deficiency is suspected;

- Ensure the nutritional product is being used correctly at home and reinforce key messages for using RUSF / RUTF
- Check what family foods are being given in addition to the RUSF / RUTF
- Ensure children with disabilities are receiving appropriate support and have adequate opportunity to eat the full ration of RUSF/RUTF
- A child with MAM can be given either;
 - Double ration (2 packets per day) of RUSF for a trial period (2 weeks)
 - A ration of RUTF according to weight for a trial period (1 week)
- A child with uncomplicated SAM already using RUTF should be transferred to hospital for treatment with RUTF or F100 under direct observation (refer according to action protocols)
- In hospital check the milk formulas are prepared to the correct prescription and dilution
- If generic formulas are being used, ensure they comply with the WHO standards for the treatment of severe acute malnutrition

Check for problems in the home environment

A number of social factors may contribute to failure to respond to treatment;

- Ensure the RUSF / RUTF is not being shared with other children / adults
- Ensure the RUSF / RUTF is being correctly stored when not in use (covered in a cool place)
- Ensure the RUTF is not being cooked in any way or directly mixed with family foods or water
- Ensure inappropriate food additives are not being used (e.g. salt, especially for SAM cases)
- Ensure the caregiver has had a psychosocial assessment including responsive feeding practices and emotional stimulation for the child
- Interview the caregiver to assess other possible problems (e.g. support for children with disabilities)

Transfer to hospital for a full clinical assessment

If previous efforts have not diagnosed and addressed the failure to respond to treatment the child may need to undergo further medical / surgical assessment to identify the reason for the failure to respond.

Idiopathic non-response

In a very small minority of cases there may be no understandable cause for the non-response to treatment. In these cases the physician in collaboration with other support services should make a decision about what treatment or support the child requires for the long-term future.

14/4 SERVICE PERFORMANCE INDICATORS

For children or PLW who stay in treatment until cure, the expected cure rate is almost 100%. In reality some children or PLW will default or die during treatment. In order to ensure the service is being provided within expected standards, service performance indicators are used as a guide to indicate when issues need to be looked at critically in order to improve performance.

14/4/1 Discharge Outcomes

The expected discharge outcomes are shown below in Table 34. These represent the minimum acceptable standard for performance.

TABLE 34 SERVICE PERFORMANCE INDICATORS FOR EXPECTED DISCHARGE OUTCOMES

DISCHARGE OUTCOME	PERFORMANCE STANDARD
Cured	Greater than 75%
Default	Less than 15%
Died (PHC)	Less than 5%
Died (Hospital)	Less than 10%*

* Deaths in hospital are expected to be marginally higher than at PHC centers since they are referred only the complicated cases with the greater risk of mortality

In Lebanon, the incidence of acute malnutrition and the numbers of cases treated at each health facility is very low. When small numbers are used, the proportions of discharge outcomes might be exaggerated. In order to ensure that standard of treatment services is adequate, even when monthly or quarterly discharge outcomes do not meet the standards, it is important to report on critical incidents.

14/4/2 Critical incidents

Critical incidents to be reported include;

- Children screened or admitted with very low MUAC (< 10.0 cm) or edema ++
- Any deaths during treatment for acute malnutrition
- Cases where treatment has been discontinued due to idiopathic non-response

CHAPTER 15- MANAGEMENT OF ACUTE MALNUTRITION IN EMERGENCIES

An important component of any response to a nutritional emergency in Lebanon is to ensure the response gears activities towards both the resident population of Lebanon and refugee population. The primary actor in any nutritional emergency is the Ministry of Public Health, MoPH, which has the prime responsibility for coordination of the type, scale and implementation of the response based on the data available at the time of the emergency and prevailing contextual factors.

Other actors who may play a major role in the response include the UN, international and local NGOs, community based organizations (CBOs) and religious groups, however all emergency nutrition responses are conducted under the coordination of the MoPH.

Strategy

Any program offering a nutritional response to an emergency should be designed in such a way as to support the integrated nutrition programming of the MoPH at primary health care and hospital levels. Programs should be designed so as to include strategies that address the underlying cause of the nutritional emergency, for example, Water, Sanitation and Hygiene (WASH), Infant and Young Child Feeding (IYCF) and psychosocial care.

Standards of care

Any non-state actors implementing programs addressing acute malnutrition must adhere to the standardized protocols of care provided in these guidelines. Other guidance may be provided by reference documents:

Infant and Young Child Feeding

Lebanese Law No. 47 of 11/12/2008 & Official Gazette No. 55 of 13/12/2008: Organizing the Marketing of Infant and Young Child Feeding Products and Tools

Ministry of Public Health, Lebanon and Ministry of Social Affairs (2012): Joint Statement on Infant and Young Child Feeding in Emergencies - Syria Crisis - Lebanon. Endorsed by UN agencies and NOGs. (See Annex 34)

Micronutrients

Joint Statement by the World Health Organization, the World Food Programme and the United Nations Children's Fund: Preventing and controlling micronutrient deficiencies in populations affected by an emergency - Multiple vitamin and mineral supplements for pregnant and lactating women and for children aged 6 to 59 months

Decision to implement

The decision to implement an emergency nutrition response is made by the MoPH. Nutritional crises are variable and the type of response required will be different for each situation depending on the prevailing context. A tentative framework for implementation strategies devised by the Global.

Nutrition Cluster for addressing MAM in emergencies gives an overview of interventions that might be considered. The use of the tool is context dependent and, if used should be interpreted in the context of any aggravating risk

factors operating in Lebanon at the time and only in coordination with the Ministry of Public Health.

Management of Resources

The strategy of any response should primarily focus on the capacity building of the health infrastructure and the MoPH human resources. The deployment of additional human resources by NGOs should be done in such a way as to support and enhance the capacity of MoPH nutrition services and should be done only with the coordination and consent of the MoPH.

Nutritional treatment products may be procured from the MoPH or through donor agencies acting in coordination with the MoPH.

Monitoring & Evaluation

All actors implementing nutrition programming will use standard MoPH forms. Reporting should be done on standard MoPH reporting formats and submitted through the local MoPH PHC or hospital network. Additional reporting may be required for donor agencies but this should not result in a parallel reporting structure.

Any program evaluations should be conducted with the inclusion of the MoPH and other agencies as designated by the MoPH. Regular and timely monitoring and evaluation reports should be submitted to the MoPH through the emergency coordination mechanism.

Table 35 below provides a summary of the role of key actors in a nutritional emergency.

TABLE 35 SUMMARY OF THE ROLE OF VARIOUS ACTORS IN A NUTRITIONAL EMERGENCY IN LEBANON

ACTOR	ROLE
Ministry of Public Health	- Technical support to implementing partners - Technical support in conducting surveys and assessments - Technical support in public health education - Provide premises, capacity building, materials, equipment, food and drugs - Coordination of health and nutrition interventions - Policy formulation - Advocacy for interventions - Advocacy for capacity building infrastructure and human resources
UN Agencies	- Assist MoPH in coordination of preparedness and response - Assist MoPH in identifying key response areas - Technical and financial support to GoL (define in intro) and implementing agencies
NGOs / CBOs	- Support GoL in emergency response - Provision of technical / logistical support to existing infrastructure - Conduct surveys and assessments in coordination with MoPH - Set up emergency programs in coordination with MoPH - Support coordination structures at national and sub-national level
Other governmental departments	- Provide other resources, for example; - Water, Sanitation and Hygiene (WASH) - Shelter and clothing - Education for children through nurseries and schools
Academic institutions	- Technical support for data analysis - Capacity building for MoPH, NGO, CBO and other ministries - Research

⁴⁹ http://www.who.int/nutrition/publications/WHO_WFP_UNICEFstatement.pdf

⁵⁰ <http://www.cmamforum.org/Pool/Resources/MAM-Decision-Tool-2014.pdf>



MANAGEMENT OF ACUTE MALNUTRITION

NATIONAL GUIDELINES 2017

ANNEXES

ANNEX 1: CONSEQUENCES OF REDUCTIVE ADAPTATION TO ACUTE MALNUTRITION	1
ANNEX 2: EXAMPLE OF INFORMATION FOR SENSITIZING COMMUNITIES ON ACUTE MALNUTRITION	2
ANNEX 3: KEY MESSAGES FOR MATERNAL, INFANT AND YOUNG CHILD FEEDING PRACTICES	3
ANNEX 4: RECOMMENDED AMOUNTS OF VARIOUS FOOD GROUPS FOR ADULTS BASED ON USDA FOOD GUIDE	6
ANNEX 5: HOW TO MEASURE MUAC FOR CHILDREN AGED 6 TO 59 MONTHS, AND PLW	7
ANNEX 6: HOW TO CHECK FOR AND CLASSIFY BILATERAL PITTING EDEMA	9
ANNEX 7: HOW TO MEASURE WEIGHT USING ELECTRONIC SCALES	10
ANNEX 8: HOW TO MEASURE HEIGHT OR LENGTH	11
ANNEX 9: WEIGHT FOR HEIGHT FOR GIRLS AND BOYS AGED 0 TO 5 YEARS	12
ANNEX 10: STANDARD REFERRAL FORMS (TO BE REPLACED WITH UPDATED VERSIONS)	13
ANNEX 11: SUMMARY OF CRITERIA FOR THE TREATMENT OF ACUTE MALNUTRITION	14
ANNEX 12: PSYCHOSOCIAL SUPPORT: PRINCIPLES AND EXAMPLES	15
ANNEX 13: AGE APPROPRIATE TOYS FOR PLAY AND STIMULATION	16
ANNEX 14: PROPERTIES OF MILK FORMULAS & NUTRITIONAL COMPOSITION OF RUTF	17
ANNEX 15: TREAT / PREVENT HYPOGLYCEMIA	20
ANNEX 16: TREAT / PREVENT HYPOTHERMIA	21
ANNEX 17: FLUID MANAGEMENT OF CHILDREN WITH SAM	22
ANNEX 18: TREAT DEHYDRATION& HYPOVOLEMIC SHOCK	24
ANNEX 19: TREAT HYPERNATREMIC DEHYDRATION	27
ANNEX 20: TREATMENT OF SEPTIC SHOCK	28
ANNEX 21: TREATMENT OF SEVERE ANEMIA	29
ANNEX 22: TREATMENT OF HEART FAILURE	30
ANNEX 23: TREATMENT FOR ABSENT BOWEL SOUNDS, GASTRIC DILATION AND INTESTINAL SPLASH	32
ANNEX 24: F75 THERAPEUTIC MILK REQUIREMENTS IN STABILIZATION PHASE FOR CHILDREN AGED 6 TO 59 MONTHS	33
ANNEX 25: REFEEDING SYNDROME, REACTIVATION SYNDROME AND OSMOTIC DIARRHEA	34
ANNEX 26: HOSPITAL BASED REHABILITATION PHASE PROTOCOLS	36
ANNEX 27: AMOUNT OF F100 TO BE GIVEN IN THE REHABILITATION PHASE FOR CHILDREN AGED 6 TO 59 MONTHS	37
ANNEX 28: AMOUNT OF DILUTED F100 (OR F75) FOR USE IN SST FOR THE INFANT AGED LESS THAN 6 MONTHS	38
ANNEX 29: SUPPLEMENTARY SUCKLING TECHNIQUE (SST)	39
ANNEX 30: HOW TO EXPRESS BREAST MILK BY HAND	40
ANNEX 31: AMOUNT OF DILUTE F100 FOR NON-BREASTFED INFANTS AGED LESS THAN 6 MONTHS	41
ANNEX 32: TEN STEPS FOR THE BABY FRIENDLY HOSPITAL INITIATIVE	42
ANNEX 33: STANDARD MONTHLY REPORTING FORM	43
ANNEX 34: OPTIMAL INFANT & YOUNG CHILD FEEDING IN EMERGENCIES IN LEBANON: A JOINT STATEMENT (NOVEMBER 2012)	

ANNEX 1: CONSEQUENCES OF REDUCTIVE ADAPTATION TO ACUTE MALNUTRITION

Cardiovascular System	• Cardiac output and stroke volume are reduced • Sudden increases in cardiovascular volume may result in heart failure • Reduced blood pressure compromises tissue/ organ perfusion
Gastro-intestinal system	• Production of gastric acid is reduced compromising the first line of immunity • Intestinal motility is decreased • Production of digestive enzymes is reduced • Pancreas is atrophied • Intestinal mucosa / microvilli are atrophied allowing invasion of pathogens through the stomach wall leading to diarrhea • Absorption of nutrients is reduced when large amounts of food are eaten • Normal gut flora is disturbed with an overgrowth of pathogenic bacteria
Liver function	• Abnormal metabolites of amino acids are produced • Detoxification of by-products of protein metabolism (ammonia) is compromised • Reduced storage of glycogen • Reduced gluconeogenesis (increasing the risk of hypoglycemia) • Bile secretion is reduced • Heat production (normally 1/3rd of body requirements) is reduced • Transferrin activity is reduced limiting capacity to absorb and reduce iron
Genitourinary system	• Renal perfusion and circulation time are reduced • Glomerular filtration is reduced • Sodium excretion is reduced • Urinary phosphate output is low • Ability to concentrate urine reduced
Immune system	• Lymph glands, tonsils and thymus are atrophied • Cell mediated T-cell immunity is severely reduced • IgA levels in secretions are reduced • Complement components are low • Production of phagocytes is reduced and do not kill ingested bacteria efficiently • Acute phase immune response is diminished • Tissue damage does not result in normal inflammation or white cell migration • Hypothalamic temperature regulation is impaired
Endocrine system	• Insulin production is reduced and glucose intolerance increased • Insulin Growth Factor (IGF-1) production is reduced • Growth hormone production is reduced • Cortisol levels increased
Circulatory system	• Plasma volume is usually normal • Red cell volume is reduced
Homeostasis	• Basal Metabolic Rate reduced by 30% • Temperature regulation is impaired producing poikilothermy • Reduced energy expenditure through reduced activity • Sodium pump activity is reduced • cell membranes are more permeable than normal, which leads to an • Increased intracellular sodium • Decreased intracellular potassium and magnesium

Skin, Muscles and Exocrine Glands	• The skin and subcutaneous fat are atrophied, which leads to loose folds of skin. • Normal signs of dehydration are unreliable; eyes may be sunken because of loss of subcutaneous fat in the orbit. • Many glands, including the sweat, tear and salivary glands are atrophied; the child has dryness of the mouth, and eyes and sweat production is reduced. • Respiratory muscles are easily fatigued; the child is lacking in energy.
Psychological	• Child may be easily irritable • Child may be lethargic • Rumination may occur after feeding • Child may experience developmental delays

ANNEX 2: EXAMPLE OF INFORMATION FOR SENSITIZING COMMUNITIES ON ACUTE MALNUTRITION

IMPORTANT MESSAGE TO ALL MOTHERS AND FAMILIES WITH CHILDREN LESS THAN 5 YEARS

A new treatment is now available at [Name of PHCC] for the treatment of children between six months and five years who are becoming thin, or who have developed swelling in the feet. The families with such children now do not have to stay in the hospital for a long time but can treat the child while he/she continues to live at home with the rest of the family.

Malnutrition can result from not eating the right type of foods, even if the child has plenty to eat. It can also occur during or following any illness in children; even a minor illness.

This is a free treatment. To see if treatment is required the child has his upper arm measured to see if he/she is thin and feet checked to see if they have begun to swell. If the arm is too thin, the child visits the PHCC closest to their home, where the measure is repeated and if correct his/her family is provided with a supply of the medicinal food called RUSF or RUTF [use local term].

The arm measurement is done with a tape similar to the measuring tape used by tailors. Many types of person can do the measurement. People are being trained in communities and health facilities in the use of the tape, so that a person who is known to the child or his family can even do the measure.

While the child is receiving treatment, the staff will also assess your child for vaccinations, to ensure the child is receiving the proper foods needed for growth, promote hygiene practices or refer you or your child for other services.

If you know a child who is very thin, or whose feet have started to swell, let his parents or guardians know about this new treatment. They can go direct to the PHCC for assessment. They may attend the PHCC at any time it is open for treatment.

This treatment is also available to mothers who are thin, if they are visibly pregnant or have a breastfeeding child aged less than 6 months. Measurement of the arm using the tape will be used to see if treatment is needed.

NB: THIS MESSAGE IS AN EXAMPLE ONLY AND MUST BE MODIFIED TO SUIT THE LOCAL CONTEXT



ANNEX 3: KEY MESSAGES FOR MATERNAL, INFANT AND YOUNG CHILD FEEDING PRACTICES

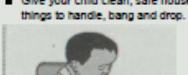
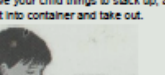
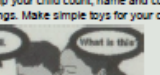
Feeding Recommendations During Sickness and Health

Feeding recommendations FOR ALL CHILDREN during sickness and health, and including HIV EXPOSED children on ARV prophylaxis

Newborn, birth up to 1 week	1 week up to 6 months	6 up to 9 months	9 up to 12 months	12 months up to 2 years	2 years and older
					
- Immediately after birth, put your baby in skin to skin contact with you. - Allow your baby to take the breast within the first hour. Give your baby colostrum, the first yellowish, thick milk. It protects the baby from many illnesses. - Breastfeed day and night, as often as your baby wants, at least 8 times in 24 hours. Frequent feeding produces more milk. - If your baby is small (low birth weight), feed at least every 2 to 3 hours. Wake the baby for feeding after 3 hours, if baby does not wake self. - DO NOT give other foods or fluids. Breast milk is all your baby needs. This is especially important for infants of HIV-positive mothers. Mixed feeding increases the risk of HIV mother-to-child transmission when compared to exclusive breastfeeding.	- Breastfeed as often as your child wants. Look for signs of hunger, such as beginning to fuss, sucking fingers, or moving lips. - Breastfeed day and night whenever your baby wants, at least 8 times in 24 hours. Frequent feeding produces more milk. - Do not give other foods or fluids. Breast milk is all your baby needs.	- Breastfeed as often as your child wants. - Also give thick porridge or well-mashed foods, including animal-source foods and vitamin A-rich fruits and vegetables. - Start by giving 2 to 3 tablespoons of food. Gradually increase to 1/2 cups (1 cup = 250 ml). - Give 2 to 3 meals each day. - Offer 1 or 2 snacks each day between meals when the child seems hungry.	- Breastfeed as often as your child wants. - Also give a variety of mashed or finely chopped family food, including animal-source foods and vitamin A-rich fruits and vegetables. - Give 1/2 cup at each meal (1 cup = 250 ml). - Give 3 to 4 meals each day. - Offer 1 or 2 snacks between meals. The child will eat if hungry. - For snacks, give small chewable items that the child can hold. Let your child try to eat the snack, but provide help if needed.	- Breastfeed as often as your child wants. - Also give a variety of mashed or finely chopped family food, including animal-source foods and vitamin A-rich fruits and vegetables. - Give 3/4 cup at each meal (1 cup = 250 ml). - Give 3 to 4 meals each day. - Offer 1 to 2 snacks between meals. - Continue to feed your child slowly, patiently. Encourage—but do not force—your child to eat.	- Give a variety of family foods to your child, including animal-source foods and vitamin A-rich fruits and vegetables. - Give at least 1 full cup (250 ml) at each meal. - Give 3 to 4 meals each day. - Offer 1 or 2 snacks between meals. - If your child refuses a new food, offer "tastes" several times. Show that you like the food. Be patient. - Talk with your child during a meal, and keep eye contact.

A good daily diet should be adequate in quantity and include an energy-rich food (for example, thick cereal with added oil); meat, fish, eggs, or pulses; and fruits and vegetables.

Recommendation for Feeding and Care for Development

Birth up to 8 months	8 up to 12 months	12 months up to 2 years	2 years and older
			
- Exclusively breastfeed as often as the child wants, day and night, at least 8 times in 24 hours. - Do not give other foods or fluids	- Breastfeed as often as the child wants. - Add any of the following - Lugaw with added oil, mashed vegetables or beans, steamed tokwa, flaked fish, pulverized roasted dills, finely ground meat, egg yolk, bite-sized fruits 3 times per day if breastfeed 5 times per day if not breastfeed	- Breastfeed as often as the child wants. - Give adequate amount of family foods such as: rice, camote, potato, fish, chicken, meat, mongo, steamed tokwa, pulverized roasted dills, milk and eggs, dark green leafy and yellow vegetables (malunggay, squash), fruits (papaya, banana) - Add oil or margarine 5 times per day - Feed the baby nutritious snacks like fruits	- Give adequate amount of family food at 3 meals a day. - Give twice daily nutritious food between meals such as: - Boiled yellow camote, boiled yellow corn, peanuts, boiled saba, banana, lino, fruits and fruits juices.
Birth up to 4 months of age	4 months to 8 months	8 months to 12 months	12 months and 2 years
			
Play: Provide ways for your child to see, hear, feel and move	Play: Give your child clean, safe house hold things to handle, bang and drop.	Play: Give your child things to stack up, and to put into container and take out.	Play: Help your child count, name and compare things. Make simple toys for your child.
4 months to 8 months Play: Have large colourful things for your child to reach for, and new things to see.	Communicate: Respond to your child's sounds and interest. Tell your child the names of things and people.	Communicate: Ask your child simple questions. Respond to your child's attempts to talk, play games like "bye".	Communicate: Encourage your child to talk and answer your child's questions. Teach your child stories, song and games.

Feeding Recommendation for a child who has PERSISTENT DIARRHEA

- If still breastfeeding, give more frequent, longer breastfeeding, day and night
- If taking other milk such as milk supplements:
 - Replace with increase breastfeeding.
 - Replace half the milk with nutrient-rich semi-solid food.
- Do not use condensed or evaporated filled milk.
- For other food, follow feeding recommendations for the child's age.



Nutrition for pregnant & breastfeeding women

- During your pregnancy, eat one extra small meal or “snack” (extra food between meals) each day to provide energy and nutrition for you and your growing baby.
- You need to eat the best foods available, including milk, fresh fruit and vegetables, meat, fish, eggs, grains, peas and beans.
- Drink whenever you are thirsty.
- Taking tea or coffee with meals can interfere with your body’s use of the foods. Limit the amount of coffee you drink during pregnancy.
- During pregnancy and breastfeeding, special nutrients will help your baby grow well and be healthy.
- Take iron and folic acid tablets to prevent anemia during pregnancy and for at least 3 months after your baby’s birth.
- Take vitamin A tablets immediately after delivery or within 6 weeks so that your baby receives the vitamin A in your breast milk to help prevent illness.
- Use iodized salt to help your baby’s brain and body develop well.
- Attend antenatal care at least 4 times during pregnancy. These check-ups are important for you to learn about your health and how your baby is growing.
- Take de-worming tablets to help prevent anemia.
- Adolescent mothers: you need extra care, more food and more rest than an older mother. You need to nourish your own body, which is still growing, as well as your growing baby’s.

Infant feeding from 0 - 6 months

- Breast milk provides all the food and water that your baby needs during the first 6 months.
 - Do not give anything else, not even water, during your baby’s first 6 months.
 - Even during very hot weather, breast milk will satisfy your baby’s thirst.
 - Giving your baby anything else will cause him/her to suckle less and will reduce the amount of breast milk that you produce.
 - Water, other liquids and foods can make the baby sick.
 - You can give medicines if your physician recommends them.
 - Exclusive breastfeeding means feeding your baby ONLY breast milk for the first 6 months.
 - Exclusive breastfeeding for the first 6 months protects your baby from many illnesses, such as diarrhea and respiratory infections.
 - When you exclusively breastfeed your baby during the first 6 months and have no menses, you are protected from another pregnancy.
 - Mixed feeding means feeding your baby both breast milk and any other foods or liquids, including infant formula, animal milks, or water.
 - Mixed feeding increases the chances that your baby will suffer from illnesses such as diarrhea and pneumonia, and from malnutrition.
 - Giving your baby foods or any kind of liquids other than breast milk including infant formula, animal milks or water before 6 months can damage your baby’s stomach. This reduces the protection that exclusive breastfeeding gives and all of the benefits that your baby gets from breast milk
 - Breastfeed your baby on demand, day and night.
 - More suckling (with good attachment) makes more breast milk.
 - Crying is a late sign of hunger. Early signs that your baby wants to breastfeed include:
 - Restlessness
 - Opening mouth and turning head from side-to-side
 - Putting tongue in and out
 - Suckling on fingers and fists
 - Let your baby finish one breast before offering the other. Switching back and forth from one breast to the other prevents the baby from getting the nutritious ‘hind milk’. The ‘fore milk’ has more water and satisfies the baby’s thirst. The ‘hind milk’ has more fat and satisfies your baby’s hunger.
 - If your baby is ill or sleepy, wake him or her to offer the breast often.
 - Do NOT use bottles, teats or spouted cups. They are difficult to clean and can cause your baby to become sick.
- Feeding the sick baby aged less than 6 months
- Breastfeed more frequently during illness, including diarrhea, to help the baby fight sickness, reduce weight loss and recover more quickly.
 - Breastfeeding also provides comfort to your sick baby. If your baby refuses to breastfeed encourage your baby until he or she takes the breast again.
 - Give only breast milk and medicines recommended by your doctor/ health care provider.
 - If the baby is too weak to suckle, express breast milk to give the baby. This will help you to keep up your milk supply and prevent breast difficulties.
 - After each illness, increase the frequency of breastfeeding to help your baby regain health and weight.
 - When you are sick, you can continue to breastfeed your baby. You may need extra food and support during this time.



Complementary feeding 6 - 9 months

- Continue breastfeeding your baby on demand both day and night. This will maintain his/her health and strength as breast milk continues to be the most important part of your baby's diet.
- Breast milk supplies half (1/2) baby's energy needs from 6 to 12 months.
- Breastfeed first before giving other foods.
- When giving complementary foods to your baby, think; Frequency, amount, thickness, variety, active /responsive feeding and hygiene.
- Frequency: Feed your baby complementary foods 3 times per day.
- Amount: Increase amount gradually to half (1/2) cup (250 ml cup; show amount in cup brought by the mother). Use a separate plate to make sure the young child eats all the food given.
- Thickness: Give pureed/mashed family foods. By 8 months baby can begin eating finger foods.
- Variety: Try to feed a variety of foods at each meal. For example;
- Animal source foods (flesh meats, eggs and dairy products)
- Staples (grains, roots and tubers)
- Legumes and seeds
- Vitamin A rich fruits and vegetables and other fruits and vegetables
- Feeding the sick baby aged more than 6 months.
- Offer the baby simple foods. Breastfeed more frequently during illness, including diarrhea, to help your baby fight sickness, reduce weight loss and recover more quickly.
- Your baby needs more food and liquids while he or she is sick.
- If your child's appetite is decreased, encourage him or her to eat small frequent meals.
- Offer the baby simple foods like porridge and avoid spicy or fatty foods. Even if the child has diarrhea, it is better for him or her to keep eating.
- After your baby has recovered, actively encourage him or her to eat one additional meal of solid food each day during the following two weeks. This will help your child regain the weight he or she has lost.
- When you are sick, you can continue to breastfeed your baby. You may need extra food and support during this time. When you are sick, you will also need plenty of liquids.

Complementary feeding after completion of 6 months -9months

- Continue breastfeeding your baby on demand both day and night. This will maintain his/her health and strength as breast milk continues to be the most important part of your baby's diet.
- Breast milk supplies half (1/2) baby's energy needs from 6 to 12 months.
- Breastfeed first before giving other foods.
- When giving complementary foods to your baby, think; Frequency, amount, thickness, variety, active /responsive feeding and hygiene.
- Frequency: Feed your baby complementary foods 4 times per day.
- Amount: Increase amount gradually to half (1/2) cup (250 ml cup; show amount in cup brought by the mother). Use a separate plate to make sure the young child eats all the food given.
- Thickness: Give finely chopped family foods, finger foods, sliced foods.
- Variety: Try to feed a variety of foods at each meal. For example;
- Animal source foods (flesh meats, eggs and dairy products)
- Staples (grains, roots and tubers)
- Legumes and seeds
- Vitamin A rich fruits and vegetables and other fruits and vegetables

Complementary feeding from 12 - 24 months

- Continue breastfeeding your baby on demand both day and night. This will maintain his/her health and strength as breast milk continues to be the most important part of your baby's diet.
- Breast milk continues to make up about one third (1/3) of the energy needs of the young child from 12 up to 24 months.
- To help your baby continue to grow strong and breastfeed, you should use a family planning method to prevent another pregnancy.
- When giving complementary foods to your baby, think; Frequency, Amount, Thickness, Variety, Active/Responsive Feeding and Hygiene.
- Frequency: Feed your young child complementary foods 5 times per day.
- Amount: Increase amount to three quarters (3/4) to one (1) cup (250 ml cup; show amount in cup brought by mother). Use a separate plate to make sure young child eats all the food given.
- Thickness: Give foods cut into small pieces, finger foods, sliced food.
- Variety: Try to feed a variety of foods at each meal. For example;
- Animal source foods (flesh meats, eggs and dairy products)
- Staples (grains, roots and tubers)
- Legumes and seeds
- Vitamin A rich fruits and vegetables and other fruits and vegetables.

ANNEX 4: RECOMMENDED AMOUNTS OF VARIOUS FOOD GROUPS FOR ADULTS BASED ON USDA FOOD GUIDE

FOOD GROUP AND SUBGROUPS	RECOMMENDED AMOUNT	EQUIVALENT AMOUNTS	EXAMPLES
Fruit Group	A servings per day	1 serving is equivalent to: - 1/2 cup fresh fruit - 1 medium fruit - 1/4 cup dried fruit - 1/2 cup of fresh fruit juice	Oranges and other citrus fruits, bananas, peaches, pears, watermelon, strawberry, dried dates, dried raisins, dried apricot, dried plums, dried figs
Vegetable Group	5 servings per day	1 serving is equivalent to: - 1/2 cup of cutup raw or cooked vegetables - 1 cup of cutup raw leafy vegetable - 1/2 cup of vegetable juice	Spinach, Jew's mallow, fava beans, lentils, beans, chickpeas, potatoes, carrots, salad vegetables such as lettuce, cabbage, cucumbers, tomatoes
Grain Group	6 servings per day	1 serving is equivalent to: - 1 slice bread (e.g. 1/4 loaf arabic bread, 1 toast, 8cm french bread) - 1 cup dry cereal - 1/2 cup cooked rice, pasta bulgur, cereal	Brown bread, markouk bread, tannour bread
- Whole grains	3 servings per day		whole rice, whole wheat, whole breakfast cereals (unsweetened), bread, toast, rice, wheat, breakfast cereals (unsweetened), ka'ak (unsweetened, unsalted), bulgur
- Other grains	3 servings per day		
Meat and Beans	2-3 servings per day	1 serving is equivalent to: - 90g cooked lean meat, poultry, fish (the size of a deck of playing cards) - 3 eggs - 3/4 cup cooked dry beans - 45g nuts or seeds	Lean meat, chicken breast, grilled or baked fish boiled egg lentil-based dishes (mujaddara) chickpeas (hommos balila) fava beans (foul moudammas) broad beans, red beans (red bean stew) unsalted nuts and seeds
Milk group	3 servings per day	1 serving is equivalent to: - 1 cup low-fat or fat-free milk, yogurt - 45g low-fat or fat-free processed cheese - 8 tablespoons of low-fat labneh	Low-fat or fat-free yogurt, low fat milk low-fat traditional white cheese akkawi, halloum, double cream, labneh low fat processed cheese (e.g. american cheese)
Oils	6 servings (6 teaspoons or 24g) per day	1 serving is equivalent to: - 1 teaspoon olive oil, canola oil or other vegetable oil - 1 tablespoon low fat mayo - 2 tablespoons light salad dressing - 1 tablespoon soft margarine	Olive oil (can be eaten raw such as in salads or with labneh, and can be used in cooking), canola oil, mayonnaise.

ANNEX 5: HOW TO MEASURE MUAC FOR CHILDREN AGED 6 TO 59 MONTHS, AND PLW



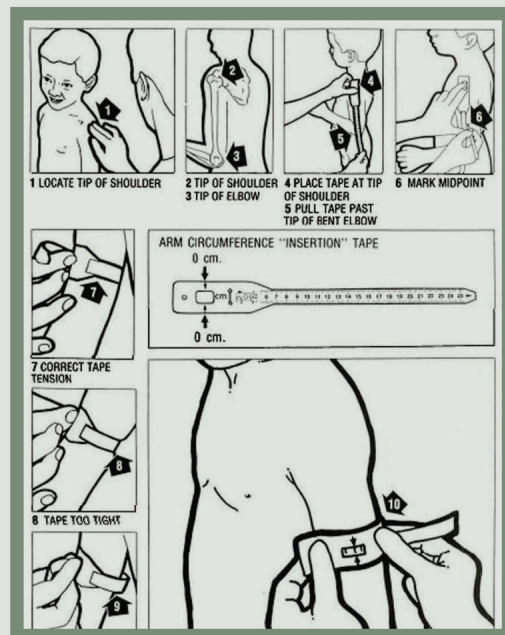
Correct tape tension



Tape too tight



Tape too loose



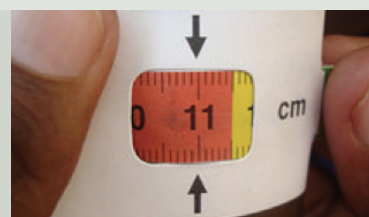
Children aged 6 to 59 months

- Ensure a MUAC tape with the correct cut-off points is used. Discard any others.

- RED MUAC less than 11.5cm Indicates SAM
- YELLOW MUAC 11.5 to less than 12.5cm Indicates MAM
- GREEN MUAC equal or greater than 12.5cm Normal

- Remove the child's clothing to expose the left arm
- Identify the mid-point of the left arm between the tip of the shoulder and tip of the elbow
- Mark the position of the mid-point with a marker pen or keep the finger over the location
- Wrap the MUAC tape around the mid-point of the left arm
- Ensure the tape lies comfortably against the skin with no gaps (too loose)
- Ensure the tape is not pinching the skin of the arm even slightly (too tight)
- Take the reading where the arrow on the tape indicates (see photograph below)

Picture indicating correct measurement of MUAC reading at the arrow



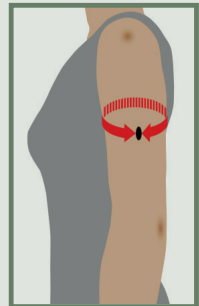
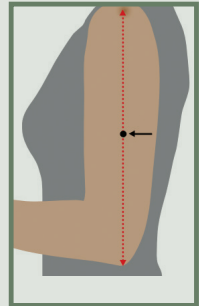
PREGNANT AND LACTATING WOMEN

- Ensure a MUAC tape with the correct cut-off points is used.

MUAC less than 23 cm Acute malnutrition

MUAC 23 cm or greater No acute malnutrition

- Expose the left arm of women
- The left arm should be bent at the elbow at a 90 degree angle, with the upper arm held parallel to the side of the body.
- Identify the mid-point of the left arm between the tip of the shoulder and tip of the elbow.
- Mark the position of the mid-point with a marker pen or keep the finger over the location.
- Ask the women to let arm hang loose to measure around the upper arm at the mid-point.
- Wrap the MUAC tape around the mid-point of the left arm.
- Ensure the tape lies comfortably against the skin with no gaps (too loose).
- Ensure the tape is not pinching the skin of the arm even slightly (too tight).
- Take the reading where the arrow on the tape indicates.





ANNEX 6: HOW TO CHECK FOR AND CLASSIFY BILATERAL PITTING EDEMA

To assess edema: Firm pressure should be applied to both feet simultaneously for a period of 3 seconds (counting “one thousand ONE, one thousand TWO, one thousand THREE”). If edema is found in the feet, this is repeated on the lower legs and hands. Assess periorbital edema visually; do not put pressure around the eyes.

Look and feel for a pit in each foot. Edema in the feet only is classified as (+) edema.
If there is no edema in the feet, STOP. Nutritional edema always spreads from the feet upwards.



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



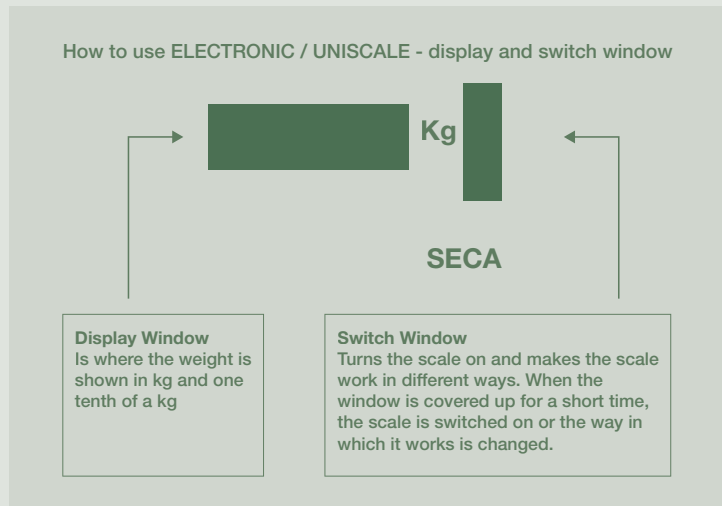
If edema is present in the feet and lower legs, check the hands. Use the same technique. If there is edema in the feet, lower legs and hands this is also classified as (++) edema



If moderate edema is diagnosed, check for edema around the eyes (periorbital edema). Do not press on the eyes to look for pitting. If there is edema above the knee this is classified as (+++) edema. Children with +++ edema are at high risk of mortality and are always treated in inpatient care.



ANNEX 7: HOW TO MEASURE WEIGHT USING ELECTRONIC SCALES



Weighing adults and children who can stand on their own

1. Place the scale on a flat surface in a well-lit area, making sure that all four of the scale's feet are on the ground.
2. Turn on the scale.
3. Remove as much clothing as possible from the child.
4. Ask the adult or child to step on the scale by herself/himself.
5. Make sure her/foot or/and clothes don't cover the display window.
6. Wait till the display shows weight. You will see the adults/ child weight in the display window.
7. Ask the adult or child to step off the scale. Make sure to wait until the display window shows (0.0) before weighing the next person.

Weighing children who are held by their mothers:

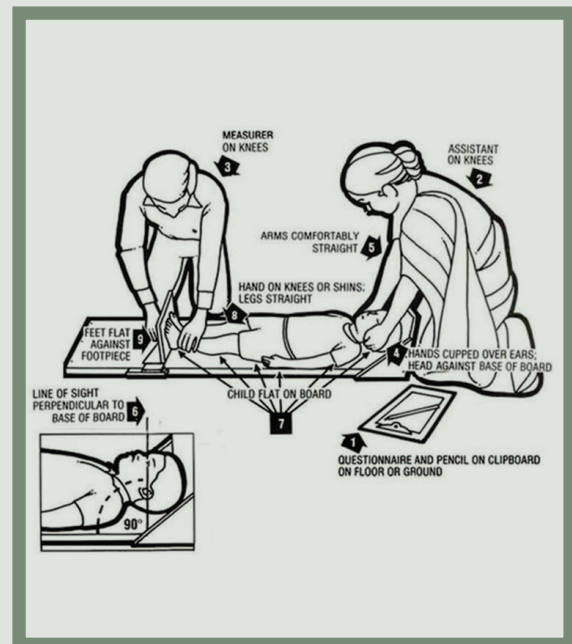
1. Turn on the scale.
2. Ask the mother to step on the scale by herself. She can give the child to you or another person to hold.
Make sure her feet or clothes do not cover the switch window. You will see the mother's weight in the display.
3. With the mother on the scale press on the (2 in 1) button then wait a couple of seconds until the display window shows (0.0).
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 and the child's weight will appear on the display window.
6. Ask the mother to step off the scale. Make sure to wait until the display window shows (0.0) before weighing the next person.

ANNEX 8: HOW TO MEASURE HEIGHT OR LENGTH

Taking a child's length

For children less than 87 cm or less than 2 year, the measuring board is placed on the ground.

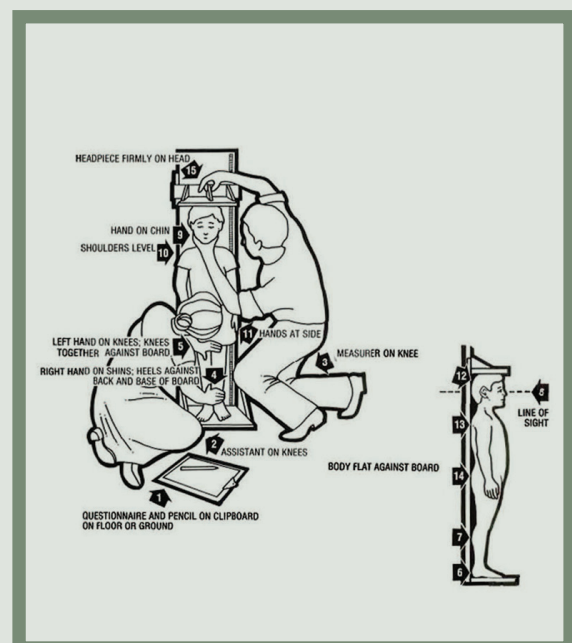
- You will need two people to take a good measurement. If there is no assistant, the mother may help by holding the head straight with eyes looking straight up.
- The child has to remove his or her footwear and accessories, then the child is placed lying down along the middle of the board.
- The assistant holds the sides of the child's head and positions the head until it firmly touches the fixed headboard with the hair lightly compressed.
- The measurer places her hands on the child's legs and then keeps one hand on the thighs to prevent flexion.
- While holding the child's legs:
 - the sliding footplate is pushed firmly against the bottom of the child's feet.
 - The footplate must be perpendicular to the axis of the board.
- The assistant should vocalize (with loud voice) the length to the nearest 0.1 cm and then record it.



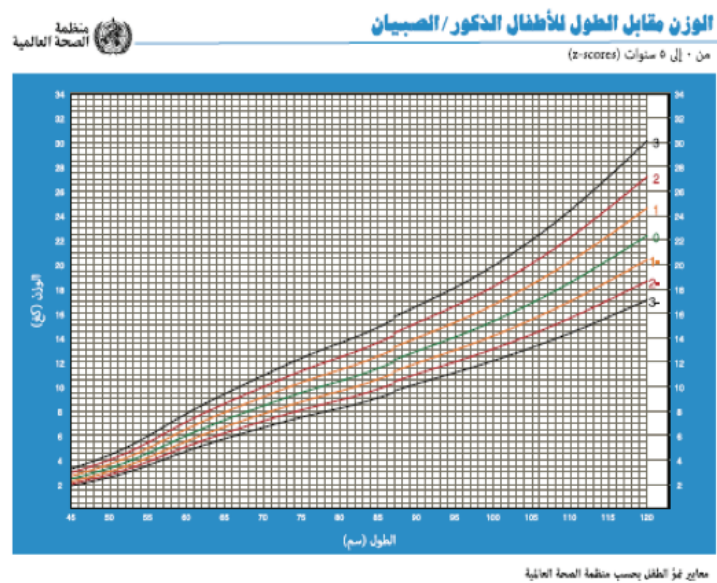
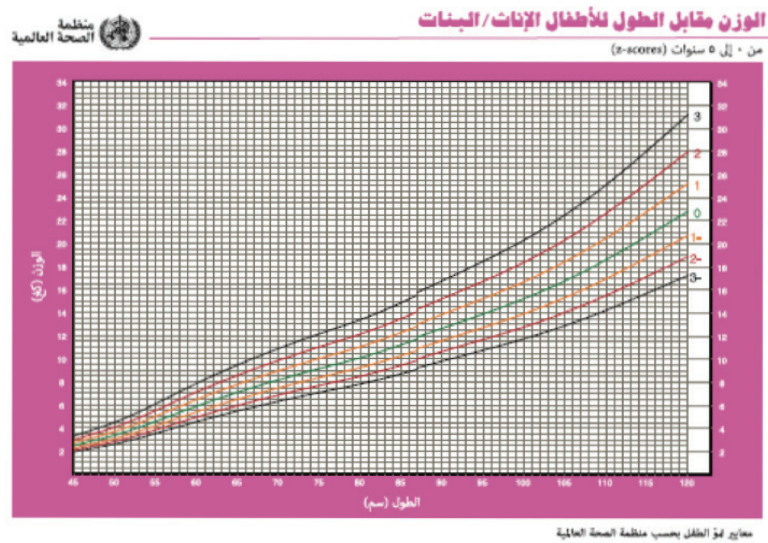
Taking a child's height

For children taller than 87 cm or if the child is older than 2 years and able to stand up independently

- The measuring board is fixed upright on level ground.
- The child has to remove his or her footwear and accessories,
- The child's foot should be flat against the footpiece.
- The child stands upright against the middle of the measuring board.
- The child's head, shoulders, buttocks are held against the board by the assistant.
- The child's ankle and knee are held against the board by the assistant.
- The measurer positions the head with eyes looking straight forward.
- The headboard is lowered against the child to rest lightly on the head. Ensure the headboard is perpendicular to the axis of the board.
- The assistant should vocalize (with loud voice) the length to the nearest 0.1 cm and then record it.



ANNEX 9: WEIGHT FOR HEIGHT FOR GIRLS AND BOYS AGED 0 TO 5 YEARS





ANNEX 10: STANDARD REFERRAL FORMS (TO BE REPLACED WITH UPDATED VERSIONS)

الجمهورية اللبنانية
وزارة الصحة العامة

نموذج إحالة حالات سوء التغذية الحاد
(مركز رعاية صحية أولية - مركز رعاية صحية أولية معالج)

رقم الإحالة: N° 15681

اسم المستفيد:	الاسم	الاب	الام	تاريخ الولادة	/ /
الجنس:	☐ أنثى	☐ ذكر	تاريخ الإحالة	/ /	
اسم المركز المحال منه:	اسم العامل (أ) الصحي (أ):				
اسم مركز رعاية صحية أولية المحال (أ) إليه:	عنوان مركز الرعاية الصحية المحال (أ) إليه:				

الوضع الصحي للطفل/ة عند الإحالة:

- الوزن: _____
- الوزن بالنسبة للطول (Z score): _____
- قياس محيط منتصف الذراع (MUAC): _____
- وجود تورم شائقي: ☐ + ☐ ++ ☐ +++

التشخيص:

- سوء تغذية حاد: ☐ معتدل ☐ شديد
- ملاحظات أخرى: _____

يونسف

الجمهورية اللبنانية
وزارة الصحة العامة

نموذج إحالة حالات سوء التغذية الحاد
(مستشفى معالج - مركز رعاية صحية أولية معالج)

رقم الإحالة: N° 19161

اسم المستفيد:	الاسم	الاب	الام	تاريخ الولادة	/ /
الجنس:	☐ أنثى	☐ ذكر	تاريخ الإحالة	/ /	
اسم المستشفى المحال منه:	اسم العامل (أ) الصحي (أ):				
اسم مركز رعاية صحية أولية المحال (أ) إليه:	عنوان مركز الرعاية الصحية المحال (أ) إليه:				

الوضع الصحي للطفل/ة عند الإحالة:

- الوزن: _____
- الوزن بالنسبة للطول (Z score): _____
- قياس محيط منتصف الذراع (MUAC): _____
- وجود تورم شائقي: ☐ + ☐ ++ ☐ +++

التشخيص:

- سوء تغذية حاد: ☐ معتدل ☐ شديد
- ملاحظات أخرى: _____

يونسف

الجمهورية اللبنانية
وزارة الصحة العامة

نموذج إحالة حالات سوء التغذية الحاد
(مركز رعاية صحية أولية معالج - مستشفى معالج)

رقم الإحالة: TR:

اسم المستفيد:	الاسم	الاب	الام	تاريخ الولادة	/ /
الجنس:	☐ أنثى	☐ ذكر	تاريخ الإحالة	/ /	
اسم المركز المحال منه:	اسم العامل (أ) الصحي (أ):				
اسم المستشفى العلاجي المحال (أ) إليه:	عنوان المستشفى العلاجي المحال (أ) إليه:				

الوضع الصحي للطفل/ة عند الإحالة:

- الوزن: _____
- الوزن بالنسبة للطول (Z score): _____
- قياس محيط منتصف الذراع (MUAC): _____
- وجود تورم شائقي: ☐ + ☐ ++ ☐ +++

التشخيص:

- سوء تغذية حاد: ☐ معتدل ☐ شديد
- ملاحظات أخرى: _____

يونسف

ANNEX 11: SUMMARY OF CRITERIA FOR THE TREATMENT OF ACUTE MALNUTRITION

Age	Management of SAM with complications at hospital	Management of SAM at PHC	Management of MAM at PHC
Child 6-59 months	Edema: +++ Combined wasting and edema* MUAC < 11.5 cm or WFH/L < -3 Z-score or Edema +, ++ Together with any one of the following; - Poor appetite for RUTF - Respirations: > 50 pm (6-12 months) > 40 pm (1-5 years) - Difficulty breathing - Fever > 39.0 C - Hypothermia < 35.5 C - Severe anemia - Unconscious, convulsions - Persistent vomiting - Severe dehydration - Extensive infection	MUAC < 11.5cm or WFH/L < -3 Z-score or Edema + or ++ AND Appetite for RUTF AND No medical complications	MUAC < 12.5cm to 11.5 cm or WFH/L < -2 to -3 Z-score AND Edema is absent AND No medical complications
Infant 0-6 months	WFH/L < -3 Z-score** or Edema of any grade (+, ++, +++) or Ineffective breastfeeding (attachment, positioning, suckling) or Recent weight loss or failure to gain weight or Any medical or social issues requiring detailed assessment or intensive support***	Infants with SAM are not managed at PHC	WFH/L < -2 to -3 Z-score AND Edema is absent AND No medical complications AND No recent weight loss AND No medical or social issues requiring detailed assessment or intensive support***
Pregnant or Lactating Mother****	Not applicable*****	Not Applicable*****	MUAC < 23 cm AND Pregnant or Breastfeeding an infant aged less than 6 months

* MUAC < 11.5cm or WFH/L < -3 z-scores combined with any grade of edema (+, ++, +++)

** Infant must be at least 45cm in length to use WHO weight for length charts

*** E.g. Disability, depression of the caregiver or other social issue

**** Treatment services for adults with SAM not required in Lebanon



ANNEX 12: PSYCHOSOCIAL SUPPORT: PRINCIPLES AND EXAMPLES

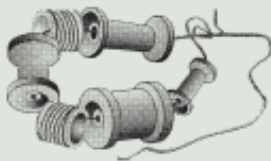
Type of stimulation	What to do	Examples
Emotional Stimulation: Interventions to improve child-caregiver interactions are important to facilitate children's emotional, social, and language development. This can be accomplished through educating caregivers on the importance of emotional stimulation	Express warmth and affection to the child in a manner consistent with cultural norms Encourage verbal and non-verbal communication between the child and caregiver Respond to the needs of the child Show appreciation for what the child manages to do	Encourage caregivers to look into the child's eyes, smile at him or her, especially during breastfeeding. Express physical affection to the child (e.g. hold and cuddle the child) Communicate with the child as much as possible. Ask the child simple questions and respond to his/her attempts to talk. Try to get a conversation going with sounds and gestures (smiles, glances). Get the child to laugh and vocalize. Teach the child words with activities. For example say "bye" when waving goodbye. Respond to the child's sounds and interests. Be attentive to his / her needs as indicated by behaviour (e.g. crying, smiling). Provide verbal praise for the child's accomplishments. Also show non-verbal signs of appreciation and approval (e.g. smiling, clapping).
Physical Stimulation: Children need a physically stimulating environment in order to develop their psychomotor and language skills and to enhance cognitive development	Ensure that the environment provides adequate sensory experiences for the child Provide play materials Provide meaning to the child's physical world Provide opportunities to practice skills	Provide opportunities for the child to see, hear and move. For example place colorful objects around the child and encourage the child to reach or crawl to them. Sing local songs and play games involving fingers and toes Inexpensive toys such as a puzzle and rattle can be made out of cardboard boxes and plastic bottles (see annex 13) Help the child to name, count and compare objects. For example, give the child plastic bottle caps and teach him/her to stack them. Teach the child to sort the bottle caps by color and learn concepts such as 'high' or 'low'. Describe to the child what is happening around him/her It is important to play with each child individually at least 15-30 minutes per day, as well as to provide opportunities for play with other children



ANNEX 13: AGE APPROPRIATE TOYS FOR PLAY AND STIMULATION

Ring on a string (from 6 months)

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



Rattle (from 12 months)

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



Drum (from 12 months)

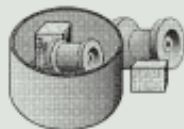
Any tin with a tightly fitting lid.

Mirror (from 18 months)

A tin lid with no sharp edges.

In-and-out toy (from 9 months)

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



Posting bottle (from 12 months)

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



Blocks (from 9 months)

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



Push-along toy (from 12 months)

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



Stacking bottle tops (from 12 months)

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



Pull-along toy (from 12 months)

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



Nesting toys (from 9 months)

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



Puzzle (from 18 months)

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



Doll (from 12 months)

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

Book (from 18 months)

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





ANNEX 14: PROPERTIES OF MILK FORMULAS & NUTRITIONAL COMPOSITION OF RUTF

Milk feed	Properties	Indications
Breastmilk	- Sodium and protein levels slightly higher than F75, less than F100-D and infant formula. Energy level similar to F75, F100-D and slightly higher than infant formula (65Kcal/ 100ml). Immunological and other health benefits - Lactose content higher than F75, F100-D or infant formula	- Suitable for initial refeeding. If availability is limited may combine breastmilk and therapeutic milk - Suitable for continuing catch-up growth in infants aged less than 6 months if adequate milk production has been re-established and if infant feeds often enough day and night.
Commercial F75	- Sodium and protein contents slightly lower than breastmilk. Renal solute load safe. - Energy concentration 75 Kcal / 100ml. percentage energy from fat lower than in breastmilk (32 v 55%) - Less phosphorous, calcium and lactose than breastmilk	- Safe initial refeeding for infants with SAM aged less than 6 months and all ages during stabilization phase. - Osmolality in commercial F75 lower than in homemade - Necessary if infant has edema - Not suitable for catch up growth at any age
Commercial F100	- Sodium, protein and lactose high. Solute load high - Energy 100 Kcal / 100ml	- Not suitable for infants aged less than 6 months - Suitable for catch up growth after 6 months of age
F100 - D	- Sodium, protein concentration lower than F100, higher than breastmilk and F75. Similar to infant formula - Solute load less than F100, slightly higher than infant formula and higher than F75 and breastmilk - Energy concentration similar to breastmilk	- Safe for initial refeeding for infants aged less than 6 months - Suitable for catch up growth of infants aged less than 6 months
Infant formula (as specified in codex alimentarius)	- Sodium and protein content higher than in breastmilk and F75, similar to F100-D - Solute load similar to F100-D - Energy concentration similar to breastmilk, F75 and F100-D - Designed as breastmilk substitute	- Safe to use in initial refeeding of infants aged less than 6 months - Suitable for catch up growth of infants aged less than 6 months
Homemade milk based feeds	- Higher sodium and protein than F75 and breastmilk; dilution only compensates partially. Accurate preparation difficult - Sugar and micronutrients must be added as well as water for dilution	- Not suitable except as a last resort if no alternative is available and then should only be used for a short time

NUTRITIONAL COMPOSITION OF RUTF

Moisture content	2.5% maximum
Energy	520-550 Kcal/100 g
Proteins	10%-12% total energy
Lipids	45%-60% total energy
Sodium	290 mg/100 g maximum
Potassium	1,110-1,400 mg/100 g
Calcium	300-600 mg/100 g
Phosphorus (excluding phytate)	300-600 mg/100 g
Magnesium	80-140 mg/100 g
Iron	10-14 mg/100 g
Zinc	11-14 mg/100 g
Copper	1.4-1.8 mg/100 g
Selenium	20-40 µg
Iodine	70-140 µg/100 g
Vitamin A	0.8-1.1 mg/100 g
Vitamin D	15-20 µg/100 g
Vitamin E	20 mg/100 g minimum
Vitamin K	15-30 µg/100 g
Vitamin B1	0.5 mg/100 g minimum
Vitamin B2	1.6 mg/100 g minimum
Vitamin C	50 mg/100 g minimum
Vitamin B6	0.6 mg/100 g minimum
Vitamin B12	1.6 µg/100 g minimum
Folic acid	200 µg/100 g minimum
Niacin	5 mg/100 g minimum
Pantothenic acid	3 mg/100 g minimum
Biotin	60 µg/100 g minimum
n-6 fatty acids	3%-10% of total energy
n-3 fatty acids	0.3%-2.5% of total energy

Note: Although RUTF contains iron, F100 does not. The composition of F100 can be found in Management of severe malnutrition: A manual for physicians and other senior health workers, WHO, 1999. <http://www.who.int/publications/guidelines/nutrition/en/>

The required standards for therapeutic milks are detailed in:

http://www.codexalimentarius.org/download/standards/394/CXG_021e.pdf and

http://www.codexalimentarius.org/download/standards/300/CXG_010e_2015.pdf

For infants with SAM but no edema, expressed breastmilk should be given and where this is not possible commercial infant formula or F75 or diluted F100 (F100-D) may be given either alone or as a supplement.

For infants with SAM and edema infant formula or F75 should be given as a supplement to breastmilk.

Undiluted F100 should not be given to infants at any time due to the risk of renal solute overload and hypernatremic dehydration.

ANNEX 15: TREAT / PREVENT HYPOGLYCEMIA

TREAT & PREVENT HYPOGLYCEMIA

Hypoglycemia is a low level of glucose in the blood (less than 3 mmol / l or less than 54 mg/dl). It is a serious condition and can cause death. It can occur together with hypothermia and both the conditions are signs of possible infection. Hypoglycemia may also occur if the malnourished child has not been fed for 6 hours or more. It is preferable to feed the child every 3 -4 hours (6- 8 times in 24 hours) during Phase 1 when the risk of hypoglycemia is greatest. Signs of hypoglycemia include lethargy, limpness, convulsions and loss of consciousness although some signs may not be present as in a normally nourished child.

If a child is able to tolerate the full amount of 6 feeds during the day, they do not need to be woken for night feeds. If all of the feed is taken during the day, hypoglycemia should not occur overnight.

- If hypoglycemia is suspected but blood glucose cannot be measured, empirical treatment should be started immediately
- Consider hypoglycemia whenever hypothermia is detected (axillary temperature less than 35.0 C; rectal temperature less than 35.5 C), or if any signs of hypoglycemia are present.

MEASURING BLOOD GLUCOSE LEVEL

If possible, testing for blood glucose level should be done using paper strips such as Dextrostix or Glucostix. When the end of the paper strip is covered with a blood sample, the strip changes color to indicate the blood glucose level. Check the expiry date of the strips; if the date is expired, the readings may not be correct. Different testing kits may have different instructions. In general, instructions are as follows:

- Touch the paper to the blood sample
- Wait for an appropriate number of seconds
- Wash the blood off the strip with running water
- Compare the test paper to the color scale provided with the strips.

In many cases the color scale for the paper strips may not clearly show the level. For example, it may say that a certain color corresponds to 2-4mmol /L. If a range is given, assume that the child's blood glucose is the lower reading (2 mmol/ l in this case).

TREATMENT

If the child is conscious give:

- 50 ml bolus of 10% glucose or sucrose solution orally or by nasogastric (NG) tube
- Feed F-75 every 30 minutes for first two hours (giving ¼ of the total recommended two hours' feed)
- Keep the child warm
- 2nd line Antibiotics.

If the child is lethargic, unconscious or convulsing, give:

- 10% glucose (5 ml/kg body weight) intravenously followed by 50 ml of 10% glucose or sucrose by NG tube to prevent rebound hypoglycemia. Then give starter F-75 as above
- If convulsion persists after giving intravenous glucose, give per rectal diazepam (0.5 mg/kg body weight)
- Keep the child warm; give antibiotics
- If the child will be given IV fluids for shock, there is no need to follow the 10% IV glucose with an NG bolus if the child will continue to receive glucose in the IV fluids.

PREVENTION OF HYPOGLYCEMIA

Frequent feeding is important in preventing both hypoglycemia and hypothermia. If possible feeds during the stabilization phase should be given every 3-4 hours including waking the child during the night if all of the feed has not been taken during the day. If staff and facilities are not available to properly feed and monitor the child overnight, the full volume of daily feed should be given in fewer feeds (5 or 6 times daily). The likelihood of hypoglycemia is reduced if the child is given the proper amount of feed during the day.

NB: If the number of feeds is reduced for whatever reason, the volume of milk given at each feed must be increased accordingly.



ANNEX 16: TREAT / PREVENT HYPOTHERMIA

TREAT & PREVENT HYPOTHERMIA

Hypothermia is a condition with low body temperature (axillary temperature is below 35°C). A rectal temperature of <35.5°C is a more reliable indicator of hypothermia. If available, a low reading rectal thermometer should be used. Check for hypoglycemia whenever hypothermia is detected.

TREATMENT

- Re-warm the child by clothing the child (including head), or covering with a warmed blanket and increasing the room temperature with a heater or lamp placed nearby, or by putting the child on the mother's bare chest (skin to skin) and covering them.
- Feed the child (or start oral rehydration for dehydration if required).
- Give 2nd line antibiotics.

PREVENTION

- Keep the child covered and away from draughts of air.
- The room temperature should be maintained at not less than 28°C if possible.
- Avoid regular bathing, keep child dry, change wet nappies, clothes and bedding.
- Avoid exposure (e.g. bathing, prolonged medical examinations).
- Let child sleep with mother/caregiver at night for warmth.
- Feed regularly, give feeds throughout the day and night during Phase 1, if possible, especially for the first 24-48 hours.



ANNEX 17: FLUID MANAGEMENT OF CHILDREN WITH SAM

FLUID MANAGEMENT OF CHILDREN WITH SEVERE ACUTE MALNUTRITION

FIGURE 1 WHO RECOMMENDATIONS ON FLUID MANAGEMENT OF CHILDREN WITH SAM

Children with severe acute malnutrition have profound disturbances of normal physiology, including electrolyte imbalances and altered fluid distribution. Children with bilateral pitting edema typically have high intracellular sodium and are therefore inclined to retain fluids. By comparison, intracellular potassium is lost to the extracellular space and total body potassium is often very low. These changes at cellular level are part of the overall adaptive responses to repeated infections and damage to cell membranes by free radicals. Children with severe wasting but without edema also have depleted intracellular and total body potassium and similarly experience adaptive physiological changes such as reduced renal and cardiac output. As a result, they are prone to fluid retention and susceptible to fluid changes and, in particular, have reduced tolerance to rapid changes in circulating blood volume.

For these reasons, fluid management is complex in all children with severe acute malnutrition. WHO recommends a cautious approach to fluid management, especially if children have diarrhea. It is frequently very difficult to assess and determine the hydration status and circulating volume of severely malnourished children.

ORAL REHYDRATION SOLUTIONS

1. Rehydration Solution for Malnutrition (ReSoMal) should be used as the standard therapy for children with SAM diagnosed with dehydration. Standard ReSoMal should not be given to children diagnosed with Acute Watery Diarrhea (AWD) or Cholera.
2. Low Osmolarity Oral Rehydration Solution (LO-ORS 75mmol/l sodium) may be used for the treatment of children with SAM but only for those who have a positive diagnosis of AWD or Cholera
3. Standard (full strength) Oral Rehydration Solution (ORS) does not have a suitable formulation for the treatment of dehydration in children with SAM.

Where ReSoMal is not available, a modified, half-strength solution of LO-ORS may be used with added potassium and glucose. Dissolve 1 sachet of standard LO-ORS in 2L of water (instead of 1L). Add 1 scoop of commercially available CMV and add 50g sugar. NB: Oral Rehydration Solutions such (ORS or ReSoMal) for the treatment of dehydration must NEVER be freely accessible to caregivers on the hospital ward.

INTRAVENOUS REHYDRATION SOLUTIONS

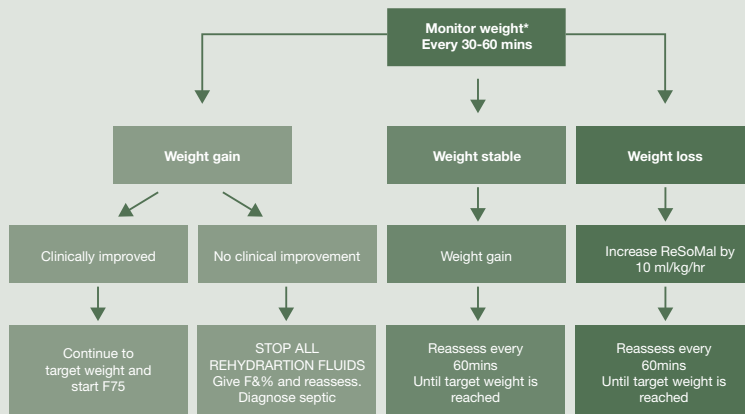
1. Ringers Lactate Solution with 5% Dextrose
2. 0.45% Saline with 5% Dextrose

MONITORING THE PROGRESS OF REHYDRATION THERAPY

The therapeutic window for rehydration therapy is narrower for a child with SAM than for a normally nourished child due to the abnormal pathophysiology. The reduced function of the cardiac, renal and abnormal cardiovascular system results in abnormal responses to an increase in fluid load. It is much easier to quickly overhydrate the child resulting in heart failure and death, as the increased fluid volume in the cardiovascular system cannot be excreted normally. A child with SAM in heart failure may not respond well to diuretic medications. Avoiding over-hydration and heart failure is easier and far preferable to treating them.

Figure 1 below describes the algorithm for monitoring rehydration therapy in a severely wasted patient with the aim of preventing fluid overload. The goal of rehydration therapy is to improve the child's clinical status. This should normally be no more than 5% of the child's body weight.

FIGURE 1 ALGORITHM FOR MONITORING REHYDRATION THERAPY IN A SEVERELY WASTED PATIENT



MONITORING THE CLINICAL STATUS DURING THE REHYDRATION OF THE MARASMIC CHILD

Every 30-60 mins assess:

- Weight of the patient (and calculate the target weight gain)
- Heart/Pulse rate, temperature, respiration rate
- Heart sounds (over-hydration may result in a gallop rhythm)
- Observe for signs of respiratory distress (chest indrawing, nasal flaring)
- Observe for vomiting or diarrhea (estimate volumes and correlate with weight loss)
- Reassess the costal margin of the liver
- Reassess the absence or presence of jugular venous distension
- Monitor for presence or absence of urine output and, if present, urine color

During rehydration therapy, breastfeeding should not be interrupted; the child should be breastfed on demand. Successful rehydration results in an improvement of the clinical status of the child with an improvement in the level of consciousness, and normal heart/pulse rate and blood pressure.

NB: Rehydration therapy should be stopped immediately if any of the following occur:

- Target weight for rehydration is achieved (start F75)
- There is development of edema (start F75)
- Jugular venous distension is observed
- Jugular veins become engorged when abdomen is pressed
- An increase in the costal margin of the liver of 1 cm or more
- Tenderness of the liver on palpation
- An increase in respiratory rate of 5 breaths per minute or more
- Increase in pulse/heart rate of 25 beats/min or more
- Development of grunting expiratory sounds/labored breathing/increased respiratory effort
- Development of pulmonary rales or crepitations on auscultation
- Development of a triple rhythm (gallop) in the heart sounds or brachial pulse

ANNEX 18: TREAT DEHYDRATION& HYPOVOLEMIC SHOCK

Diagnose / Treat dehydration without shock

Misdiagnosis and inappropriate treatment for dehydration is the most common cause of death of the severely malnourished patient. It is difficult to diagnose dehydration in children with SAM; the signs of dehydration such as non-elastic skin and sunken eyes are often present in the severely malnourished patient regardless of hydration status. It is important to take a detailed medical history and determine if there was a recent fluid loss from acute diarrhea or vomiting.

Children with SAM usually have reduced cardiac contractility and renal function. Rehydration therapy in these patients is more cautious than for a normally nourished child as the child cannot compensate for increased intravascular volumes in the same way, which may quickly precipitate heart failure.

If a child is conscious or has a nasogastric tube in place and the risk of aspiration is low, oral rehydration solutions are ALWAYS preferable to intravenous rehydration solutions. Intravenous solutions should only be used when the child is unconscious or is being resuscitated from shock. An intravenous infusion should never be present in a child who is able to take fluids orally or by nasogastric tube.

NB: The treatment of dehydration and hypovolemic shock differs for children with wasting and children with edematous malnutrition. A child with edema should not be diagnosed with dehydration although they may be hypovolemic. The rehydration of children with edema is the same as the treatment of a child with septic shock.

Use of IV lines in inpatient management of SAM

Intravenous access should be maintained only for those children in which it is indicated, i.e.:

- Children receiving intravenous antibiotics in Phase 1 / Transition Phase
- Children with decreased consciousness unable to safely tolerate oral fluids
- Children with hypovolemic / septic shock
- Children in whom oral or NG tube fluids are contraindicated.

IV access which is used intermittently (e.g. for IV antibiotics) must be flushed every 8 hours with 2ml of sterile normal saline or Heplock®. Peripheral IV access must be cleaned with alcohol at each use.

Intravenous access must not be maintained with slow infusion IV fluids “to keep the line open”. This places the child with SAM in danger of fluid overload.

All IV access must be removed when there is no indication for its use. IV access should not be left in place “just in case it is needed”. Peripheral IV access should be removed (and re-sited if needed) every 5 days or more frequently if signs of phlebitis or infection develop.

Central venous access (including peripherally inserted central cannula, PICC) should be maintained according to the physicians’ instructions.

Assess the dehydration

A diagnosis of dehydration must be made from an examination of the clinical condition with a positive history of fluid loss, which identifies the cause of dehydration (e.g. persistent vomiting or acute diarrhea). The assessment of dehydration for children with SAM can be very difficult even for a skilled health staff and can be confused with other conditions. It is essential to manage the child with extreme caution and be willing to change the diagnosis if the clinical status of the child does not improve with rehydration. There is a narrow ‘therapeutic window’ for children with SAM and dehydration; over-hydration and death can occur quickly.

Clinical signs

- The skin pinch test is an unreliable sign especially in marasmic children. A positive skin pinch test may occur in a marasmic child with a normal hydration status.
- A definite history of significant, recent fluid loss - usually frequent watery diarrhea of sudden onset (within the past few hours or days). Children with chronic diarrhea may become adapted physiologically to this state and do not require urgent rehydration therapy.
- Sunken eyes must be confirmed by an accurate history. The eyes must have become sunken in the previous few days and a positive history for the cause of dehydration identified. In dehydration this is due to contraction of the venous plexus behind the eye and occurs acutely. Sunken eyes can also occur over time in marasmic children due to a loss of fat behind the eyeball.
- A child’s urine output must also be assessed by an accurate history. The mother or caregiver should be asked whether or not the child passed urine in the last 6 hours, noting also the urine color if present.
- Visibly full superficial veins on the head, neck and limbs must be absent in a SAM child with dehydration.

- A diagnosis of dehydration should ALWAYS be a provisional diagnosis. The response to treatment must be observed before the diagnosis can be confirmed.
- Concomitant signs of dehydration may include increased heart rate, temperature and/or reduced blood pressure.

Patient's status

- Weigh the child. The weight should be monitored regularly (at least every hour) during rehydration to assess the response to treatment. Rehydration therapy should aim to replace the estimated fluid losses up to a maximum of 5% body weight.
- Check the heart rate.
- Check the respiration rate.
- Feel and note if extremities (hands and feet) are cold.
- Note the level of consciousness of the child (may range from lethargy to unconsciousness).
- Palpate the liver and mark the costal margin with indelible ink.
- Note the absence of jugular venous distension.
- Note the amount of any edema.

Treatment of the marasmic child with dehydration without signs of shock

Children with dehydration but no signs of shock should receive;

- ReSoMal* 5ml / kg every 30 mins for 2 hours, then
- Reassess every 30 mins for improved status
- ReSoMal 5-10 ml / kg every hour up to a maximum of 10 hours. ReSoMal should be alternated with F75 for prolonged treatment
- Reassess every 30 mins for improved status

* Use LO-ORS for AWD or Cholera

Diagnosis of dehydration in children with edema

Patients with bilateral edema are overhydrated and have increased total body water and increased sodium levels. Edematous patients thus cannot be dehydrated, although they are frequently hypovolemic. The hypovolemia (relatively low circulating blood volume) is due to a dilatation of the blood vessels with a low cardiac output.

Treatment of dehydration in children with edema

If a child with edema has watery diarrhea, and the child is deteriorating clinically, then the fluid lost can be replaced on the basis of 30ml ReSoMal per episode of watery stool.

The fluid management of hypovolemia for a child with edema is the same as the treatment for septic shock.

DIAGNOSIS / TREATMENT OF HYPOVOLEMIC SHOCK

In addition to the general signs for dehydration, the following signs are also present;

- Slow capillary refill in the nail beds (longer than 3 seconds) OR
- Fast or weak / absent radial / femoral pulse
- Children 2-12 months - pulse rate greater than 160 / min
- Children 1 - 5 years - pulse rate greater than 140 / min
- Restlessness or anxiety

Then hypovolemic shock is provisionally diagnosed (confirmation of the diagnosis is only made following observation of the response to treatment). If the hypovolemic shock is severe;

- Decreased level of consciousness so that the patient is semi-conscious or cannot be roused. If there is no immediate response to treatment, then assume septic shock.

NB: The differential diagnosis of hypovolemic shock and septic shock and is often very difficult in a child with SAM. In hypovolemic shock the reduced circulatory volume is 'absolute'. In septic shock the hypovolemic state may be 'relative' due to dilation of the vascular system as a result of the sepsis. If another illness such as viral infection, malaria or other severe condition is present, septic shock should be assumed. Septic shock is often seen in individuals who are immunocompromised or have hospital acquired infections. Mortality due to multiple organ failure may exceed 50%.

TREATMENT OF MARASMIC CHILDREN WITH HYPOVOLEMIC SHOCK

The box below describes the treatment for hypovolemic shock in a child with severe wasting. For children with edema the treatment is given as for septic shock.

BOX 1 TREATMENT OF HYPOVOLEMIC SHOCK IN CHILDREN WITH SEVERE WASTING

- Establish target weight for therapy
- Give intravenous solution at 15 ml / kg / hr.
- Monitor every 5-10 mins for signs of fluid overload and heart failure
- If any signs of over hydration or heart failure develop stop all IV therapy immediately
- If the child improves after the first hour, continue 15 ml / kg / hr. during the 2nd hour
- If the child is conscious, insert a NG tube and continue rehydration with ReSoMal at 10 ml / kg / hr. for 2 hours and 5-10 ml / kg / hr. for the next 6 hrs. until clinical status is normal or until target weight is reached and start F75
- If there is no improvement in clinical status after the 1st hour or the child remains in a lethargic or unconscious state, assume septic shock.

ANNEX 19: TREAT HYPERNATREMIC DEHYDRATION

HYPERNATREMIC DEHYDRATION

Hypernatremic dehydration (serum sodium concentration greater than 145 mEq/l) is common in areas with very dry atmosphere particularly if the ambient temperature is also high. It can also occur when the feeds are too concentrated (for example if the mother has been making up infant formula incorrectly).

Hypernatremia is difficult to treat safely, but is easy to prevent. Malnourished patients, particularly those in dry and hot environments, should be given continuous access to sufficient plain water.

The conventional treatment of hypernatremia is to give normal saline slowly, either orally or intravenously. However, this treatment is NOT used in SAM because sodium intake in the severely malnourished child should be restricted.

DIAGNOSIS

The first sign to appear is a change in the texture of the skin;

- The skin develops a doughy consistency.
- The eyes may be sunken.
- The abdomen frequently becomes flat and may become progressively scaphoid or wrinkled.
- Fever may develop.
- The patient may become drowsy and progress to unconscious state.
- Convulsions may follow.

If treatment for hypernatremia is not instituted, this may lead to death. The convulsions are not responsive to the usual anticonvulsants (phenobarbitone, diazepam). Failure to control convulsions with anticonvulsants may be the first indication of the underlying diagnosis.

TREATMENT

For incipient hypernatremic dehydration, i.e., an alert patient with only skin changes;

- Breastfeed the child or give breast milk. This can be supplemented with up to 10 ml/kg/hr. of 10% sugar-water in sips over several hours until thirst is satisfied. At this early stage, treatment is relatively safe.
- Give small amounts of water and have the patient drink slowly over several hours to correct the dehydration.

For developed hypernatremic dehydration, treatment should be given over 24 - 48 hrs.

If possible, measure serum sodium;

- Aim to reduce the serum sodium concentration by about 12 mmol /24 hrs. Rapid correction of hypernatremia runs the risk for death from cerebral edema.

If it is not possible to measure the serum sodium;

- Take at least 48-72 hrs. to correct hypernatremic dehydration.

Progress is assessed by serial weight measurements of the patient;

- First, put the patient in a relatively humid, thermoneutral (28° to 32° C) environment - this is the most important step.
- Weigh the patient on an accurate balance and record the weight.

The objective of treatment is to place the patient in a positive water balance of about 60 ml/kg/day over the course of treatment (assessed by weight gain), which is equivalent to 2.5 ml/kg/hr. of plain water. This amount should not be exceeded and is continued until the child is awake and alert.

For the child who is conscious, fluid replacement is given orally. If the child is semiconscious and there is no ongoing diarrhea;

- Insert an NGT and start 2.5 ml/kg/hr. 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. (Note that 5% dextrose and 10% sucrose solutions are both isotonic).
- Reweigh the patient every 2 hours.

If the weight is static or there is continuing weight loss, check the ambient temperature and correct as necessary to prevent further evaporative water losses. Then, increase the amount of sugar-water intake to compensate for additional fluid loss from heat (calculated at 2.5 ml/kg/hr. PLUS the amount of fluid to replace the additional losses).

If the weight is increasing, continue treatment until the child is awake and alert.

If there is accompanying diarrhea;

- Give 0.18% normal saline in 5% dextrose orally or by NGT.

If the child is unconscious,

- Give the same volumes of fluid (5% dextrose if there is no diarrhea and 0.18% saline in 5% dextrose if there is diarrhea) -can be given by intravenous infusion.
- Ideally, there should be an intravenous infusion pump. If not, at the very least, use a pediatric soluset 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), start feeding with F75.

ANNEX 20: TREATMENT OF SEPTIC SHOCK

DIAGNOSIS & TREATMENT OF SEPTIC SHOCK

Septic shock is caused by decreased tissue perfusion and oxygen delivery as a result of infection and sepsis. It can cause multiple organ failure and death. Children, immunocompromised individuals and the elderly are most susceptible as their immune systems cannot cope with infection as well as healthy adults do. The mortality rate from septic shock can be high.

Septic shock presents with some of the signs of dehydration, hypovolemic shock or cardiogenic shock. The differential diagnosis is often very difficult. If a child diagnosed with hypovolemic shock is not responding to treatment then septic shock should be diagnosed.

Septic shock may present as cold septic shock characterized by low cardiac output and high peripheral vascular resistance or warm septic shock characterized with low peripheral vascular resistance and variable cardiac output. Central venous pressure is typically low. If a high central venous pressure, crackles or other signs of fluid overload are present then the child should be treated for heart failure (annex 22).

If septic shock develops after admission, treatment must be carefully reviewed to determine if the treatment is the cause of the clinical deterioration.

- Review sodium intake
- Check drug dosages are adjusted for the malnourished child
- Stop any drugs which are not absolutely necessary

DIAGNOSIS OF SEPTIC SHOCK

Septic shock is diagnosed when;

- Signs of dehydration without any history of fluid loss
- Tachycardia with weak or absent radial pulses (femoral pulses may also be weak)
- Cold extremities (capillary refill time more than 3 seconds)
- Reduced level of consciousness
- Absent signs of heart failure
- Possible signs of infection (may be masked in children with malnutrition)

NB: The differential diagnosis of hypovolemic shock and septic shock is often very difficult in children with SAM. If a concomitant illness such as viral infection, malaria or other severe condition is present, septic shock should be assumed. Septic shock is often seen in individuals with immunocompromisation or hospital acquired infections.

TREATMENT OF SEPTIC SHOCK

Patients diagnosed with septic shock should immediately be given;

- Oxygen via face mask or nasal cannula
- Broad spectrum, first line / second line antibiotic
- Cefotaxime IV once daily for 3 days (100mg/kg/d on 1st day then 50 mg/kg/d)
- Add Ciprofloxacin PO TID 10 mg/kg (or Gentamicin IM OD 5mg/kg/d)
- Add Metronidazole PO or PR 10 mg/kg/d
- If no improvement in 24 hrs. add Fluconazole PO OD 3 mg/kg/d
- Conscious patients should be started on F75 (or sugar water) orally / NGT (phase 1 protocols)
- Treat / prevent hypoglycemia in unconscious patients (annex 15)
- Treat / prevent hypothermia (annex 16)
- Keep physical disturbance of the child to the minimum required to deliver emergency care.

If there is a decreased level of consciousness which is diagnosed to be due to poor cerebral perfusion;

- Whole blood transfusion 10ml/ kg over at least 3 hours
- or
- Intravenous rehydration solutions at 10 ml/kg /hr.

NB: Administration of intravenous fluids when septic shock is diagnosed must be done with extreme caution so as not to induce fluid overload. The patient should be monitored every 10 minutes for signs of clinical changes. Blood transfusion should be given within 24 hours of admission. During blood transfusion oral feeding must be discontinued. When the child regains consciousness and blood transfusion is no longer required the child may be started on F75. As soon as clinical signs have improved all intravenous fluids must be stopped.

ANNEX 21: TREATMENT OF SEVERE ANEMIA

DIAGNOSIS & TREATMENT OF SEVERE ANEMIA

When possible, the hemoglobin should be measured on admission in any child that presents with clinical signs of anemia.

Do NOT give any treatment, apart from a dose of folic acid on admission if;

- Hemoglobin is above 4g/100ml or the packed cell volume is above 12%

OR

- If the patient has been on treatment with F75 for more than 48 hours (preferably 24 hours) and less than 14 days.

The patient has severe anemia that should be treated by transfusion if;

- Hemoglobin concentration is less than 4g/100ml

OR

- The packed -cell volume is less than 12% in the first 24 hours after admission.

For the transfusion;

- 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 (Phase 1 or Transition phase).

If the facilities and expertise exist (neonatal units) it is preferable to give an exchange transfusion to severely malnourished patients with severe anemia. If a transfusion is necessary during the danger period of 48 hrs. to 14 days after starting dietary treatment or if there is heart failure with very severe anemia, then the patient cannot be given a straight transfusion and needs an exchange transfusion.

If the expertise does not exist locally, transfer the patient to a center where there are the facilities and skill to do an exchange transfusion (neonatal unit). Heart failure due to anemia is clinically different from normal heart failure; when the failure is due to anemia alone there is 'high output' failure with a hyperdynamic circulation, easily felt pulse and heartbeat and warm peripheries.

Anemia or a falling hemoglobin and respiratory distress is a sign of fluid overload and an expanding plasma volume; the heart failure is not being caused by the anemia per se; the anemia is 'dilutional' and the heart failure is caused by the fluid overload.

Extreme caution should be used in the interpretation of a low hemoglobin level and it should not be measured subsequently in most circumstances. This is to avoid an inexperienced clinician transfusing the patient during the danger period of electrolyte disequilibrium (day 2 to 14) in response to a low reading. Do not give a straight transfusion of blood or even packed cells to these patients.

ANNEX 22: TREATMENT OF HEART FAILURE

DIAGNOSIS & TREATMENT OF HEART FAILURE

SIGNS AND SYMPTOMS

Heart failure should be considered when there is:

- Physical deterioration in the presence of weight gain
- An increase in respiration rate with weight gain
- An acute increase of more than 5 breaths per minute (particularly during rehydration treatment)
- Respiration rate;
 - Greater than 50 breaths/minute in infants or
 - Greater than 40 breaths/minute in children 1-5 years
- A sudden increase in liver size (thus, it is important to mark the liver edge on the skin before starting any infusion)
- Tenderness developing over the liver
- Respiration with a “grunting” sound during each expiration
- Breath sounds indicate crepitation or rales
- Prominent neck and other superficial veins
- Engorgement of the neck veins when the liver is pressed
- Enlargement of the heart (may be very difficult to assess in clinical practice)
- Appearance of gallop or triple rhythm in the heart rate / pulse
- An acute fall in hemoglobin concentration or hematocrit

As heart failure progresses, there is either (1) marked respiratory distress with rapid pulse rate, cold hands and feet, edema, and cyanosis or (2) sudden, unexpected death. This is cardiogenic shock, and it usually occurs in the child with SAM after treatment has started.

The underlying cause may be excessive intake of sodium from the diet, rehydration fluids, or from drugs. Even if sodium intake is restricted, heart failure can still occur due to the residual sodium in the diet or the amount of sodium moving out of the intracellular space as recovery progresses. Excess sodium given during the initial treatment of dehydration can give rise to heart failure several days later when intracellular sodium enters the vascular space. There is usually weight gain.

DIFFERENTIAL DIAGNOSIS

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

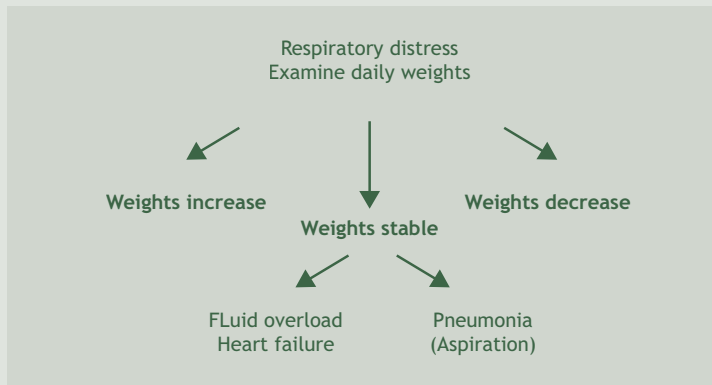
- If there is increased respiratory rate AND weight gain, heart failure should be the first consideration
- If there is increased respiratory rate with a loss of weight, pneumonia is more likely the diagnosis. Pneumonia should never be considered if there has been a gain in weight just before the onset of respiratory distress
- If there is no change in weight (fluid balance), differentiation should be made using other signs of heart failure.

Children with edema can go into heart failure even without a gain in weight. This occurs when the expanded circulation due to edema fluid is mobilized from the tissues into the vascular space.

TREATMENT

As edema fluid is mobilized (as in kwashiorkor) and sodium is moving out of the cells (in both kwashiorkor and marasmus), plasma volume expands but the volume of red cells remains constant. There is thus a **FALL IN HEMOGLOBIN** concentration. This **DILUTIONAL** anemia happens to some extent in nearly all children as they recover. A substantial fall in hemoglobin, a sign of an expanding circulation is also indicative of impending or actual volume overload with heart failure. Heart failure here is not caused by anemia per se but by the expanding blood volume resulting in heart failure. Children with respiratory distress and anemia should never be transfused.

FIGURE 2 ALGORITHM FOR THE DIFFERENTIAL DIAGNOSIS OF HEART FAILURE AND PNEUMONI



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 hypoglycemia
- Review drug regimen and reduce dose or stop those which are given as the sodium salt (see annex 28)
- Give furosemide (1 mg/kg/dose). This is generally not very effective and diuretic treatment should not be relied upon in the malnourished patient to manage heart failure
- Optional: Digoxin can be given as a single dose (5 micrograms/kg). A loading dose is not given. Use the pediatric preparation whenever possible.

ANNEX 23: TREATMENT FOR ABSENT BOWEL SOUNDS, GASTRIC DILATION AND INTESTINAL SPLASH

TREATMENT FOR ABSENT BOWEL SOUNDS, GASTRIC DILATION & INTESTINAL SPLASH

Functional ileus with bacterial overgrowth can present with findings similar to intestinal obstruction. Gram-negative bacterial translocation is usually observed across the intestine in septicemia. Gastric emptying is delayed and there may be no intestinal peristalsis. Fluid can subsequently accumulate in the intestinal lumen. These are very grave signs. This state is often accompanied by severe liver dysfunction and resembles the “grey baby syndrome” associated with chloramphenicol toxicity. When the condition develops after admission, all drugs that are potentially hepatotoxic must be discontinued. Apart from drug toxicity, it is possible that some patients develop this syndrome from super-infection by organisms which are resistant to antibiotics or from herbal medicines. Since there is no gastric emptying, nothing can be absorbed orally.

- 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 cause toxicity (including antiretrovirals)
- Give an IM injection of magnesium sulfate (2ml of 50% solution) and repeat twice daily until stool is passed and gastric residuals are reduced
- Insert an NGT and aspirate the contents of the stomach, then irrigate the stomach with isotonic clear fluid (5% Dextrose / 10% Sucrose). Infuse 50ml of the solution into the stomach and then gently aspirate all the fluid back again. Repeat this until the gastric fluid becomes clear
- Instill 5 ml/kg of sugar-water solution (10% sucrose solution) into the stomach and leave it there for one hour. Aspirate the stomach contents. If the volume retrieved is less than the amount that was introduced, return the aspirate to the stomach and give additional sugar-water solution to make a total volume of 5ml/kg
- Because gastric and esophageal candidiasis is common, instill oral nystatin suspension or fluconazole through the naso-gastric tube
- Always keep the patient warm
- Give intravenous glucose since these children are often unconscious, semiconscious or delirious (see section on hypoglycemia)
- Do not insert an intravenous drip at this stage, but monitor the patient carefully for 6 hours without giving any other treatment
- Monitor closely to see if there is any improvement in the following:
 - Intestinal function when abdominal distension has decreased; visible peristalsis is noted through the abdominal wall; bowel sounds have returned to normal; and gastric aspirates have reduced in volume
- General condition of the child.

If there is intestinal improvement:

- Start giving small amounts of F75 by NGT (half the quantities given in Annex 24). Aspirate the stomach before each feed
- If the volume of gastric residuals is more than 50% of amount instilled, decrease the amount of F75
- If the amount of aspirate is small, the volume to be fed can be gradually increased.

If there is no improvement after 6 hours:

- Consider putting up an IV drip. It is very important that the fluid given contains adequate amounts of potassium. Intravenous Potassium Chloride should be added to all solutions that do not contain potassium at a final concentration of 20 mmol/L. Use 0.18% saline in 5% dextrose (D5 0.18% saline) if it is available; otherwise use Ringer's lactate in 5% dextrose or 0.45% saline in 5% dextrose. The drip should be run VERY SLOWLY - the amount of fluid to be given should be NO MORE THAN 2 to 4 ml/kg/hr. A pediatric soluset or infusion pump should be used
- When the gastric aspirates decrease to approximately 50% of the fluid introduced to the stomach, discontinue IV treatment and continue with oral treatment.

ANNEX 24: F75 THERAPEUTIC MILK REQUIREMENTS IN STABILIZATION PHASE FOR CHILDREN AGED 6 TO 59 MONTHS

Weight of the child (Kg)	Amount of Milk per feed 8 Feeds per day	Amount of Milk per feed 6 Feeds per day
2.0 - 2.1	40ml	50ml
2.2 - 2.4	45ml	60ml
2.5 - 2.7	50ml	65ml
2.8 - 2.9	55ml	70ml
3.0 - 3.4	60ml	75ml
3.5 - 3.9	65ml	80ml
4.0 - 4.4	70ml	85ml
4.5 - 4.9	80ml	95ml
5.0 - 5.4	90ml	110ml
5.5 - 5.9	100ml	120ml
6.0 - 6.9	110ml	140ml
7.0 - 7.9	125ml	160ml
8.0 - 8.9	140ml	180ml
9.0 - 9.9	155ml	190ml
10.0 - 10.9	170ml	200ml
11.0 - 11.9	190ml	230ml
12.0 - 12.9	205ml	250ml
13.0 - 13.9	230ml	275ml
14.0 - 14.9	250ml	290ml
15.0 - 19.9	260ml	300ml

ANNEX 25: REFEEDING SYNDROME, REACTIVATION SYNDROME AND OSMOTIC DIARRHEA

Re-feeding syndrome

Re-feeding syndrome is a complex metabolic reaction that occurs when the energy or nutrient load on the body causes a rapid shift of electrolytes and fluid between intracellular and extracellular compartments in the body. The condition may arise when malnourished patients and those who have been fasting for more than one week¹ ingest food rapidly and in large amounts.

Prevention

It is necessary at the start of treatment not to provide large amounts of food intake in the malnourished state. On admission, these malnourished patients should never be force-fed amounts in excess of the diet prescribed in this protocol.

Treatment

For refeeding syndrome among patients in the recovery or transition phase:

- Return to Phase 1 of treatment and feed with F75
- Assess the child for heart failure and treat according to annex 22.

Re-activation syndrome

Reactivation syndrome occurs when a previously undiagnosed infection becomes apparent. This may occur as a result of the recovery of the immune and / or inflammatory system rather than the development of a newly acquired infection. Treatment for disease conditions which become apparent is according to national protocol except where modified by other protocols in this guideline. Prescribed drug dosages should take account of potential poor renal and hepatic function in acute malnutrition.

Osmotic diarrhea

Osmotic diarrhea results from an excess of non-absorbable and osmotically active solutes in the gut lumen. This differs from secretory diarrhea in which the activity of the mucosa exceeds its absorption capacity and may be caused by pathogens. Osmotic diarrhea is usually investigated by examination of the carbohydrates or fecal osmolar gap (FOG) in stool specimens. The FOG does not however reveal the pathological mechanism.

Osmotic diarrhea in children undergoing treatment for SAM usually occurs following a change in diet from F75 to F100 in the Transition Phase or increasing the amount of F100 between Transition Phase and Phase 2. When diarrhea occurs after a change in diet the diagnosis of osmotic diarrhea can be presumptive, however it is normal for some increase in frequency of stools to occur when the diet is increased. An increased frequency of stools without weight loss does not require any treatment. Confirmation of the diagnosis of osmotic diarrhea is made when symptoms resolve within 3 days of reducing the diet.

Diarrhea may occur during the first week of treatment with RUTF in the outpatient setting but may also be related to enteropathogens and or the use of antibiotics on admission. RUTF (and F100) contains zinc and the diarrhea normally resolves within the first week of treatment. Osmotic diarrhea should not be presumed in the outpatient setting and RUTF should not be reduced until enteropathic causes have been eliminated through treatment with antibiotics.

Prevention

Protocols for feeding in Transition Phase and Phase 2 should follow the guidance in this protocol. Osmotic diarrhea is more common when non-commercial preparations are used. Commercial F75, F100 and RUTF contain maltodextrin instead of sugar and thus have a lower osmolality.

Treatment

Treatment for osmotic diarrhea is based on a presumptive diagnosis and the condition should resolve within 3 days. If it does not resolve despite adherence to protocols, then a pathogenic cause may be presumed and treated empirically with antibiotics.

- Use commercially produced F75 / F100 where possible
- In Phase 1 maintain the required daily intake but give F75 in smaller volumes with each feed and increase to 8-12 feeds per day
- In Transition Phase return to Phase 1 using F75 milk
- In Phase 2 return to Transition Phase protocols using F100 milk.

Where osmotic diarrhea has been diagnosed, the diet in Transition Phase should be increased from 130 kcal/kg/day by 10-20 kcal/kg/day daily until the target energy intake of 200 kcal/kg/day of Phase 2 is reached. The energy intake should only be increased as long as the child remains free of further symptoms.

¹ The refeeding syndrome also occurs in obese patients who have been fasting as part of their treatment. While they are not wasted like the malnourished patient, they too have metabolically adapted to a low intake of food.



Osmotic diarrhea caused by lactose intolerance

Lactose intolerance is over diagnosed in acute malnutrition; the diarrhea is rarely a result of lactose intolerance although the clinical presentation is similar. During the standard treatment for acute malnutrition, the intolerance usually resolves due to an improvement in the gut function and increased level of lactase. Treat children for lactose intolerance only if the continuing diarrhea is preventing general improvement. Starter F-75 is a low-lactose feed. In exceptional cases, substitute milk feeds with a lactose-free infant formula². Before the child is discharged from hospital, milk-based feeds can be given to determine whether the intolerance has resolved³.

REASSESSMENT OF CHILD'S CONDITION

In any case of failure to respond or deterioration of the child's condition in any phase, a thorough reassessment is needed. The physician should consider;

- A detailed recent history
- Accuracy of previous record keeping
- Full medical examination and review of nutritional status
- Review previous medical and nutritional therapy
- Chest x-ray / laboratory investigations
- Use of un-prescribed medicines or food
- A review of the care environment (hygiene, staffing, milk preparation)
- Appropriate use and / or recalibration of measurement equipment
- Referral may be required to a specialist pediatric service.

² WHO Pocket book of hospital care for children: guidelines for the management of common illnesses with limited resources. 2nd Edition. 2013 (p140)

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

ANNEX 26: HOSPITAL BASED REHABILITATION PHASE PROTOCOLS

If a child requires nutritional rehabilitation in a hospital setting, the child may continue taking RUTF using the outpatient PHC ration or use F100 therapeutic milk. F100 is nutritionally similar to F100 but lacks the iron content of RUTF.

During the Rehabilitation Phase, the energy and protein content of the diet is increased and rapid weight gain is expected (except where a child may still be losing edema). On average the duration is 2 - 3 weeks depending on the rate of weight gain.

Medical Protocols

If it is indicated and has not already been given, deworming treatment may be given in the Rehabilitation Phase. Any continuing medications from the Stabilization or Transition Phases may be continued. No other medications are given in this phase unless indicated by a specific medical diagnosis.

Medication	Route	Dose	Prescription
Mebendazole	Oral	500 mg	Day 7 or Rehabilitation Phase

Diet

In Phase 2, the energy and protein intake of the child is increased to 200 kcal/kg/day giving F100 therapeutic milk. During Phase 2, iron is added to the therapeutic milk. The amount of milk to be given is based on weight and is shown in the table below.

ANNEX 27: AMOUNT OF F100 TO BE GIVEN IN THE REHABILITATION PHASE FOR CHILDREN AGED 6 TO 59 MONTHS

WEIGHT in Kg	F100 (6 feeds per day) in ml	F100 (5 feeds per day) in ml
< 3 KG	Do not use full strength f100 use diluted f100	
3.0 to 3.4	110	130
3.5 - 3.9	125	150
4.0 - 4.9	135	160
5.0 - 5.9	160	190
6.0 - 6.9	180	215
7.0 - 7.9	200	240
8.0 - 8.9	215	260
9.0 - 9.9	225	270
10.0 - 11.9	230	280
12.0 - 14.9	260	310

The amount of iron to be added is;

- 200 mg Ferrous Sulfate in 2 liters of therapeutic milk
- 100 mg Ferrous Sulfate in 1 liter of therapeutic milk

If smaller quantities of milk are being made, crush 100mg (1/2 iron tablet) and mix thoroughly in 10 ml of water (ensure the tablet is well crushed and leaves no sediment).

- Add 10 mg Ferrous Sulfate (1 ml of 10 ml Iron solution) in each 100 ml of therapeutic milk

Annex 27 gives the volume of F100 therapeutic milk to be given in Phase 2. Feeds should be given at least 5 times per day. The table gives milk volumes depending on whether 5 or 6 feeds per day are given.

Discharge

Discharge from the Rehabilitation Phase is based on the same criteria as for discharge from outpatient PHC rehabilitation. Discharge criteria are given in Chapter 8, table 17.

ANNEX 28: AMOUNT OF DILUTED F100 (OR F75) FOR USE IN SST FOR THE INFANT AGED LESS THAN 6 MONTHS

Weight of infant (kg)	Amount of Diluted F100 8 feeds per day
equal or less than 1.2kg	25 ml
1.3 - 1.5 kg	30 ml
1.6 - 1.7 kg	35 ml
1.8 - 2.1 kg	40 ml
2.2 - 2.4 kg	45 ml
2.5 - 2.7 kg	50 ml
2.8 - 2.9 kg	55 ml
3.0 - 3.4 kg	60 ml
3.5 - 3.9 kg	65 ml
4.0 - 4.4 kg	70 ml

To prepare the diluted F100

Add 1 small packet of F100 to 670 ml of water instead of using 500ml as usual.

If only small quantities are need and F100 has already been prepared for use in phase 2, take 100ml of F100 and add 35 ml of water.

This will produce 135 ml of diluted F100.

ANNEX 29: SUPPLEMENTARY SUCKLING TECHNIQUE (SST)

The supplementation is given using a tube the same size as n°8 NGT (a size n°5 tube can be used, but the therapeutic milk should be strained through cotton wool to remove any small particles that would block the tube).

METHOD

- Diluted F100 is put in a cup and the mother holds it
- The end of the NG tube is put in the cup
- The tip of the tube is put on the breast at the nipple and the infant is offered the breast in the normal way so that the infant attaches properly. Sometimes at the beginning the mothers find it better to attach the tube to the breast with some tape
- 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
- At first an assistant needs to help the mother by holding the cup and the tube in place. She encourages the mother confidently. Later the mothers nearly always manage to hold the cup and tube without assistance
- At first, the cup should be placed at about 5 to 10cm below the level of the nipple so the milk does not flow too quickly and distress the infant. And the weak infant does not have to suckle excessively to take the milk. As the infant becomes stronger the cup should be lowered progressively to about 30cm below the breast
- The mother holds the tube at the breast with one hand and uses the other for holding the cup. Some mothers find it more convenient if the tube is held in place with a strip of tape, but this is not normally necessary
- 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
- By far the best person to show the mother the technique is another mother who is using the technique successfully. Once one mother is using the SS technique successfully the other mothers find it quite easy to copy her
- The mother should be relaxed. Excessive or officious instructions about the correct positioning or attachment positions often inhibit the mother and make her 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
- If the therapeutic milk is changed (e.g. F75 to Diluted F100) the infant may take a few days to become used to the new taste. It is preferable to continue with the same supplementary diet throughout the treatment.

Supplementary suckling technique



This infant is suckling the breast and also getting the Diluted F100 (130ml/kg/d) using 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. Never position the cup higher than this level as the feed can flow into the child's mouth by siphoning and expose the child to danger of aspiration.

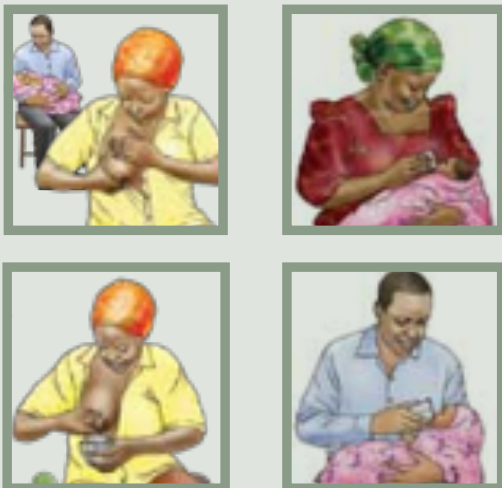
As the suckling becomes stronger the position of the cup relative to the child's mouth may be lowered.

Source: Action Contre La Faim (ACF)

ANNEX 30: HOW TO EXPRESS BREAST MILK BY HAND

If the supplementary suckling technique is not working or the skilled staff required to use the SST are not available, expressing the breast milk by hand and then feeding the infant using a cup is possible.

How to hand express breast milk and cup feed



- Make sure your hands and utensils are clean
- Wash your hands with soap and running water
- Clean and boil the container you will use to collect your breast milk
- Get comfortable
- It is sometimes helpful to gently stroke your breasts. A warm cloth may help stimulate the flow of milk
- Put your thumb on the breast above the dark area around the nipple (areola) and the other fingers on the underside of the breast behind the areola
- With your thumb and first 2 fingers press a little bit in towards chest wall and then press gently towards the dark area (areola)
- Milk may start to flow in drops, or sometimes in fine streams. Collect the milk in the clean container.
- Avoid rubbing the skin, which can cause bruising, or squeezing the nipple which stops the flow of milk.
- Rotate the thumb and finger positions and press/compress and release all around the areola
- Express one breast for at least 3 to 5 minutes until the flow slows, then express the other breast, then repeat both sides again (20 to 30 minutes total)
- Store breast milk in a clean, covered container. Milk can be stored 6 to 8 hours in a cool place and up to 72 hours in the back of the refrigerator
- Give baby expressed breast milk from a cup. Bring cup to the baby's lower lip and allow baby to take small amounts of milk, lapping the milk with his or her tongue. Do not pour the milk into baby's mouth
- Pour just enough breast milk from the clean covered container into the feeding cup
- Bottles are unsafe to use because they are difficult to wash and can be easily contaminated
- Continue with care protocols as described above as if the child was breastfed by SST
- When the child is gaining weight, give breastfeeding counseling and attempt to re-establish breastfeeding.

ANNEX 31: AMOUNT OF DILUTE F100 FOR NON-BREASTFED INFANTS AGED LESS THAN 6 MONTHS

Weight of the infant	Stabilization Phase 8 feeds per day (ml)	Transition Phase 8 feeds per day (ml)	Rehabilitation Phase 6 feeds per day (ml)
Equal or less than 1.5 kg	30	40	60
1.6 - 1.8 kg	35	45	70
1.9 - 2.1 kg	40	55	80
2.2 - 2.4 kg	45	60	90
2.5 - 2.7 kg	50	65	100
2.8 - 2.9 kg	55	75	110
3.0 - 3.4 kg	60	80	120
3.5 - 3.9 kg	65	85	130
4.0 - 4.4 kg	70	95	140

NOTE: Amounts of F75 for infants with edema are the same as in the table above

To prepare the diluted F100

Add 1 small packet of F100 to 670 ml of water instead of using 500ml as usual.

If only small quantities are need and F100 has already been prepared for use in Phase 2, take 100ml of F100 and add 35 ml of water. This will produce 135 ml of diluted F100.

ANNEX 32 TEN STEPS FOR THE BABY FRIENDLY HOSPITAL INITIATIVE

Step 1 Have a written breastfeeding policy that is routinely communicated to all staff

Step 2 Train all health care providers in skills necessary to implement this policy

Step 3 Inform all pregnant women about the benefits and management of breastfeeding

Step 4 Help mothers initiate breastfeeding within half an hour of birth

Step 5 Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants

Step 6 Give newborn infants no food or drink other than breast milk unless medically indicated

Step 7 Practice 'rooming-in'. Allow mothers and infants to remain together 24 hours a day

Step 8 Encourage breastfeeding on demand

Step 9 Give no artificial teats or pacifiers (dummies or soothers) to breastfeeding infants

Step 10 Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic

ANNEX 34: OPTIMAL INFANT & YOUNG CHILD FEEDING IN EMERGENCIES IN LEBANON: A JOINT STATEMENT (NOVEMBER 2012)

This is a call for the support for appropriate infant and young child feeding in the current refugee situation in Lebanon, and caution about unnecessary and potentially harmful donations and use of breast-milk substitutes

During emergencies, the risks for morbidity and mortality among under-five year old children are generally higher than other age groups, particularly due to their higher vulnerability to the combined impact of increased incidence of communicable diseases and diarrhea and increased rates of under-nutrition. The most effective and fundamental measure to prevent malnutrition and mortality among infants and young children is to ensure their optimal feeding and care.

Exclusive breastfeeding of infants during the first six months, with no introduction of other food or drinks including water, is the ideal natural nutrition, as it meets the nutritional requirements of the infant and provides valuable protection from disease and infection. After six months, introduction of adequate and safe complementary foods, IN ADDITION to breast milk, is necessary for the infant's increasing nutritional requirements.

RECOMMENDATIONS

1. Exclusive Breastfeeding for the first six months.

Rationale - Protecting and supporting exclusive breastfeeding in normal situations and particularly in emergencies is important because:

- Risks of infections are higher during emergencies. Breastfeeding provides a protective measure against the increased risks of illness among infants during emergencies.
- Stress, overcrowding and lack of privacy may temporarily disrupt breastfeeding or make it difficult to accomplish.
- Providing infants with breast milk substitutes (BMS) in an emergency increases the risk of illness and mortality, as hygiene and sanitation conditions as well as access to clean water are usually limited.

Note: Breastfeeding also provides major benefits for the mother, the first of which is protection from breast, uterine, and ovarian cancer, type 2 diabetes, heart diseases, high blood pressure, and osteoporosis.

Action- To protect breastfeeding practices:

- Encourage and support mothers to continue breastfeeding.
- Provide "safe havens" for mothers to continue exclusive breastfeeding and/or re-lactation.
- Provide appropriate nutritious food and water for the lactating mother.
- Provide support for re-lactation when necessary.
- Find among population groups lactating women willing to breastfeed orphans or unaccompanied infants if culturally appropriate.

Conditions when replacement feeding is necessary:

- When a child is orphaned - and wet-nursing is not possible or culturally accepted.
- When a child is temporarily or permanently separated from mother.
- When the mother is unable to breastfeed for accepted medical reasons (according to WHO and UNICEF standards).
- When mothers have stopped breastfeeding and re-lactation efforts have failed under the supervision of a trained health worker.

Guidelines to follow for replacement feeding in emergencies - according to the International Code of Marketing of Breast-milk Substitutes (BMS) and the World Health Assembly resolutions:

- A general distribution should NEVER include breast-milk substitutes or any other milk products.

BMS should only be provided to infants with exceptional conditions who cannot or should not breastfeed (as per WHO and UNICEF standards which are adopted by the National Program for IYCF). Individual case assessments should be conducted by personnel who have received training in infant and young child feeding in consultation with health and nutrition personnel.

- Organizations must NEVER accept unsolicited donations of ANY milk products.

- The milk product should conform to the Codex Alimentarius standards for labeling in the appropriate language according to the International Code of Marketing of Breast-milk Substitutes and Lebanese law 47/2008.

- In exceptional cases when use of infant formula is indicated, the infants' caregiver(s) should receive training on how to properly handle the formula. Caregivers should be encouraged and taught to feed with a cup and spoon.

- Infant formula should only be sourced and distributed when there is access to adequate clean water, when resources are available to continuously provide infant formula and to prepare formula safely, with family support and access to health services.

- The use of infant feeding bottles and artificial teats in emergency settings should be actively discouraged.

2. Complementary Feeding

Rationale - After six months of age, infants' requirements increase beyond what is provided by breast milk alone, and therefore infants should receive complementary foods IN ADDITION to breast milk.

- The complementary foods should be age appropriate, nutritionally adequate, safely prepared and continuously provided.
- Agencies should encourage use of local products and avoid commercially marketed products.

3. Key References:

- International Code of Marketing of Breastmilk Substitutes and subsequent relevant World Health Assembly Resolutions. WHO (1981). Available at: www.unicef.org/nutrition/files/nutrition_code_english.pdf
- Operational Guidance on Infant and Young Child Feeding in Emergencies, v2.1, Feb2007 Available at: www.enonline.net
- UNHCR Policy Related to the Acceptance, Distribution and Use of Milk Products in Refugee Settings, revised edition, UNHCR (2006). Available at: www.ibfan.org
- Module 2 on Infant Feeding in Emergencies, v1.1, Dec 2007, for health and nutrition workers in emergency situations. Available at: www.enonline.net/ife

4. For more information please contact:

Ministry of Public Health,
Infant and Young Child Nutrition Program,
Beirut: iycfprogramleb@gmail.com



MANAGEMENT OF
ACUTE MALNUTRITION
NATIONAL GUIDELINES 2017



REPUBLIC OF LEBANON
MINISTRY OF PUBLIC HEALTH

unicef | for every child