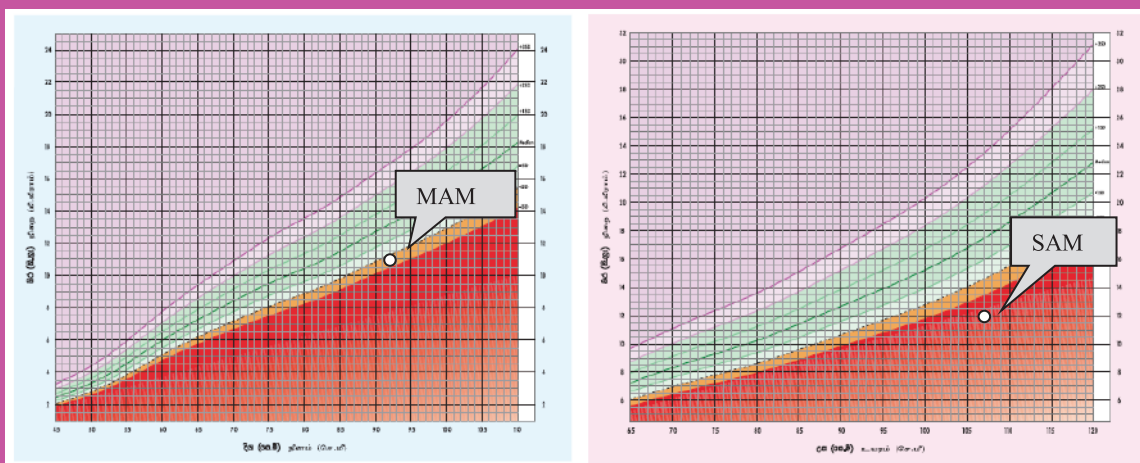


Management of Severe and Moderate Acute Undernutrition

of children under five years of age

Manual for Health Workers in Sri Lanka



MINISTRY OF HEALTH, NUTRITION AND INDIGENOUS MEDICINE

SRI LANKA

2019



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PREFACE

Sri Lanka has achieved substantial advances in the area of maternal and child morbidity and mortality reduction. However undernutrition remains a significant public health problem among women and children. The gravity of child undernutrition is that it prevents children from reaching their full potential for growth and development. At present approximately 15% of children below 5 years of age suffer from wasting (weight-for-height below -2 SD) with 3% having severe wasting (weight-for-height below -3SD) (DHS 2016). These children are considered to be at risk of severe impairment of growth and psychosocial development and susceptibility to infection even though it is not depicted in mortality rates of the country.

As a measure of secondary prevention of wasting among children below 5 years this manual was first developed in year 2007 to serve as a guideline for healthcare personnel on management of children under five years of age with moderate and severe acute undernutrition in hospitals and community settings. The present revision in 2017/18 intends to further strengthen and streamline these interventions by adapting it to the present clinical scenarios and changing socio economic and cultural context of the country.

Considering the above all health care personnel both in preventive and curative sectors are instructed to abide by these guidelines in the management of moderate and severe acute undernutrition among children below 5 years of age to ensure and enhance promotion of growth and development of our children.

Dr. Anil Jasinghe

Director General of Health Services

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Management of Severe Acute Undernutrition and Moderate Acute Undernutrition: Manual for Health Workers

1. PREAMBLE

Undernourished children are much more likely to contract illnesses, with or without complications, than their well nourished counterparts. With appropriate nutrition management in hospitals, field clinics and homes, and with regular follow-up, growth and development of many children can be improved.

The aim of this manual is to provide simple, specific and practical instructions for the management of children suffering from **severe acute undernutrition** (SAM) defined as severe wasting (weight-for-height < -3 z-scores of the WHO child growth standards median*), the presence of bilateral pitting oedema (a sign of kwashiorkor), or both and moderate acute undernutrition (MAM) defined as moderate wasting (weight-for-height between < -2 and -3 z-scores of the WHO child growth standards median*).

The manual also gives guidelines on the use of “**Ready-to-use Therapeutic Food**” (RUTF) and therapeutic milks “Formula100[®]” (F100) and “Formula 75[®]” (F75). RUTF is a high-energy, mineral-and-vitamin enriched therapeutic food, which is recommended by WHO for the treatment of severe undernutrition. Examples for commercial forms of RUTF are BP 100[®] (a compressed dry form of food), and Plumpy nut[®] (an oil based-paste or spread).

2. TARGET GROUP

The target group for nutrition rehabilitation is children aged 0-59 months with severe acute undernutrition (SAM) and moderate acute undernutrition (MAM) as defined above.

3. OBJECTIVES

The overall objective is to improve the nutritional status of children with SAM and MAM through hospital care (both outpatient and in patient) and proper care and follow up in the community thereafter.

* Mid Upper Arm Circumference (MUAC) to be used in case of debilitated and/ or bed ridden patients where assessment of weight for height is difficult; $<115\text{mm}$ SAM, 115 to $<125\text{mm}$ MAM

4. IDENTIFICATION OF CHILDREN WITH SEVERE ACUTE UNDERNUTRITION IN THE COMMUNITY

4.1 Case detection

- o At the field weighing centre conducted by the Public Health Midwife (PHM)
- o During routine visits to the field Child Welfare Clinics (CWC) and visits to Nutrition Clinics of the Medical Officer of Health (MOH)
- o During home visits the PHM will be engaged in active case finding and refer children for screening to the field weighing centre or the CWC
- o When children are brought to a hospital for other services (e.g. treatment of illnesses, referred for specialised care or immunization etc)

4.2 Screening procedure

- o When children between 0 to 59 months are brought for growth monitoring follow the below steps:
 - Measure weight with a spring balance scale if it is at the field weighing centre. For infants especially during the first 6 months the use of a beam balance scale in the clinic is recommended. However the beam balance scale can be used till the infant is about one year old. For older children a spring balance scale can be used (refer annex 1)
 - Length should be measured till 2 years of age using a length board. From the age of two years, height should be measured with a height board (Refer annex 2).
 - Children under below categories (who are suspected of having acute undernutrition (wasting)) should be measured for their length/height at the CWC with out delay, values correctly plotted in the weight for length/height chart (annexes 3a & 3b) and degree of wasting assessed and if below -2SD referred to the MOH.
 - i. Moderate and severe underweight (weight for age less than -2SD i.e. children who are in the orange or red zone in the weight for age graph in the Child Health and Development Record - CHDR) or
 - ii. Weight loss or flattening of weight immediately on detection or in adequate weight gain for 2 consecutive weight measurements for children in the green zone (+2SD to -2SD in the weight for age graph in the CHDR) or
 - iii. Bilateral pitting oedema*

** Oedema should be checked by applying thumb pressure for 3 seconds on both feet. If a shallow print persists on both feet, then the child has bilateral pitting oedema (since weight measurements of these children will be misleading due to oedema PHM should refer these children to the MOH immediately*

- Children should be seen by the Medical Officer conducting the clinic to confirm severe acute undernutrition. Weight-for-length / height chart in the CHDR should be applied for these children. If weight for length/height falls within the;
 - o red zone (SAM) - they should be referred to hospital nutrition clinic/paediatrician by the Medical Officer of Health (MOH) for SAM management.
 - o orange zone (MAM) - MOH to apply MAM guideline and manage the child at CWC/ nutrition clinic of MOH.
 - o green zone- MOH to assess the growth problem and manage accordingly with close follow up at routine growth monitoring sessions.

4.3 Referral

- o Children who are diagnosed with severe acute undernutrition should be referred immediately to a hospital.
 - The special referral form (pink colour Nutrition Rehabilitation Card - NRP card) should be used for this purpose (annex 5). The referral should be indicated in the CHDR referral section also for future reference. This special referral card will get direct access to the paediatric clinic/hospital nutrition clinic by passing the OPD. This card will serve for both referral and treatment follow up. Therefore it will be kept with the patient together with the CHDR (clipped to the back cover of CHDR) to be produced at each visit to the hospital.
 - If a Hospital Nutrition Clinic is available it should function as the central coordinating point, referrals from the MOH should be directly sent to the Hospital Nutrition Clinic conducted by a Medical Officer with MSc Human Nutrition.
 - If a Hospital Nutrition Clinic is not available the MOH should directly refer the child to the paediatrician to be seen at the paediatric clinic.
 - Infants less than 6 months of age with SAM should be directly referred to a paediatrician for assessment and inward management if required.

Diagram 1 – Growth trends in Weight for age chart which need assessment of weight for length/height

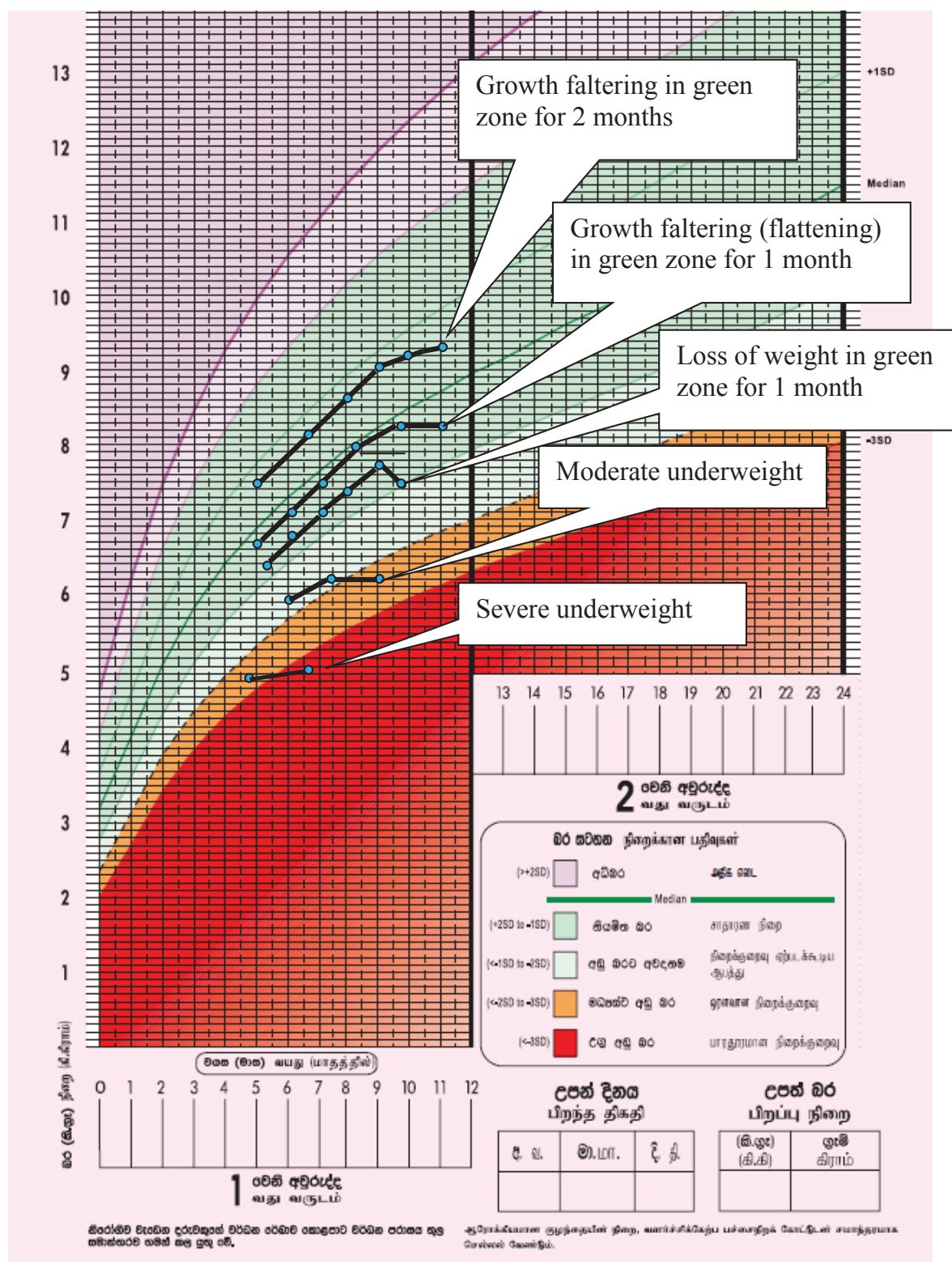
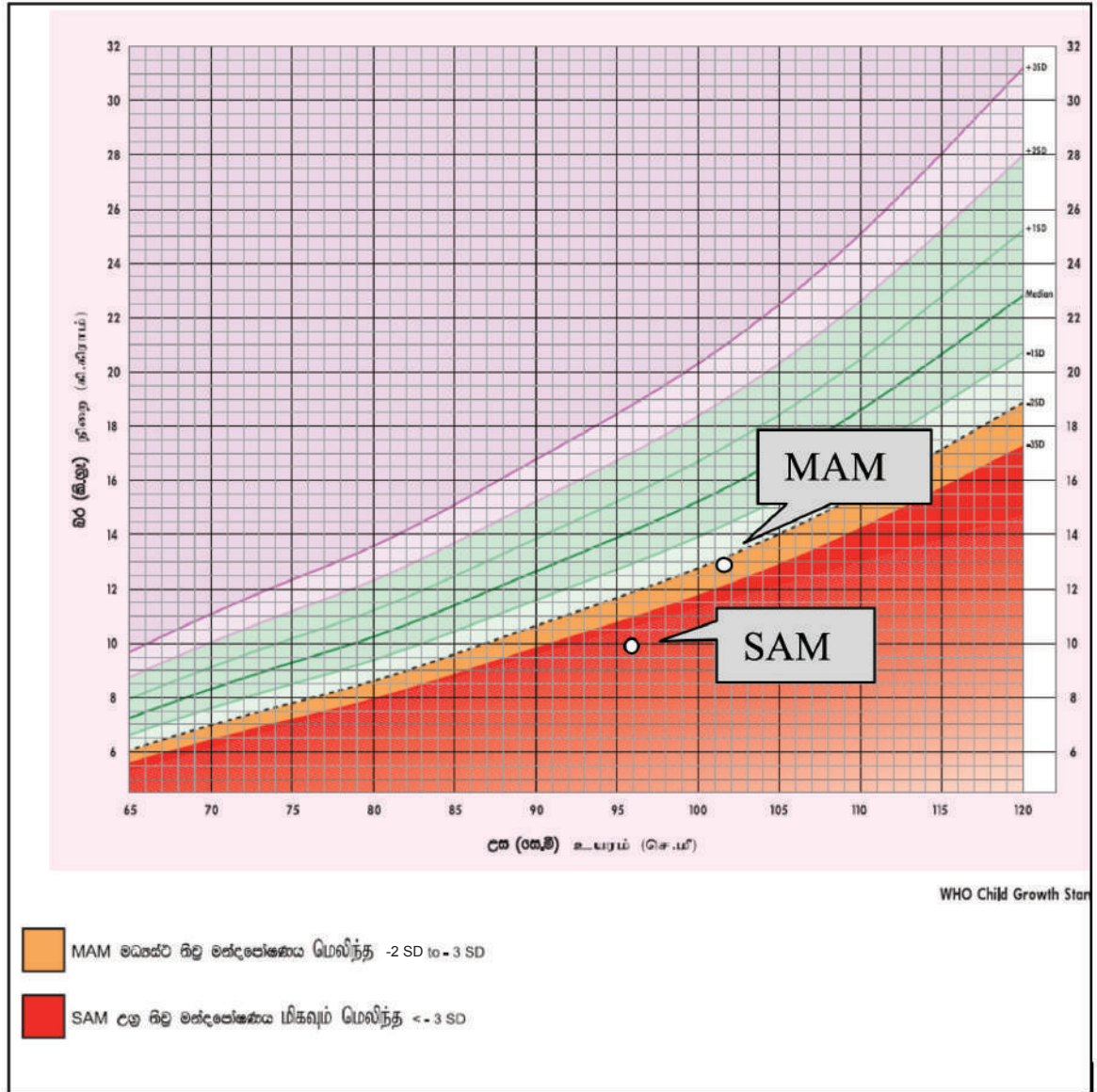


Diagram 2 – Weight for length/height charts in CHDR to identify MAM & SAM



5. SCREENING AND ENROLMENT OF CHILDREN FOR NUTRITION REHABILITATION PROGRAMME (NRP) AT THE HOSPITAL

- o Children with weight-for-height below -3SD (severe wasting) with or without bilateral pitting oedema should be enrolled in to the therapeutic feeding programme.
- o All children referred due to severe acute undernutrition should be preferably assessed at the hospital Nutrition Clinic (by a Medical Officer Nutrition) and in the absence of a Nutrition Clinic at the Paediatric Clinic.
- o This assessment should include;
 - A history of the presenting condition taken from the mother or caregiver
 - Checking for bilateral pitting oedema
 - Appetite
 - Give some RUTF to try and see whether the child eats it freely.
 - Provide sufficient time and a calm environment to allow the child to try out the food.
 - Vomiting • Diarrhoea
 - Temperature • Superficial infections
 - Respiratory rate • Alertness
 - Pulse rate • Hydration status
 - Pallor (Anaemia)
- o Children with severe acute undernutrition will be divided into 2 main groups as shown in the diagram 3:
 - I. “Children with severe acute undernutrition without complications”
 - II. “Children with severe acute undernutrition with complications” (loss of appetite, lower respiratory tract infections, severe pallor, high fever, severe dehydration, reduced alertness, hypothermia, extensive infections, convulsions, bilateral pitting oedema and other conditions that require in-patient care according to clinicians’ assessment)
- o Children with severe acute undernutrition **without complications** should be followed up in a hospital clinic (the first follow up visit after a week and thereafter every fortnightly and provided with take home ration of RUTF and ensured that they receive other services (de-worming, Vitamin A, immunisation etc.). If children are managed in the hospital nutrition clinic, it should be done in close collaboration with the Paediatrician.
- o Children with severe acute undernutrition **with complications** should be admitted to hospital for inpatient treatment under the Paediatrician.

5.1 IMPLEMENTATION PROCESS

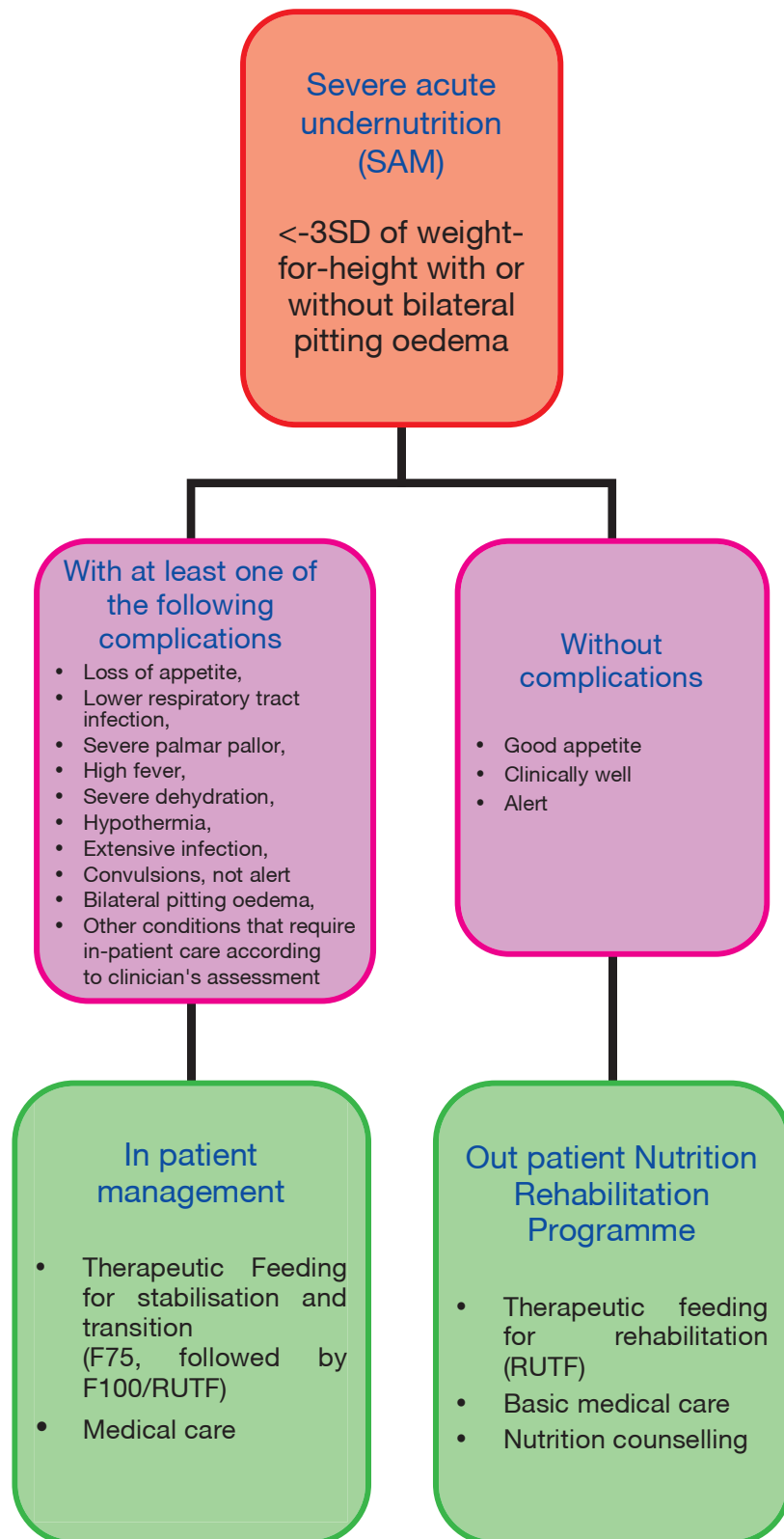
Three forms of management are provided according to the child's condition:

- Those with severe acute undernutrition without bilateral pitting oedema, who have appetite and with no medical complications are treated on ambulatory basis with RUTF depending on the nutrition assessment and status of food security under two regimes;
 - o First regime: If the child is just below -3SD and treating Specialist/Medical Officer confident that caregiver will provide nutritious main meals as recommended in the guideline - provide 50% of nutrition requirement from main meals (prepared at home) and the other 50% from RUTF as snacks (annex 7a).
 - o Second regime: If the child is well below -3SD or caregivers unable to provide nutritious meals or there is any other condition (to decide on an individual basis) provide 100% of nutrition requirement from RUTF (annex 7b).

These children should return to the clinic for check-up and more supplies of RUTF; the first follow up visit after a week and thereafter every fortnightly.

- The few children with severe acute undernutrition with medical complications are managed as inpatients with Formula 75[®] (F75[®]) (or a milk based formula providing 75kcal/100ml preparation) during the stabilisation phase (till life threatening problems are under control) and during the transition phase (return of appetite and reduced oedema or minimal oedema), and then changed over to Formula 100[®] (F100[®]) (or a milk based formula giving 100kcal/100ml) and thereafter RUTF introduced gradually.

Diagram 3 – Implementation process



6. CHILDREN WITH SEVERE ACUTE UNDERNUTRITION (SAM) WITHOUT COMPLICATIONS

6.1 Enrolment criteria for Out Patient Nutrition Rehabilitation Programme

New enrolments /1st detection	Children 6-59 months old and below -3SD weight-for-height without complications
Inpatient discharge/Transferred from inpatient care	From inpatient care after "stabilisation treatment"
Relapse	Previously discharged, cured and again fulfils NRP criteria
Returned	After defaulting from NRP

6.2 Protocol & procedures for children without complications for Out Patient Nutrition Rehabilitation Programme

- o Register all selected children in the registration book in the clinic (annex 4).
- o Child's basic information should be recorded in the child's NRP card (annex 5).
- o Decide on the regime of providing RUTF – whether child is managed solely on RUTF or together with nutritious meals – assess the nutrition status, clinical condition as well as home environment including economic status to decide on the regime.
- o Provide RUTF for the child.
- o Refer to annex 7 to identify the amount of ration according to the weight of each selected child.
- o Provide required RUTF initially for one week to take home for treatment and rehabilitation of the child (review in one week to assess compliance, follow up with investigation reports etc) and thereafter two weekly.
- o Children should be continued on any medications the child had been on, de worming medication and complete the vaccinations.
- o Give all children vitamin A Mega dose (100,000U) if they have not received Vitamin A mega dose within last 3 months. If child shows vitamin A deficiency features, then need to treat them with therapeutic regimen of vitamin A (annex 17)
- o SAM Children need 200kcal/kg/day; If the first regime is adopted, take home RUTF provides 100kcal/kg/day and the balance should be provided from nutritious family food. If the second regime is adopted the total requirement of 200kcal/kg daily will be provided from RUTF.
- o Child should be fed on RUTF in small amounts frequently (up to 3-4 times per day). Children who are on the first regime should eat home prepared nutritious food as main meals (annex 26) and RUTF as snacks (annex 7a).

- o The details of the commercially available RUTF are given in annex 6 (RUTF can also be produced locally).
- o If the child's medical condition is deteriorating advise the care giver to immediately bring the child back to the clinic or to take to the closest hospital.
- o Assess the child after a week of commencement of outpatient management and if there is further weight loss at that visit or inadequate weight gain or no weight gain on the second visit, refer to inpatient care facility.
- o If the mother is still breast feeding, she should be advised to continue breastfeeding but on a structured manner, where she could breastfeed after a therapeutic feed, but should not breastfeed at least for 2 hours before the next feed with RUTF.
- o Mothers or care givers should be advised that children who are eating BP100® as RUTF must be given sufficient amount of safe drinking water (boiled or filtered or treated with chlorine) to keep them adequately hydrated, at least 200ml of safe drinking water with one bar. Use the guide provided in annex 7 to advise the mother.
- o When RUTF is given for children under 2 years, caregivers should be advised to give it to the child in porridge form. Children above 2 years can eat RUTF as porridge or as it is in the dry form with the recommended amount of fluid.
- o Health worker should emphasise the need for the child to consume the entire ration daily. It is both a medicine and a food that is vital for the recovery of the child.
- o If the child is on the first regime, main meals as indicated in annex 26 should be given to the child in alternate to RUTF.
- o Provide key education messages to mothers / caregivers as given in annex 6 on storage of RUTF and the preparation method.
- o Provide age appropriate counselling to mothers / caregivers on infant and young child feeding (so that the dietary practices of the child are corrected at the same time) as well as prevention and management of diarrhoeal diseases at home.
- o Ask the care giver to bring the child to the clinic every fortnightly for follow up, to receive additional medical treatments if needed, and to receive a supply of RUTF to last until their next appointment.
- o The care giver should be informed that the RUTF **should not be shared** with other children in the household.

6.3 Follow up

- Child's progress is monitored on fortnightly basis at the hospital.
- Record the weight of the child at each visit on the weight chart provided with the NRP card (annex 5).
- Length/height is measured at enrolment and discharge from the SAM management and recorded in the NRP card and Child Health Development Record (CHDR).

- Check for oedema on feet, appetite and medical problems at each visit.
- Identify whether the child has gained weight according to weight chart in the NRP card.
- If child has not gained weight refer for specialised paediatric care.
- The PHM should follow up all the children referred for NRP to ensure that they are taking the RUTF as recommended and are attending the hospital clinics regularly.
- If the hospital decides that special follow up is required at the MOH level this should be indicated in the back referral section of the Child's NRP card and the parent/caregiver instructed to show it to the MOH.

6.4 Outcome of Management of SAM

Cured and transferred to MAM management	Child's weight-for-height $\geq$ -3SD and enter in to MAM category and management of MAM
Defaulted	Absent for 2 consecutive clinic visits (inform MOH to arrange home visit by PHM to check).
Transferred to inpatient care	1. Condition has deteriorated and requires inpatient hospital therapeutic care. 2. Weight loss at first visit. 3. Inadequate weight again/no weight gain at second visit. 4. Has not reached weight-for-height $\geq$ -3SD after maximum of 2 months in NRP and with all available treatment options. Refer to a Paediatrician.

6.5 When cured from SAM – follow supplementary feeding regime for children with moderate acute undernutrition (MAM)

- All children who achieve a weight-for-height $\geq$ -3SD should be referred to the supplementary feeding programme for MAM children implemented by the MOH where they stay for a maximum of 3 months till they reach >-2 SD weight-for-height level. If there is no improvement even after 3 months of supplementary feeding, the MOH should refer them back to the hospital nutrition clinic or a paediatrician.
- The child should be provided with two week's supply of therapeutic food on discharge from SAM management during which time they should enrol in the MAM management programme at the MOH clinic.

7. CHILDREN WITH MODERATE ACUTE UNDERNUTRITION (MAM)

7.1 Enrolment criteria for Supplementary Feeding Programme for children with moderate acute undernutrition

New enrolment	Children 6-59 months old and between $-3SD$ to $-2SD$ weight-for-height without complications
Discharge from SAM management	From outpatient care after "RUTF treatment"
Readmission/ relapse	Previously discharged, cured and again fulfils criteria
Returned	Returned after defaulting from management of MAM

7.2 Follow up

- Check the weight every month at least for a period of six months even after they recover from MAM
- Check the length every two months and height every 3 months according to the age of the child.
- Plot the measurement on weight-for-height chart in the CHDR
- Follow this protocol for supplementary feeding programme which supports moderately undernourished children without complications by providing the supplement of energy and nutrients as a dry-take-home ration every month. The available food item is Thriposha[®] or any food recommended by the Ministry of Health for MAM children.
- A supplementary food should have a calorie density of 350 – 500 Kcal/100g and provide 350 – 500 kcal per child per day in addition to the calories provided by the three main meals.
- Supplementary food should be provided as 2-3 snacks in between main meals.
- Arrange follow up visits every month to obtain supplementary food.
- Continue with supplementary food according to the national protocol till the child is $>-2SD$ weight-for-height and remains above $-2SD$ for another 2 months to maintain in that level with an upward trend towards $-1SD$ (annex 7c).
- The child is discharged from supplementary feeding programme when the child reaches $>-2SD$ and remains above $-2SD$ maintaining an upward trend towards $-1SD$ for another 2 months.
- It is essential to provide age appropriate dietary counselling to mothers / caregivers on infant and young child feeding so that the dietary pattern of the child is corrected along with food supplementation.

7.3 Discharge criteria for Supplementary Feeding Programme

Cured	When children reach above -2SD for weight-for-height and remain above -2SD maintaining an upward trend towards -1SD at two consecutive programme distributions (2 months)
Defaulted	Children who are absent for more than three consecutive distributions need to be traced and followed up actively through home visits
Referred for hospital care	Non-responding; Children who do not reach the target weight-for-height after three months of receiving supplementary food need to be referred to hospital for further investigations.

On discharge;

- The family should be counselled and taught to:
 - o Provide energy and nutrient dense foods as appropriate for the age; i.e. 2-3 main meals per day, plus giving nutritious snacks between meals twice daily (annex 26).
 - o Prevent and manage diarrhoea
 - o If required the family should be referred to relevant authorities to be given support with food security activities (support in agriculture, socioeconomic activities such as access to the market, micro-credit initiatives etc.)

8. SEVERE ACUTE UNDERNOURISHED CHILDREN (SAM) WITH COMPLICATIONS

8.1 Admission criteria for inpatient hospital NRP

New admissions	Children 0-59 months old and below $-3SD$ weight-for-height reference with or without bilateral pitting oedema and with severe medical complications as :
	I. No appetite or unable to eat test dose of RUTF
	II. Intractable vomiting
	III. Fever $> 39^{\circ}C$ or hypothermia $< 35^{\circ}C$
	IV. Lower respiratory tract infection according to Integrated Management of Childhood Illness (IMCI) guidelines for age. • 60 breaths/min for 0-6 months • 50 breaths/ min for 6-12 months • 40 breaths/ min for 1-5 yr
	V. Any chest wall recessions
	VI. Severe anaemia (severe pallor in palms, conjunctiva)
	VII. Extensive infection requiring IM / IV treatment
	VIII. Weak, apathetic, unconscious, seizures
	IX. Severe dehydration
Choice	Caregiver refuses outpatient care
Referral	From NRP outpatient programme due to: • Deterioration of medical condition • Weight loss at first visit or inadequate/no weight gain at second visit • Non recovery after 2 months in the outpatient NRP programme • All children <6 months of age with severe acute undernutrition
Readmission/ relapse	Previously discharged cured and again fulfils admission criteria

8.2 Protocol and procedures for children with complications (inpatient hospital NRP)

- Register all selected children in the registration book in the hospital ward (annex 4).
- Child's basic information, the history and findings of physical examination should be recorded in the child's NRP card (annex 5).
- Carry out relevant investigations as necessary and indicated by the Paediatrician / Medical Officer Nutrition.
- Suggested investigations on admission;
 - Random blood glucose
 - Haemoglobin / Full blood count
 - Serum electrolytes
 - Chest x-ray
 - Urine full report including urine protein
 - Serum protein
- Monitoring
 - Temperature
 - Heart rate, respiratory rate, capillary refill time
 - Input output (fluid balance) chart
 - Level of consciousness/alertness
- Initiate feeding immediately with F-75[®] if the child is very sick and appetite is poor. F-75[®] is specially made to meet the child's needs during the initial phase of management (annexes 8, 9, 10 and 11). Feed using a cup or spoon, not by bottle. If poor appetite, feed with a nasogastric tube.
- Start F-75[®] feed with 100ml/kg/day and gradually increase to 130ml/kg/day by day 3-5 as follows;
 - 2 to 3 hourly feeds 8-12 times a day, including night feeds.
 - See annex 9 for feed volumes by child's weight using F-75[®].
 - Each child's feeds should be recorded in a 24-hour food intake chart (annex 12)
 - If the child is on breast milk encourage the mother to breast feed the child on demand between F-75[®] feeds ensuring that the child still gets the required feeds of F-75[®].
 - It may be necessary to use a Nasogastric (NG) tube if the child is very weak, has mouth ulcers that prevent drinking, or if the child cannot take enough F-75[®] by mouth. The minimum acceptable amount for the child to take is 80% of the amount

offered (annex 9). At each feed, first offer the F-75[®] orally. Use an NG tube if the child does not take 80% of the feed (i.e. leaves more than 20%) for 2 or 3 consecutive feeds. Sometimes the child may not be able to tolerate a bolus feed and in such an instance a 'drip feed' can be given using the NG tube. Also can use domperidone to enhance gastric emptying.

- o If the child has continuing watery diarrhoea after he/she has been rehydrated, offer ReSoMal[®] (annex 15) or specially prepared fortified half strength oral rehydration solution (ORS) (annex 15) or king coconut water between feeds to replace losses from stools.
- o If the child continues to vomit, offer half the amount of feed twice as often (e.g. if 40ml of F75[®] every 2 hours, offer half amount [20ml] every hour) until vomiting stops. Start domperidone (oral or suppository) or ondansetron (oral or intravenous).
- In the rare event that enteral feeding is impossible, ensure careful IV fluid infusion only if the child meets the following criteria;
 - o A severely undernourished child is considered to have shock if he or she
 - Is lethargic or unconscious and
 - Has cold peripheries with delayed capillary refill time (>3 sec)
 - Plus either:
 - Low volume pulse or
 - Rapid pulse rate
- Use 0.9% NaCl or Hartmann solution. Fluid should be provided according to the level/state of hydration. If hypokalaemia is present, add 14.9% KCl intravenous solution 10ml (20mmol) to 500ml of above IV fluid.
- Prevent and treat hypoglycaemia (see annex 13)
- Prevent and treat hypothermia (see annex 14)
- Prevent and treat dehydration (see annex15)
- Treat infections (see annex 16)
- Correct electrolyte imbalance and micronutrient deficiencies (see annex 17)
- Provide stimulation, play and loving care (annex 18)
- As soon as the child's appetite and general condition improves, the volume of feed needs to be increased. F-100[®] should be used as a "catch-up" formula to rebuild wasted tissues and then RUTF should be gradually introduced. Then increase the number of RUTF feeds while decreasing F100[®] feeds.
- Volume of the F100[®] feed is 150-220ml/kg/day divided into;

- o 3 hourly feeds - 8 times a day
 - o See annex 10 for feed volumes by child's weight for F100.
- Plan feeding for the ward as a whole, so that the staff knows how much food to prepare, how much food to put in cups at each feed, etc. (annexes 19 and 20).

8.3 Monitor individual child's progress and care

- Specialist/MO should calculate the child's weight gain in grams per kg body weight for each day (annex 22) after a child is taking F100[®] / RUTF using weight chart maintained in the ward (annex 23) and judge whether weight gain is sufficient:

Good weight gain:	10g/kg/day or more
Moderate weight gain:	5 up to 10g/kg/day
Poor weight gain:	Less than 5g/kg/day

- Identify the child who is failing to respond using the following criteria:
 - o Failure to regain appetite - 4 days after admission
 - o Failure to start to lose oedema - 4 days after admission
 - o Oedema still present - 10 days after admission
 - o Failure to gain at least 5g/kg/day for 3 successive days after feeding freely on F100[®] and RUTF
- Determine causes for failure to respond
- Identify and implement solutions for the individual child
- Use the weight gain chart as a basis for discussion and problem solving with the staff and to complete the summary form.

8.4 Discharge criteria for inpatient care

Appetite	Good (When the child is eating at least 75% of the prescribed quantity of RUTF for his or her body weight)
Medical complications	Under control and can discharge immediately and follow up at outpatient level.
Bilateral oedema	Reduced or minimal

8.5 Instructions on discharge

- The child should be given one week's supply of RUTF to take home.
- The mother / caregiver should have a discharge card including the summary of the child's stay in hospital with the duly completed NRP card.
- Give an appointment to attend the hospital clinic (paediatric clinic or the hospital nutrition clinic as appropriate) in one week's time with a referral note in the child's NRP card. The same NRP card can be continued to record the clinic follow up as well (Annex 5).
- On discharge, depending on the regime adopted advice mother/caregivers to give RUTF as instructed (second regime) or age appropriate number of main meals together with RUTF in between (first regime) (Annex 26) during ambulatory rehabilitation phase (as outpatient in hospital clinic).

9. SEVERE ACUTE UNDERNUTRITION IN INFANTS AGED < 6 MONTHS

- Severe acute undernutrition is less common in infants < 6 months than in older infants. An organic cause for the malnutrition or failure to thrive should be considered, and, when appropriate, treated.
- Infants less than 6 months of age with severe acute undernutrition with any of the following complicating factors should be admitted for inpatient care under a Paediatrician:
 - General danger signs or serious clinical conditions as outlined for infants 6 months or older.
 - Recent weight loss or failure to gain weight.
 - Ineffective breastfeeding (attachment, positioning or suckling) directly observed for 15–20 min, ideally in a supervised separated area.
 - Any pitting bilateral oedema of the feet.
 - Any medical problem needing more detailed assessment
 - Any social issue requiring detailed assessment or intensive support

9.1 Treatment

- Admit infants with any of the above complicating factors.
- Give appropriate treatment for other medical complications.
- Re-establish effective exclusive breastfeeding by the mother, supplementary feeding techniques can be tried. If not possible, give replacement commercial infant formula with advice on safe preparation and use (cup or cup and spoon. Avoid use of bottle with a teat).
- For infants with severe acute undernutrition and oedema, give infant formula to supplement breastfeeding.
- For infants with severe acute undernutrition with no oedema, give expressed breast milk; and when not possible, commercial infant formula or F-75[®] or diluted F-100[®], in this order of preference.
- During nutritional rehabilitation, the basic principles for older children apply; however, young infants are less able to excrete salt and urea in their urine, especially in hot climates. Therefore, the preferred diets in the stabilization phase are (in order of preference):

- o breast milk (if available in sufficient quantity)
 - o commercial infant formula
- Assessment of the physical and mental health of mothers or caretakers should be promoted and relevant treatment or support provided.

9.2 Discharge

- Infants less than 6 months of age admitted to inpatient care can be transferred to outpatient care if:
 - all clinical conditions or medical complications including oedema are resolved or the child is clinically well and alert,
 - the child is breastfeeding effectively or feeding well,
 - weight gain is satisfactory and more than 5gm/kg per day for at least 3 successive days
- Before discharge, the infant's vaccination status and other routine interventions should be checked and provided as appropriate.
- Mothers or caregivers should then be linked with any necessary community follow-up and support.
- A child should only be discharged from all nutritional care only when he or she:
 - is breastfeeding effectively or feeding well with replacement feeds, and
 - has an adequate weight gain, and
 - has a weight-for-length equal or higher than -2 z scores

10. RECORD KEEPING AND LOGISTICS

- A Child's NRP card (pink colour card) is issued to all children from the point of first identification/referral (e.g. MOH clinic, hospital OPD/ward etc.). This card would enable direct access to the hospital nutrition clinic /paediatric clinic for management of severe acute under nutrition (annex 5).
- A 'Nutrition Rehabilitation Programme Register' is maintained in the treatment centre (e.g. hospital nutrition clinic/ paediatric clinic / paediatric ward) (annex 4).
- From the Nutrition Rehabilitation Programme Registers maintained at each treatment centre (e.g. hospital nutrition clinic/ paediatric clinic / paediatric ward), a monthly feedback summary form has to be prepared by each institution in triplicate; institutional copy, RDHS copy and FHB copy, which has to be sent regularly every month to RDHS and FHB. Head of the Institution is responsible to identify an officer to carry out this task regularly (annex 24).
- The NRP register, NRP card, H 1158 and Monthly Feedback Summary Form (annex 24) will be supplied by the Family Health Bureau; directly to the line ministry institutions and through Medical Officers of Maternal and Child Health (MOMCH) of the district to the hospitals that come under the provincial system.
- Family Health Bureau of the Ministry of Health is responsible for the procurement and distribution of RUTF e.g. BP 100®. Therapeutic formulae can be prepared in hospital using the recipes provided in this manual (annex 8).
- The chief pharmacist of the hospital is responsible for obtaining RUTF stocks for the programme. The line ministry institutions can obtain it directly from the Family Health Bureau and the hospitals that come under the provincial system through their respective Regional Medical Supplies Divisions (RMSDs).
- Every month the chief pharmacist should get the details of RUTF (e.g. BP 100®) usage from the clinics / wards using the item and prepare the monthly stock return H 1158 in triplicate (office copy, RDHS copy, RMSD copy from provincial institutions/ FHB copy from line ministry institutions). RMSD should also prepare the monthly stock return compiling all the returns from provincial hospitals in triplicate (office copy, FHB copy, RDHS copy) (annex 25).
- At RDHS level, it is the responsibility of the MOMCH under the technical guidance of CCP to monitor the NRP programme and logistics both in line ministry hospitals and the hospitals under the provincial government.

Annex 1:

Measuring weight of children under 5 years of age

The beam balance scale should be used for infants under 6 months of age and for infants older than 6 months either the beam balance scale (till about 1 year of age) or the spring balance scale can be used. (Both beam balance scale and the spring balance scale are available in the CWC. Only the spring balance scale is available in the field weighing post).

Equipments should be calibrated regularly; the beam balance once in three months and the spring balance monthly.

Steps in measuring weight using the beam balance scale

- Before starting to take the measurement make sure that the instrument is working properly.
- Assemble all the parts of the scale as recommended.
- Place the assembled scale on a table in a well lighted place. The scale placed on the table, should be at the measurer's eye level when seated in front of it.
- Spread a thin sheet on the tray of the scale and bring the reading to 0.
 - Bring parts D and E to 0.
 - Then move part A (the part with a screw) till parts B and C are at the same level. Then turn the screw to tighten it.



- Remove the clothing of the baby with the mother's support and place the baby on the tray. The whole body of the baby should fit into the tray.
- First, move part D towards the right side according to the likely weight (in kilo grams).
- Then move part E towards the right side till parts B and C are at the same level.
- When parts B and C are at the same level pull the L lock down and stop the balance from moving.
- Read the measurement accurately (at eye level) while sitting in front of the scale.

Steps in measuring weight using the spring balance scale



- Before starting to take the measurement make sure that the instrument is working properly.
- Hang the scale securely with the face of the scale at the measurer's eye level.
- Then hang the trouser (used to measure the child) and balance the scale to 0.
- Dress the child with minimal clothing and then the trouser (already balanced) and then hang the child on the scale with the support of the mother. (Measure children over 1 year of age with light underclothing only. In the event an infant needs to be weighed using the spring balance scale, weigh without clothes).
- If in a cold climate can wrap the baby with a blanket but this blanket has to be balanced first (as done with the trouser).
- Make sure that the child's feet are not touching the floor once the child is hung onto the scale. Console the baby and keep them still as much as possible.
- As soon as the pointer stops moving, read the measurement accurately.

Recording and interpreting the measurement.

- Immediately on taking the reading, record this measurement in the growth record of the B portion of the child's CHDR. Then plot this measurement in the weight for age graph in the A portion of the CHDR and interpret the measurement according to the zone and the direction of the growth curve. Then record the relevant code again in the column provided for recording of the code in growth record of the B portion (the particular code for the zone in which the measurement falls and whether there is growth faltering according to the direction of the curve).
- Please note that if the reading is not recorded at once after getting the measurement, inaccuracies in recording are liable to occur.

Annex 2:

Measuring length/height of children under 5 years of age

Depending on the child's age and ability to stand, measure the child's length or height. A child's length is measured with the child lying down (recumbent). Height is measured standing upright.

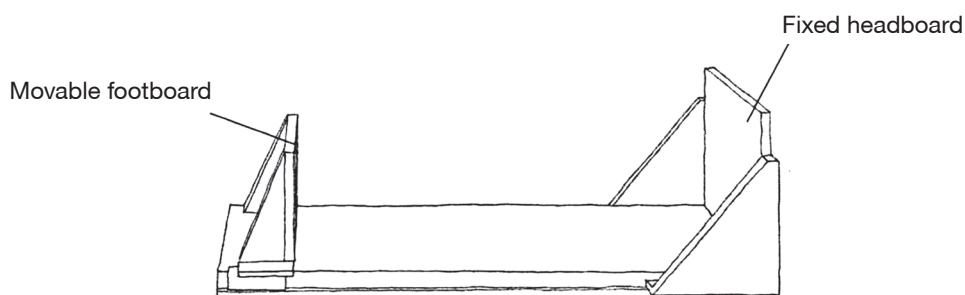
- If a child is less than 2 years old, measure recumbent length.
- If the child is aged 2 years or older and able to stand, measure standing height.

In general, standing height is about 0.7 cm less than recumbent length. This difference was taken into account in developing the WHO growth standards used to make charts in the CHDR. Therefore, it is important to adjust the measurements if length is measured instead of height and vice versa.

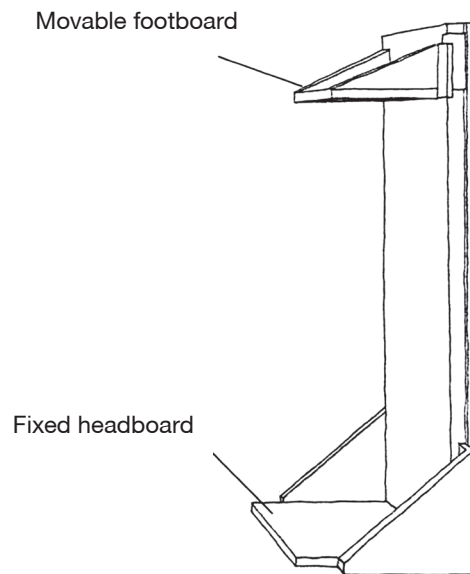
- If a child less than 2 years old will not lie down for measurement of length, measure standing height and add 0.7 cm to convert it to length.
- If a child aged 2 years or older cannot stand, measure recumbent length and subtract 0.7 cm to convert it to height.

Equipment needed to measure length is a length board (sometimes called an infantometer) which should be placed on a flat, stable surface such as a table. To measure height, use a height board (sometimes called a stadiometer) mounted at a right angle between a level floor and against a straight, vertical surface such as a wall or a pillar.

Length board/Infantometer



Height board/stadiometer



Different types of equipment may be used for measuring length or height from time to time, but the basic steps in length or height measurements are the same for all these equipment. The manual provided with the instrument should be used as a guide to assemble the parts in the correct manner and take measurements accurately.

Preparing a child to measure length/height

It is advisable to measure a child for length/height as soon as you finish weighing and the child still remains undressed. Therefore it is important to prepare the child both for weighing and measuring length/height before weighing, to avoid delay between the measurements.

Before measuring length/height, check again to see whether the child's socks and shoes, hair braids, ribbons and ornaments that would interfere with length/height measurement are removed.

If a child was weighed without any clothing, dress the child with the nappy to avoid the child from wetting himself. If there is a cold climate and it would take sometime to measure length/height after weighing, wrap the child in a blanket. However, especially with young children whose length is measured, it is important to move quickly and surely from the scale to the length board to avoid upsetting a child.

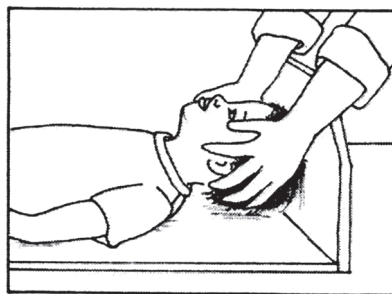
Mother/caregiver's help and support is needed in measuring length/height and comforting the child during the procedure. Explain to mother why the measurement is taken and the steps in the procedure. If she has any queries, answer them. Show and tell her how she can help in taking the measurement. Explain that it is important to keep the child still and calm.

Measuring the length

Cover the length board with a thin cloth or soft paper for hygiene and the baby's comfort. Explain to mother that she will need to place the baby on the length board herself and then help to hold the baby's head in place while you take the measurement. Show her where to stand when placing the baby down, i.e. near the head end of the board. Tell her where to place the baby's head against the fixed headboard so that she can move quickly and surely without distressing the baby.

When the mother understands your instructions and is ready to assist;

- Ask her to lay the child on his back with his head against the fixed headboard, compressing the hair.
- Quickly position the head so that an imaginary vertical line from the ear canal to the lower border of the eye socket is perpendicular to the board; i.e. the child's eyes should be looking straight up. Ask the mother to move behind the headboard and hold the head in this position.



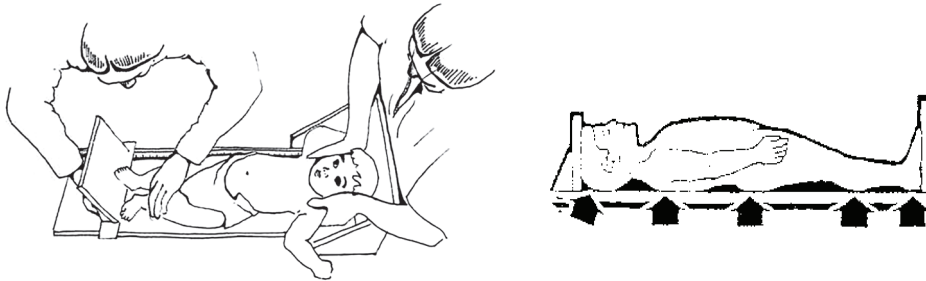
Speed is important. Standing on the side of the length board where you can see the measuring tape and move the footboard;

- Check that the child lies straight along the board and does not change position. Shoulders should touch the board, and the spine should not be arched. Ask the mother to inform you if the child arches the back or moves out of position.

- Hold down the child's legs with one hand and move the footboard with the other. Apply gentle pressure to the knees to straighten the legs as far as they can go without causing injury. Note: it is not possible to straighten the knees of the newborn to the same degree as older children. Their knees are fragile and could be injured easily, so apply minimum pressure.

If a child is extremely agitated and both legs cannot be held in position, measure with one leg in position.

- While pressing and holding the knees down, pull the footboard against the child's feet. The soles of the feet should be flat against the footboard, toes pointing upwards and ankle joint placed at right angle. If the child bends the toes and prevents the footboard from touching the soles, scratch the soles slightly and slide in the footboard quickly when the child straightens the toes.
- Read the measurement and record the child's length in centimetres to the last completed 0.1 cm in the B portion of the CHDR. This is the last line that you can actually see (0.1 cm = 1 mm).
- Remember: If the child whose length you measured is 2 years old or more, subtract 0.7 cm from the length and record the result as height.



Move quickly and surely to measure length accurately before the baby becomes agitated.

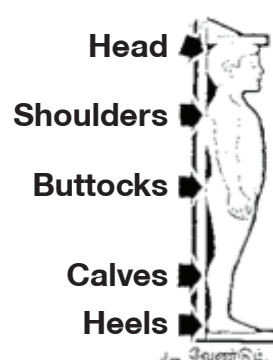
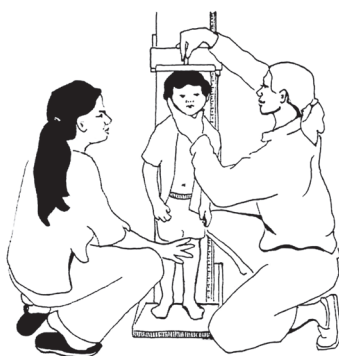
Measuring the height

Ensure that the height board is on level ground. Check that shoes, socks and hair ornaments have been removed.

Working with the mother and kneeling in order to get down to the level of the child;

- Help the child to stand on the baseboard with feet slightly apart. The back of the head, shoulder blades, buttocks, calves and heels should all touch the vertical board. In case of an obese child this may be difficult. If that is the case, try to get at least some parts touch the vertical board and ensure that the child keeps the back straight without bending forward or backwards.
- Ask the mother to hold the child's knees and ankles to help keep the legs straight and feet flat, with heels and calves touching the vertical board. Ask her to focus the child's attention, soothe the child as needed and inform you if the child moves out of position.
- Position the child's head so that a horizontal line from the ear canal to the lower border of the eye socket runs parallel to the baseboard. To keep the head in this position, hold the bridge between your thumb and forefinger over the child's chin.
- If necessary, push gently on the tummy to help the child stand to full height.
- Still keeping the head in position, use your other hand to pull down the headboard to rest firmly on top of the head and compress the hair.
- Read the measurement and record the child's height in centimetres to the last completed 0.1 cm in the B portion of the CHDR. This is the last line that you can actually see (0.1 m = 1 mm).

Remember: If the child whose height you measured is less than 2 years old, add 0.7 cm to the height and record the result as length.



Annex 3a:

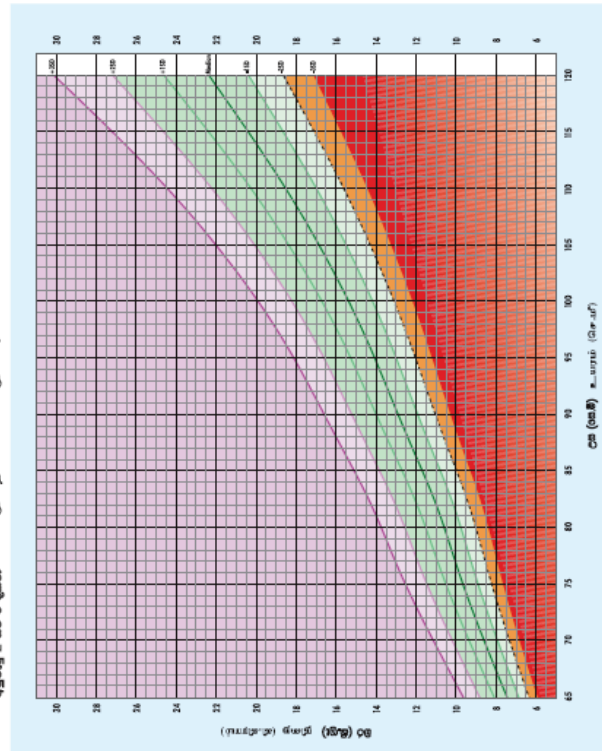
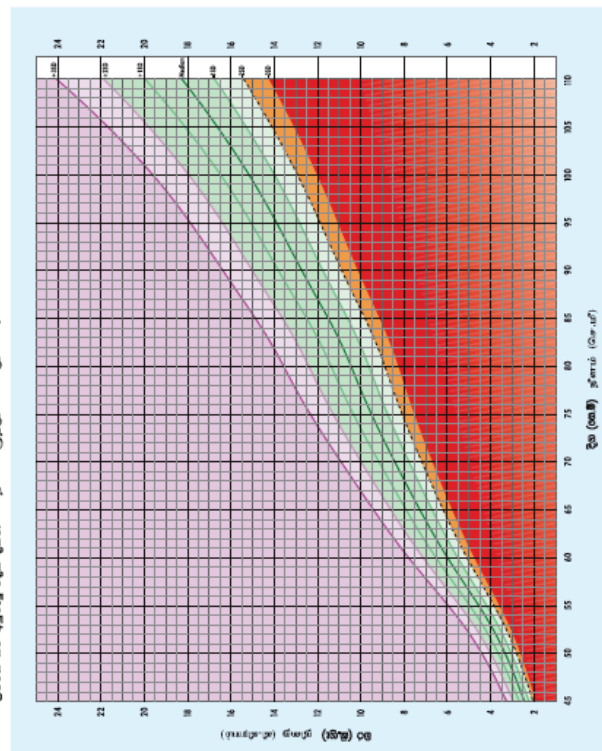
WHO child growth standards for Weight for length/height – Boys

குழந்தையின் நீள/உயரத்திற்குரிய நிறை வரைபு

உடலின் நீள/உயரம் கவனம் வரைபு

உயரம் 2 மீட்டர் 5 செ.மீ. 2 வயது வரை

எடையின் 2 மீட்டர் 5 செ.மீ. 2 வயது வரை



WHO Child Growth Standards

- OWWL (Overweight for Length) >+2SD
- NW (Normal) -2SD to +2SD
- NW (Normal) <-2SD

WHO Child Growth Standards

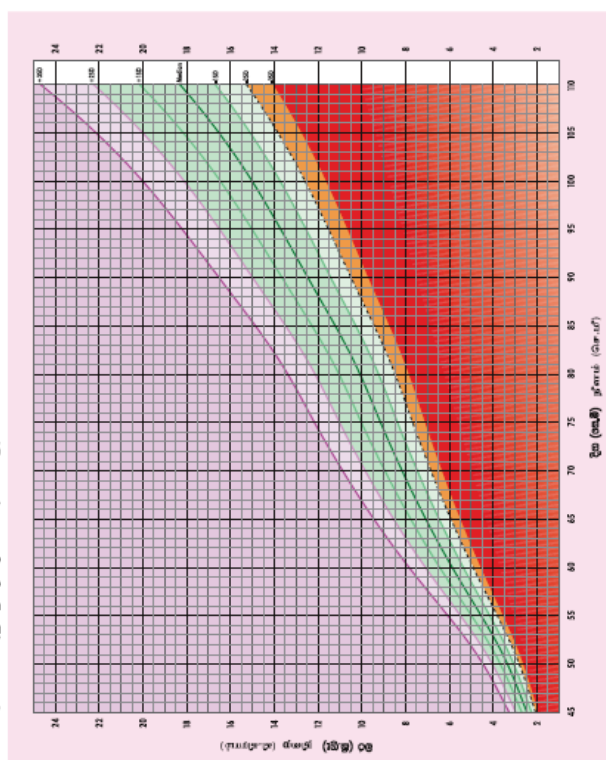
- MAM (Moderately Malnourished) -2SD to -1SD
- SAM (Severely Malnourished) <-2SD
- SAM (Severely Malnourished) -1SD to Median

Annex 3b:

WHO child growth standards for Weight for length/height – Girls

உடலின் நீள/உயரத்திற்குரிய நிறை வரைபு

உடலின் நீள/உயரத்திற்குரிய நிறை வரைபு

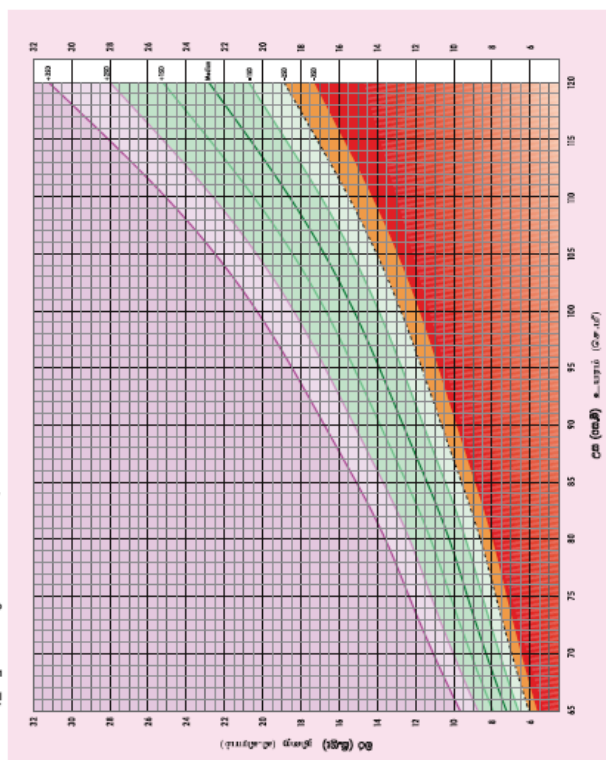


WHO Child Growth Standards

- OWW ஒவ்வொரு வயதிலும் வளர்ந்து வரும் ± 2 SD
- NW வளர்ந்து வரும் வளர்ந்து ± 2 SD

குழந்தையின் நீள/உயரத்திற்குரிய நிறை வரைபு

குழந்தையின் நீள/உயரத்திற்குரிய நிறை வரைபு



WHO Child Growth Standards

- MAM உடம்பில் சிறு உடம்பிலான பிள்ளை >2 SD
- SAM உடம்பில் சிறு உடம்பிலான பிள்ளை <-2 SD

Nutrition Rehabilitation Programme Register

Nutrition Rehabilitation Programme Register

[illegible]

¹Enrolment Criteria : 1. 1st detection 2. Relapse 3. Defaulter 4. Transferred from inpatient/outpatient care

Page 2 of the register

Final outcome: 1. Cured from SAM 2. Admitted to hospital ward (as not recovered/condition worsened) or referred to the clinic from ward 3. Defaulted 4. Other (specify)

Nutritional status: Severe Acute Malnutrition - SAM Moderate Acute Malnutrition - MAM

Annex 5:

Child's Nutrition Rehabilitation Card (NRP card)

Nutrition Rehabilitation Card

Doctor to complete on referral (MOH, GP, MO OPD etc.)							
Name of the child							
Name of the caregiver							
Address & Telephone no.							
Date of birth		Male ☐ Female ☐					
MOH area & Telephone no.		PHM area & Telephone no.					
Reg. No. (B & I no. from CHDR)		Date of referral					
Referred to	Name of Hospital						
	Direct admission to - Paediatric ward ☐ Paediatric Clinic ☐ Hospital Nutrition Clinic ☐						
Hospital to complete on entry							
Hospital		Ward ☐ Paediatric Clinic ☐ Nutrition clinic ☐					
BHT No./Clinic Reg. No.		Date					
Referred by		MOH ☐ OPD ☐ GP ☐ Other ☐					
Type of entry		1 st detection ☐ Relapse ☐ Defaulter ☐ Other ☐					
Anthropometry on entry							
Weight (kg)		Length/Height (cm)		Weight for length/height	SAM ☐ MAM ☐	Oedema	0 / +/ ++/ +++
History							
Complications		Yes ☐ No ☐					
State reported complications		1. 2. 3.					
Medications							
Date	Drug	Dosage		Date	Drug	Dosage	
Referrals / Back referral to MOH							
Date	Place referred to	Person referring	Reason for referral				

Anthropometry and RUTF treatment for out patients

Week	0	1	2	3	4	5	6	7	8
Weight (kg)									
Length/Height (cm)									
No. of RUTF packets issued									
Amount of RUTF consumed									
Comments									

Weight gain record chart

Weigh and measure the length/height at the beginning of treatment. Use the reference weight for height chart to determine specific weight at -3SD based on the length of the child at beginning of the treatment programme and draw a horizontal line on the weight gain record chart (given below).

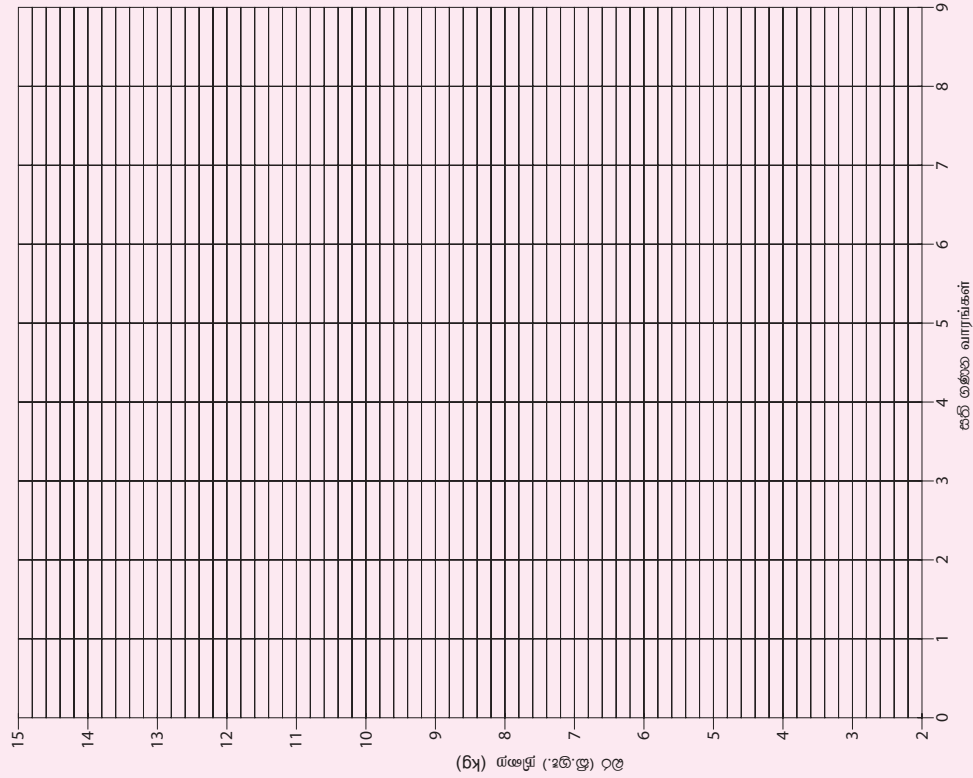
Plot the child's weight weekly/biweekly while treatment is going on. Plot the starting weight at 0 weeks and the measured weights thereafter at each evaluation point against the duration of treatment. Connect the points to see the progress. When the target weight (-3SD) is reached, check the child's weight for length/height chart (as by now the child may have gained some length/height as well) to reassess the growth status before the child exits therapeutic feeding programme. If the child has gained in length/height the new -3SD level also could be marked by a horizontal line on the weight gain record chart.

Weight gain record chart

Desired weight at discharge (-3SD) (kg):

Actual weight at discharge (kg):

Length / height on discharge (cm):



Annex 6:

The details of BP 100

BP 100[®] is a compressed food product fortified with micronutrients for use in the rehabilitation phase of severely undernourished children. BP100[®] is both a **medicine** and a food that is vital for the recovery of the child. When the child is less than 2 years it can be used in porridge form and for the children >2 years it can be used in the dry form.

BP 100[®] can be consumed as tablets from the pack together with sufficient drinking water, or crumbled and mixed with water and made into a porridge. It is advisable to be given as a porridge due to the need for sufficient water for children under 2 years. One bar (two tablets) of BP 100[®] contains 300 kcal. When adopting regime 2, always feed small, but frequent meals per day in the initial phase of rehabilitation to avoid overloading of the intestine, liver and kidney. The intake of BP 100[®] should not be mixed in the same meal with local food items as the latter may contain components inhibiting the absorption of vitamins and minerals.

Storage

- Store in a cool dry place.
- The integrity of the package is essential.
- The shelf life is maximum 48 months from the date of manufacture indicated on the packaging.
- Once the alufoil packaging is opened, the product should be used within 2 weeks.
- Porridge made of BP 100[®] and water should be used within 3 hours.
- Use 100ml (½ cup) of boiled cooled water per tablet to make a porridge.

Annex 7a:

Guide to identify the amount of BP100[®] ration according to the weight of each selected child

On half ration of RUTF – First Regime

BP100[®] (1 packet = 9 bars; 1 bar=2 tablets = 300kcal)

Weight of the child (kg)	Amount of BP-100 [®] (150kcal/ per tablet)		
	No. of bars per day	Daily divided dose as snacks	No. of packets per Fortnight
3.5 – 4.4	1.5	1 tablet 3 times	2 packs
4.5 – 5.4	1.5	1 tablet 3 times	2 packs
5.5 – 5.9	2.0	1 tablet 4 times	3 packs
6.0 – 6.9	2.0	1 tablet 4 times	3 packs
7.0 – 7.9	2.5	a bit more than one and a half tablets 3 times	5 packs
8.0 – 8.9	2.5	a bit more than one and a half tablets 3 times	5 packs
9.0 – 9.9	3.0	2 tablets 3 times	5 packs
10.0 – 10.9	3.5	2 tablets 3 times	5 packs
11.0 – 11.9	3.5	2 tablets 3 times	5 packs
≥12	4	3 tablets 3 times	6 packs

Weight of the child in Kg	Regular main meals (to provide 100kcal/kg/day) (according to annex 26)	Balance 100kcal/kg from RUTF as snacks
3.5 – 4.4	Age appropriate complementary food and breast milk after meals	1 tablet 3 times
4.5 – 5.4	At least ¾ cup of age appropriate complementary food 3 times a day and breast milk after meals	1 tablet 3 times
5.5 – 5.9	Age appropriate complementary food 3 times a day and breast milk after meals	1 tablet 4 times
6.0 – 6.9	3 meals (at least 1 full cup) of family foods and breastfeeding after meals	1 tablet 4 times
7.0 – 7.9	3 meals (at least 1 full cup) of family foods and breastfeeding after meals	a bit more than one and a half tablets 3 times
8.0 – 8.9	3 meals (at least 1 full cup) of family foods and breastfeeding after meals	a bit more than one and a half tablets 3 times
9.0 – 9.9	3 meals (at least 1 full cup) of family foods and breastfeeding after meals	2 tablets 3 times
10.0 – 10.9	3 meals (at least 1 full cup) of family foods and breastfeeding after meals	2 tablets 3 times
11.0 – 11.9	3 meals (at least 1 full cup) of family foods and breastfeeding after meals	2 tablets 3 times
≥12	3 meals	3 tablets 3 times

(1 cup = 200ml)

Annex 7b:

Guide to identify the amount of BP100[®] ration according to the weight of each selected child

On full ration of RUTF – Second Regime

BP100[®] (1 packet = 9 bars; 1 bar=2 tablets = 300kcal)

Weight of the child (kg)	Amount of BP-100 [®] (150kcal/ per tablet)		
	No. of bars per day	No. of packets per week	No. of packets per Fortnight
3.5 – 4.4	2.5	2 packs	4 packs
4.5 – 5.4	3	2 packs & 3 bars	4 packs & 6 bars
5.5 – 5.9	3.5	2 packs & 7 bars	5 packs & 4 bars
6.0 – 6.9	4	3 packs & 1 bar	6 packs & 2 bars
7.0 – 7.9	4.5	3 packs & 5 bars	7 packs
8.0 – 8.9	5	4 packs	8 packs
9.0 – 9.9	6	4 packs & 6 bars	9 packs & 3 bars
10.0 – 10.9	6.5	5 packs	10 packs
11.0 – 11.9	7	5 packs & 4 bars	11 packs
≥12	8	6 packs & 2 bars	12 packs & 4 bars

Amount of water to be used for each meal (cup = tea cup)

- To prepare porridge with ½ bar (1 tablet) use 100 ml or ½ of a cup
- To prepare porridge with 1 bar (2 tablets) use 200 ml or 1 of a cup
- To prepare porridge with 1½ bars (3 tablets) use 300 ml or 1½ cup
- To prepare porridge with 2 bars (4 tablets) use 400 ml or 2 cups
- To prepare porridge with 2½ bars (5 tablets) use 500 ml or 2½ cup

Annex 7c:

Guide to identify the amount of supplementary feeding ration according to the age of each selected child

Food ration

- Dry food ration is provided monthly.
E.g. Thriposha[®] –1500g per month per child (two packets per child).

Thriposha[®]

- Is a cooked ready-to-eat supplementary food
- 50g of Thriposha[®] daily will provide approximately 199 kcal/day
- Mothers should wash hands thoroughly with soap and clean water before preparing the food.

Age of the child in months	Regular main meals (according to annex 26)	Supplementary calories (kcal) to be given as 2 or 3 snacks
6+ - 8+ months	2-3 main meals. Starting with well mashed rice gradually made coarser. Start with 2-3 teaspoonfuls per feed increasing gradually to a little more than ½ of a 200 ml cup per meal. Breast feeds – preferably after meals from 7 th month onwards.	350 kcal per day Thriposha 3 full Tbs (50g) Oil/butter 1Tbs (15g) Sugar/jaggery/honey 1 tsp (5g)
9-11+ months	3 main meals Chopped or coarsely mashed with foods baby can pick up using fingers (finger foods). ¾ of a 200ml cup per meal. Breastfeeds - after meals.	This recipe gives the total quantity per day which should be given in 2-3 divided snacks Can add breast milk if required.
12-23 months	3 main meals of nutritious adult foods (if necessary chopped or coarsely mashed). 1 full 200ml cup or a bit more per meal. 2-3 Breastfeeds a day - after meals.	≈ 400 kcal per day Thriposha 3 full Tbs (50g), Sugar/ jaggery/ honey 2 tsp (10g) Scraped coconut 2 Tbs (30g) Banana, ripe (50g) Above total quantity to be given in 2 divided doses - as mid morning and mid afternoon snack
24 – 60 months	3 main meals of nutritious adult foods of more than 1 full 200ml cup per each meal 2-3 Breastfeeds a day - after meals.	≈ 500 kcal Thriposha 3 full Tbs (50g), Sugar/ jaggery/ honey 2 tsp (10g) Scraped coconut 2 Tbs (30g) Roasted peanut (finely crushed) 15g Banana, ripe (50g) Above total quantity to be given in 2 divided doses - as mid morning and mid afternoon snack

Tbs – table spoon

tsp – tea spoon

Annex 8:

Details of Feeding Formulas: F75[®] and F100[®]

F75[®] is the “starter” formula to use during initial management, beginning as soon as possible and continuing until the child is stabilised.

F75[®] contains 75kcal and 0.9g protein per 100ml.

F100[®] contains more calories and protein: 100kcal and 2.9g protein per 100ml.

Details on F75[®] and F100[®] and preparation method

Composition of F-75[®] and F-100[®]

Contents per 100ml	F-75 [®]	F-100 [®]
Energy (Kcal)	75	100
Protein (g)	0.9	2.9
Lactose (g)	1.3	4.2
Potassium (mmol)	3.6	5.9
Sodium (mmol)	0.6	1.9
Magnesium (mmol)	0.43	0.73
Zinc (mg)	2.0	2.3
Copper (mg)	0.25	0.25
% of energy from protein	5	12
% of energy from fat	32	53
Osmolarity (mOsmol/l)	333	419

Preparation of F-75[®] / F-100[®]

- They are commercially available as powder formulations that can be mixed with clean water.
- Once mixed with water, the mixture must be used afresh without delay.
- One sachet of 456 g diluted in 2 litres of drinking water gives 2.4 litres high energy milk (100 kcal/100 ml); Prepare quantities according to the number of children available.
- Use F 75[®] for the first phase (stabilization) and F 100[®] in the transition phase.
- F75[®] and F100[®] should be used only for inpatient care.
- Add 350 ml drinking water per 1 litre of F 100[®] in order to prepare F75[®] which has low osmolarity and the energy density of 75 kcal/100 milk.
- If ready-to-use F75[®] or F100[®] are not available, they can be prepared using local ingredients and a complex of minerals and vitamins.

Administering the F-75[®] / F-100[®]

- A cup and/or spoon should be used for feeding.
- Initially, only liquid formula feeds should be given.
- After 2-7 days, semi-solid food can be introduced (when appetite returned and oedema reduced or minimal).
- For all infants and young children, breast-feeding should be continued in addition to solid feeding. Feeding should be continued, even if a child occasionally vomits.

Organizing a therapeutic feeding centre

- Each centre must have: enough water (30 litres per person per day)
- Each therapeutic feeding centre will require the same basic equipment. As a rough guide, a centre that cares for 50 children will need the following:
 - 5 buckets, 5 stirrers, 5 measuring cups
 - 100 feeding cups and spoons
- Pediatrician / Medical officer should be in charge.

Storage

- In a cool and dry place, protected from UV light
- Shelf life: 6 months
- F75[®] / F100[®] should be kept in its original packaging
- Once opened, the sachet must be immediately used up. The sachet can be kept if well closed and kept in an airtight container
- Once reconstituted, the milk should be consumed within 2 hours
- Destroy milk powder immediately if the color, the smell or the aspect of the milk has changed, even if the expiry date is not yet reached, since there is an important risk of organoleptic change of the product.

Hygiene and food safety

- Plenty of clean and safe water (at least 30 litres per person per day) must be available in the health facilities)
- Foods must be protected from flies, insects, and dust, and should not be reconstituted in advance
- The mothers or other caregivers should clean the children's feeding plates and utensils after every meal
- Everyone who feeds the children must wash their hands with soap first
- Latrine facilities must be available for patients and personnel

Record-keeping

- Each child's progress should be carefully monitored and full records should be kept, including weight charts.

Recipes of F75[®] / F100[®] to be prepared in the hospital

	Milk is available		Milk is not available	
	F-75 [®] *	F-100 [®] **	F-75 [®]	F-100 [®]
Dried skimmed milk (g)	25	80	-	-
Sugar (g)	70	50	85	25
Pre-cooked cereal flour (g) / Corn Soya Blend (CSB) / Thripasha	35	-	50	150
Vegetable oil (g)	27	60	25	40
Electrolyte/mineral solution (ml) ¹	20	20	20	20
Water: make up to (ml)	1000	1000	1000 ^a	1000 ^a
Content per 100ml				
Energy (kcal)	75	100		
Protein (g)	1.1	2.9		
Lactose (g)	1.3	4.2		
Potassium (mmol)	4.2	6.3		
Sodium (mmol)	0.6	1.9		
Magnesium (mmol)	0.46	0.73		
Zinc (mg)	2.0	2.3		
Copper (mg)	0.25	0.25		
% energy from protein	6	12		
% energy from fat	32	53		
Osmolality (mOsm/litre)	334	419		

*Cook for 4 min. and add mineral/vitamin mix after cooking. This may be helpful for children with dysentery or persistent diarrhoea.

**A comparable F-100[®] formula can be made from 110 g whole dried milk, 50 g sugar, 30 g oil, 20 ml electrolyte/mineral solution and water to make 1000 ml. If using fresh cow's milk, take 880 ml milk, 75 g sugar, 20 ml oil, 20 ml electrolyte/mineral solution and water to make 1000 ml.

^a Add boiled water

¹Formula for concentrated electrolyte/mineral solution

This solution is used in the preparation of F-75[®], F-100[®] and ReSoMal[®]. Electrolyte and mineral powders are produced by some manufacturers. If these are not available or affordable, prepare the solution (2500 ml) using the following ingredients:

Ingredient	Amount
Potassium chloride (KCl)	224
Tripotassium citrate	81
Magnesium chloride (MgCl ₂ .6H ₂ O)	76
Zinc acetate (Zn acetate.2H ₂ O)	8.2
Copper sulfate (CuSO ₄ .5H ₂ O) g	1.4
Water to make up to	2500 ml

If available, also add selenium (0.028 g sodium selenate, NaSeO₄.10H₂O) and iodine (0.012 g potassium iodide, KI) per 2500 ml.

- Dissolve the ingredients in boiled cooled water.*
- Store the solution in sterilized bottles in a refrigerator to retard deterioration. Discard if it turns cloudy. Make up fresh each month.*
- Add 20 ml of the concentrated electrolyte/mineral solution to each 1000 ml of milk feed.*
- If it is not possible to prepare this electrolyte/mineral solution and pre-mixed sachets are not available, give potassium, magnesium and zinc separately. Make a 10% stock solution of potassium chloride (100 g in 1 litre of water) and a 1.5% solution of zinc acetate (15 g in 1 litre of water).*
- For the oral rehydration solution ReSoMal[®], use 45 ml of the stock potassium chloride solution instead of 40 ml electrolyte/mineral solution*
- For milk feeds F-75 and F-100, add 22.5 ml of the stock potassium chloride solution instead of 20 ml of the electrolyte/mineral solution to 1000 ml of feed. Give the 1.5% zinc acetate solution by mouth at 1 ml/kg per day. Give 0.3 ml/kg of 50% magnesium sulfate intramuscularly once to a maximum of 2 ml.*

Annex 9:

Feed volumes for the child with F75[®]

Weight of the child (kg)	Range of volumes per 2-3-hourly feed of F-75 [®] (ml) (8-12 feeds daily)		Range of daily volumes of F-75 [®]	
	Every 2 hours (12 feeds)	Every 3 hours (8 feeds)	Daily total (130ml/kg/day)	80% of daily total (minimum)
2.0	20	30	260	210
2.2	25	35	286	230
2.4	25	40	312	250
2.6	30	45	338	265
2.8	30	45	364	290
3.0	35	50	390	310
3.2	35	55	416	335
3.4	35	55	442	355
3.6	40	60	468	375
3.8	40	60	494	395
4.0	45	65	520	415
4.2	45	70	546	435
4.4	50	70	572	460
4.6	50	75	598	480
4.8	55	80	624	500
5.0	55	80	650	520
5.2	55	85	676	540
5.4	60	90	702	560
5.6	60	90	758	580
5.8	65	95	754	605
6.0	65	100	780	625
6.2	70	100	806	645
6.4	70	105	832	665
6.6	75	110	858	685
6.8	75	110	884	705
7.0	75	115	910	730
7.2	80	120	936	750
7.4	80	120	962	770
7.6	85	125	988	790
7.8	85	130	1014	810
8.0	90	130	1040	830
8.2	90	135	1066	855
8.4	90	140	1092	875
8.6	95	140	1118	895
8.8	95	145	1144	915
9.0	100	145	1170	935
9.2	100	150	1196	960
9.4	105	155	1222	980
9.6	105	155	1248	1000
9.8	110	160	1274	1020
10.0	110	160	1300	1040

Annex 10:

Feed volumes for the child with F-100[®]

Weight of the child (kg)	Range of volumes per 3 hourly feed of F-100 [®] (8 feeds daily)		Range of daily volumes of F-100	
	Minimum (ml)	Maximum (ml)	Minimum (150ml/kg/day)	(minimum) (220ml/kg/day)
2.0	40	55	300	440
2.2	40	60	330	485
2.4	45	65	360	530
2.6	50	70	390	570
2.8	55	80	420	620
3.0	55	85	450	660
3.2	60	90	480	705
3.4	65	95	510	750
3.6	70	100	540	795
3.8	70	105	570	840
4.0	75	110	600	880
4.2	80	115	630	925
4.4	85	120	660	970
4.6	85	125	690	1010
4.8	90	130	720	1055
5.0	95	140	750	1100
5.2	100	145	780	1145
5.4	100	150	810	1190
5.6	105	155	840	1230
5.8	110	160	870	1280
6.0	115	165	900	1320
6.2	115	170	930	1365
6.4	120	175	960	1410
6.6	125	180	990	1450
6.8	130	190	1020	1500
7.0	130	195	1050	1540
7.2	135	200	1080	1590
7.4	140	205	1110	1630
7.6	145	210	1140	1670
7.8	145	215	1170	1715
8.0	150	220	1200	1760
8.2	155	225	1230	1805
8.4	160	230	1260	1850
8.6	160	235	1290	1890
8.8	165	240	1320	1935
9.0	170	250	1350	1980
9.2	175	255	1380	2025
9.4	175	260	1410	2070
9.6	180	265	1440	2110
9.8	185	270	1470	2155
10.0	190	275	1500	2200

Annex 11:

In patient management

Preparation of F-75[®] and F-100[®]

Feed volumes for the child with F-75[®]

Weight of the child (kg)	Range of volumes per 2-3 hourly feed of F-75 [®] (8-12 feeds daily)		Volume to be prepared every 3 hr	
	Every 2 hours (12 feeds)	Every 3 hours (8 feeds)	F-75 [®] (g)	Water (ml)
2.0-2.9	20	30	1 teaspoon	25
3.0-3.9	35	50	2 teaspoons	40
4.0-4.9	45	65	2 ½ teaspoons	50
5.0-5.9	55	80	3 ½ teaspoons	75
6.0-6.9	65	100	4 teaspoons	90
7.0-7.9	75	115	4 ½ teaspoons	100
8.0-8.9	90	130	5 ½ teaspoons	110
9.0-9.9	100	145	6 teaspoons	130

Feed volumes for the child with F-100[®]

Weight of the child (kg)	Range of volumes per 4-hourly feed of F-100 [®] (6 feeds daily) (ml)	Volume to be prepared every 3 hr	
	Feed	F-100 [®] (g)	Water (ml)
2.0-2.9	75	3 teaspoons	80
3.0-3.9	110	5 teaspoons	130
4.0-4.9	145	6 teaspoons	160
5.0-5.9	185	7 teaspoons	200
6.0-6.9	220	8 teaspoons	240
7.0-7.9	255	10 teaspoons	270
8.0-8.9	295	12 teaspoons	320
9.0-10.0	330	13 teaspoons	350

24-hour food intake chart for inpatient management

Name: Hospital BHT No: Admission Weight (kg): Today's weight (kg):

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

Total volume taken over 24 hours = amount taken orally (c) + amount taken by NG (d) – total amount vomited (e) = _____ ml

Annex 13:

Prevent and treat hypoglycaemia

- Treat asymptomatic hypoglycaemia with a feed of F-75[®] or 10% glucose (50ml) orally. Re check the blood sugar in 30 minutes to assure it is above 3mmol/L. If not, repeat feed as above.
- Treatment of hypoglycaemia should start as soon as the child reaches the hospital. Such children should not be kept waiting and quickly given 50ml of glucose solution (10%) orally. If the child is alert but not drinking, give the 50ml by Naso-gastric tube.
- Treat symptomatic hypoglycaemia (fits/decreased level of consciousness/ eye lid retraction), severe hypoglycaemia (<1.5mmol/L), unconscious or convulsing should be treated by 5ml/kg, 10% dextrose solution administered intravenously (IV) followed by 50ml of 10% glucose or sucrose by NG tube. If only 50% dextrose is available, dilute 1 part of 50% dextrose solution with 4 parts sterile water.
- Start feeding F-75[®] half an hour after giving glucose and give it every half-hour during the first 2 hours. For a hypoglycaemic child, the amount to give every half-hour is ¼ of the 2 hourly amounts shown on annex-9.
- Take another blood sample after 2 hours and check the child's blood glucose again. If blood glucose is 3mmol/L or higher change to 2-hourly feeds of F-75[®]. If still low, make sure antibiotics and continue giving F-75[®] every half-hour (annex-9).
- Test blood glucose 3 hourly in severely ill children.

Annex 14:

Prevent and treat hypothermia

Hypothermia is present when the under-arm (axillary) temperature is below 35°C (<35.5°C body temperature), and indicates the need to immediately warm up and feed the child.

- **Prevent Hypothermia**
 - Measure under-arm temperature 3 hourly.
 - Keep the child covered at all times, including the head, especially at night.
 - Stop draughts in the room; move the child away from window.
 - Keep the child dry.
 - Avoid exposure (such as bathing) to cold temperature, motivate the mother to bathe the child during the hottest hours of the day, not in the early morning or evening. Promptly change wet clothes and dry the child thoroughly. If use hot water to bath, afterwards cover well.
 - Use mother-child skin to skin contact (Kangaroo care) to keep the child warm.
- **Treat Hypothermia**
 - Immediately place the child in skin to skin contact (Kangaroo care) against mother's chest and/or abdomen and wrap both with blankets. Give a hot drink to the mother.
 - If the mother is absent, clothe and wrap the child (including the head) with a warmed blanket.
 - Monitor temperature during re-warming to avoid hyperthermia or uncorrected hypothermia. Check the temperature every 2 hours until it rises over 36.5°C.

Annex 15:

Prevent and treat Dehydration

Many children with severe acute undernutrition also suffer from diarrhoea, and may therefore become dehydrated.

- **To prevent dehydration in a child with diarrhoea:**
 - Replace approximate volume of stool losses with Resomal[®]. If Resomal[®] is not available, replace with half diluted ORS (Jeevani) with KCl one tablet twice daily. ReSoMal[®] is a rehydration solution for undernourished children and is the one to use in case of dehydration of a severe acute undernourished child or after each stool passed.

Composition of ReSoMal[®]

Glucose	55 mmol
Saccharose	73 mmol
Potassium	40 mmol
Sodium	45 mmol
Chloride	70 mmol
Citrate	7 mmol
Magnesium	3 mmol
Zinc	300 micromol
Copper	45 micromol
Osmolarity of the solution	294 mEq / litre

Preparation of ReSoMal[®]

- They are commercially available as powder formulations that can be mixed with clean water.
- Once mixed with water, the mixture must be used within 24 hours;
- One sachet of 84 g is diluted in 2 litres of drinking water; Prepare quantities according to the number of children available.

Local preparation of a rehydration solution suitable for an undernourished child (similar to ReSoMal[®])

Recipe for locally prepared rehydration solution for undernourished children

Ingredients	Amount
Water	2 litres
Jeevani [®]	1 packet
Sugar (Sucrose)	50 g
Electrolyte / mineral solution	40 ml

- See above (page 52) for the recipe for the electrolyte/mineral solution.
- If use a commercially prepared electrolyte and mineral powder, follow the manufacturer's instructions.
- If these cannot be made up, use 45 ml of potassium chloride solution (100 g potassium chloride in 1 litre of water) instead.

- ReSoMal[®] contains approximately 45 mmol sodium, 40 mmol potassium and 3 mmol magnesium per litre.
- Give ReSoMal[®] / ORS as follows, in amounts based on the child's weight

How often to give ReSoMal [®]	Amount to give
Every 30 minutes for first 2 hours	5ml/kg body weight
Alternate hours for up to 10 hours	5 - 10 ml/ kg*

(* Amount offered in this range should be based on the child's willingness to drink and the amounts of ongoing losses in the stool or vomitus)

- If the child has already received IV fluids for shock and is switching to ReSoMal[®] / ORS, omit the first 2-hour treatment and start with the amount for the next period of up to 10 hours.
- F-75[®] is given in alternate hours during this period until the child is rehydrated.
- Encourage continued breast feeding if breastfed.

Recognize the need for rehydration solution (ReSoMal[®])

- It is difficult to determine dehydration status in a severely undernourished child, as the usual signs of dehydration (such as lethargy, sunken eyes) may be present in these children all of the time, whether or not they are dehydrated.
- Ask the mother if the child has had watery diarrhoea or vomiting. If the child has watery diarrhoea or vomiting, assume dehydration and give ReSoMal[®]. (Also ask about blood in the stool, as this will affect choice of antibiotics.)
- Even if a severely undernourished child has oedema, he may be dehydrated. The oedema indicates a loss of control of fluid distribution in the body, rather than too much fluid. If the child has diarrhoea or vomiting, give ReSoMal[®] even if the child has oedema.
- Note the following signs of dehydration in order to detect improvements later. Even though the signs may be misleading, if they go away after giving ReSoMal[®], you will know that the ReSoMal[®] has had a good effect.

Signs of Dehydration

Lethargic	A lethargic child is not awake and alert when he should be. He is drowsy and does not show interest in what is happening around him.
Restless, irritable	The child is restless and irritable all the time, or whenever he is touched or handled.
Absence of tears	Observe whether the child has tears when he cries.
Sunken eyes	The eyes of a severely undernourished child may always appear sunken, regardless of the child's hydration status. Ask the mother if the child's eyes appear unusual.
Dry mouth, tongue and conjunctivae	
Thirsty	See if the child reaches out for the cup when you offer fluid. When it is taken away, see if the child wants more.

Skin pinch goes back slowly

Using your thumb and other 4 fingers, pinch a flap of skin over child's abdomen halfway between the umbilicus and the side of the abdomen. Place your hand so that the fold of skin will be in a line from top to bottom, to a side of the midline and, not across the body from left to right. Firmly pick up all the layers of skin and tissue under them for one second and then release. If the skin stays folded for a brief time (more than 2 seconds) after you release it and then only goes back to its original position slowly, that indicates presence of dehydration. *(Note: The skin pinch may always go back slowly in a wasted child.)*

Give rehydration solution for undernourished children slowly

- It is essential to give this solution slowly, much more slowly than you would give ORS to a well-nourished child.
- Too much fluid, too quickly, can cause heart failure.
- The best way to give this solution is by cup, even with a very sick child. The child may need to be coaxed, or you may need to use a spoon or syringe.
- If the mother is able to give it, she should be taught to give it slowly.
- A nasogastric (NG) tube can be used to give the solution at the same rate if the child is too weak to take enough fluid voluntarily. An NG tube should be used in weak or exhausted children, and in those who vomit, have fast breathing, or painful mouth sores.
- IV fluids should not be used to treat dehydration (except in case of shock as discussed earlier). Since clinical signs cannot determine the degree of dehydration and too much fluid could cause heart failure, it is very important that fluids not be forced on the child. When fluids are given orally, the child's thirst helps to regulate the amount given.

Monitor the child who is taking rehydration solution for undernourished children

- Monitor the child's progress every half hour for the first two hours; then monitor hourly, i.e., every time the child takes therapeutic milk feed (F-75[®]) or the above solution.

Signs to check

- Respiratory rate - Count for a full minute.
- Pulse rate - Count for 30 seconds and multiply by 2.
- Urine frequency - Ask: Has the child urinated since last checked? (if possible measure and record). Also ask for the colour (if it is dark yellow and concentrated it suggests dehydration).
- Stool or vomit frequency - Ask: Has the child had a stool or vomited since last checked?
- Signs of hydration - Have tears returned? Is the mouth less dry? Is the child less lethargic or irritable? Are the eyes less sunken? Does a skin pinch go back faster? Has the urine output and colour improved?
- Check severe pallor as soon as the child receives IV (especially at the beginning).
- Record the above information, then give the rehydration solution and record the amount taken. Notice any changes when you check the signs above.

Signs of improving hydration status

- Fewer or less pronounced signs of dehydration, for example:
 - less thirsty
 - skin pinch not as slow
 - less lethargic

Note: Although these changes indicate that rehydration is receding, many severely undernourished children will not show these changes even when fully rehydrated.

- Slowing of rapid respiratory and pulse rates
- Passing urine and colour is pale yellow
- Not thirsty

If a child has 3 or more of the above signs of improving hydration status, stop giving the rehydration solution routinely in alternate hours. Instead, offer after each loose stool.

Signs of Over hydration

Stop the rehydration solution if any of the following signs appear:

- Increased respiratory and pulse rate (both must increase to consider it a problem).
- Engorged jugular veins (pulse wave can be seen in the neck)
- Increasing oedema (e.g., puffy eyelids).

Annex 16:

Treat infections

Infection is common among severely undernourished children and signs of infection such as fever are often absent.

- **Consider all children admitted as infected and start treatment according to the national protocol while investigating for the infection.**
- **Choice of broad spectrum antibiotics for bacterial infection**
 - **Child with no signs of infections** (no danger signs present), must receive oral antibiotics as below:
 - Amoxycillin 15mg/kg/day 8 hourly orally for 5 days
 - **Child is severely ill or has complications** (hypoglycaemia, hypothermia, lethargy, skin lesions, respiratory infection), must receive antibiotics as below:
 - Gentamycin 7.5mg/kg/24 hourly IV or IM for 7 days
 - AND
 - Ampicillin 50mg/kg IV 6 hourly 2 days.
 - FOLLOWED BY
 - Oral Amoxycillin 15mg/kg 8 hourly for 5 days.
- Before starting antibiotics collect specimens for investigations
 - Blood and urine for culture and ABST
 - C- Reactive Protein
 - Other relevant investigations based on clinical indications
- **If child fails to improve in 48 hours:**
 - Check if all the above steps have been carried out
 - Check for correct feeding
 - Investigate aggressively for occult infection (chest / urine / blood / CSF) and if possible refer to specialised paediatric care

Annex 17:

Correct electrolyte imbalance and micronutrient deficiencies

- All severely undernourished children have electrolyte imbalances
 - Prepare food without added salt
 - Treat and prevent electrolyte imbalances
 - Treat and prevent vitamin and mineral deficiency
 - No clinical signs of Vitamin A deficiency: Give Vitamin A megadose according to the national protocol
 - Signs of Vitamin A deficiency present: treat with Vitamin A megadose
 - Signs: conjunctival xerosis, Bitot spots, clouding of cornea or corneal ulceration or scars
 - Treatment regimen (dose based on age of child):
Immediately on diagnosis (D0), give
 - < 6 months 50,000 IU
 - 6-12 months 100,000IU
 - >12 months 200,000IUSecond dose the next day (D1) – Same age specific dose
Third dose can be given between D14 and D28 - Same age specific dose
- Give multi-vitamin preparation, which contains vitamins and minerals, especially B group vitamins and Zinc (should not start iron immediately)
- Treat and prevent iron deficiency only after the child has started to gain weight
 - Iron supplementation is not given until the child starts to gain weight, even if anaemic.
 - Once gaining weight give: elemental Iron 3mg/kg/day
 - Always give iron orally, never give via parenteral route.
 - Give iron supplement preferably between feeds.
 - At this stage give Mebendazole 100mg twice daily orally for 3 days for children above two years of age.

Management of Severe anaemia

Blood transfusion should be given in the first 24 h only if:

- Hb is < 4 g/dl
- Hb is 4–6 g/dl and the child has respiratory distress.

In severe acute undernutrition, the transfusion must be slower and of smaller volume than for a well-nourished child. Give;

- whole blood, 10 ml/kg, slowly over 3 hours
- furosemide, 1 mg/kg IV at the start of the transfusion.

If the child has signs of heart failure, give 10 ml/kg of packed cells, because whole blood is likely to worsen this condition. Children with severe acute undernutrition with oedema may have redistribution of fluid leading to apparent low Hb, which does not require transfusion.

Annex 18:

Provide stimulation, play and loving care

- From the time of admission provide tender loving care.
- Structure play and activity for 15-30 min/day in a cheerful stimulating environment.
- Encourage mother's involvement as far as possible.
 - o Hang colourful objects from the cot rails
 - o Pick child up at least hourly for love, play and contact
 - o Sing or have music playing
 - o Use a kind, soothing voice
 - o Use simple hand made toys for playing

Annex 19:

Plan of feeding for the ward

The ward schedule should include times for the following activities:

- Preparing feeds (as often as necessary to ensure freshness)
- Reviewing patient charts and planning feeding for the day
- Feeding according to 2-hourly and 3-hourly plans
- Weighing
- Bathing
- Shift changes

Time for preparing feeds

- Feeds should be prepared every 2-3 hours depending on the need.
- Feeds should be used within 2 hours of preparation and leftover feeds discarded after 2 hours.

Time for review and planning

- Select a time of day to review each child's past 24-hour food intake chart (Annex 21).
- Plan feeding for each child (during ward round).
- Compile feeding plans for each child onto a feeding chart for the entire ward using Daily Ward Feed Chart (Annex 21). Can be used by the kitchen staff.

Feeding times

- Select a time of day that each "feeding day (24 hours)" will start.
- Plan times for 2-hourly and 3-hourly feeds.
- Ensure no feeds occur at times of shift changes of staff.
- Keep in mind that a few children, those with hypoglycaemia or continued vomiting, may be on a special half-hourly or hourly feeding schedule. Ensure the additional feeds are provided outside the normal schedule.

Weighing and bathing

- Daily weighing should be done at about the same time each day, preferably one hour before or after a feed.
- Children who are on 2-hourly feeding schedules are new to the ward and are likely to be too ill to be given a bath.
- Children on 3-hourly schedules could be given the bath when they are weighed.

Shift changes

- Normally 3 shifts per day and feeding should not be scheduled to be carried out during a shift change.

Annex 20:

Example of Ward Schedule

Time	Activities by feeding schedules		Other ward activities/comments
	2-hourly	3-hourly	
6.00am	Weigh, feed	Weigh, feed	
7.00			
8.00	Feed		Paediatrician / MO review each child's past 24-hour food intake chart and weight; plans feeding for the day; completes daily ward feed chart
9.00		Feed	Prepare feeding plan for the next 24 hours; distribute individual charts to bed
10.00	Feed		Start of new "feeding day"
11.00			Organised play, parent education
12.00	Feed	Feed	
1.00pm			
2.00	Feed		
3.00		Feed	Organised play, parent education
4.00	Feed		
5.00			Organised play, parent education
6.00pm	Feed	Feed	
7.00pm			
8.00	Feed		
9.00		Feed	
10.00	Feed		
11.00pm			
12.00am	Feed	Feed	
1.00			
2.00	Feed		
3.00		Feed	
4.00	Feed		
5.00			
6.00am	Feed	Feed	

Annex 21:

Daily ward feed chart for in patient management

Date: _____

Ward: _____

Name of The child	Low osmolar milk feed (75kcal/100mg - F75 [®])			High osmolar milk feed (100kcal/100mg - F100 [®])		
	Number of feeds	Amount/feed(ml)	Total (ml)	Number of feeds	Amount/feed(ml)	Total (ml)
Total volume needed for 24 hours (ml)				Total volume needed for 24 hours (ml)		
Amount needed for _____ hours*				Amount needed for _____ hours*		
Amount to prepare (round up to whole litre)				Amount to prepare (round up to whole litre)		

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

Annex 22:

Calculation of weight gain

(To be calculated after the child starts taking either F100[®] or RUTF)

Weight gain in (g/kg/day) =

Assessment day's/Discharge weight in (g) – Admission weight in (g)

Admission weight in (kg) x number of days in the programme

(E.g. Admission weight of the child = 9.5kg = 9500g, Discharge weight of the child = 11.5kg = 11500g, Number of days in the programme = 30 days

$$\text{Weight gain} = \frac{11500 - 9500}{9.5 \times 30} = \frac{2000}{285} = 7.0 \text{ g/kg/day}$$

(If child had oedema on admission take the initial weight as the weight on the day of disappearance of oedema)

Average weight gain in the clinic =

Total of daily weight gain of every child (g/kg/day)

Total number of children discharged

(E.g. Daily wt gain of 1st child= 5g/kg/day, Daily wt gain of 2nd child = 7g/kg/day, Daily wt gain of 3rd child = 6g/kg/day

Total of daily weight gain of every child = 5 + 7 + 6 = 18

Average weight gain in the clinic = 18 / 3 = 6)

Length of stay (days):

Average length of stay =

Sum of length of stay (in days)

Total number of children discharged

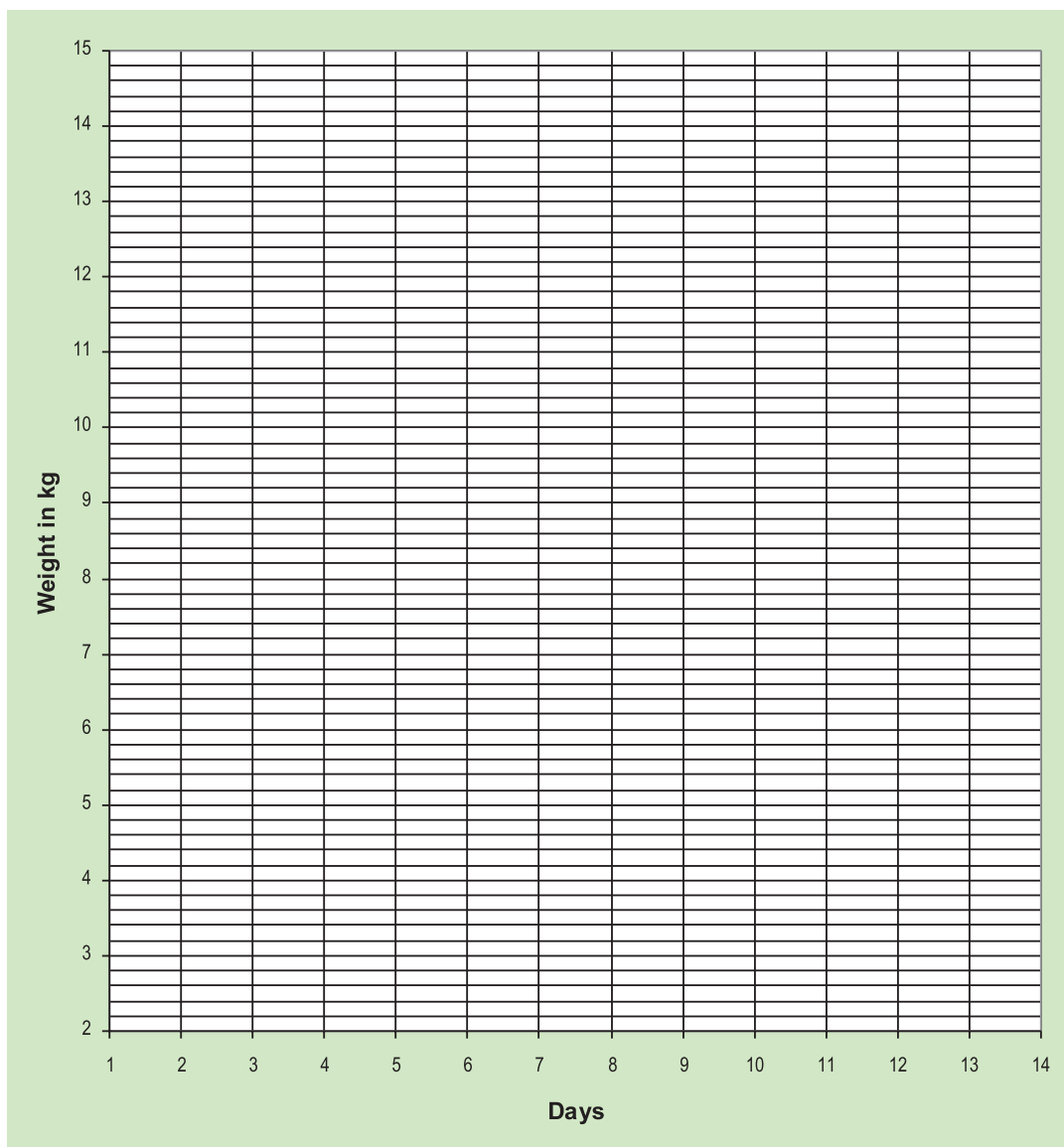
(E.g. Length of stay of 1st child= 20, Length of stay of 2nd child= 30, Length of stay of 3rd child= 55, Sum of length of stay = 20 + 30 + 55 = 105

Average length of stay = 105 / 3 = 35 days)

Annex 23:

Weight gain chart for Hospital use

Weigh the child daily and on each day plot the child's weight on the chart. Take the starting day as day 1. Mark each point with an X or a clearly marked dot. Connect the points to see the child's progress. The chart shown below can be used to mark the dates when F 75[®] or F100[®] or RUTF is started. At the beginning, draw horizontal lines of the weights that represent -3SD for this particular child's length/height.



Annex 24:

Monthly feedback summary form

(Should be prepared by each institution treating SAM children in triplicate; office copy, RDHS copy and FHB copy)

Reporting period: Month Year
 Ward/clinic: Name of the hospital: District:

Age category (Month s)	Total no. of children at beginning of the month (A)	New Enrolments				Discharge / Exits					Total number of children at the end of the month	No. of RUTF packets issued
		Number of new Admissions (B)	Type of admission			Type of discharge/Exit						
			1 st detection	Relapse	Defaulter	Transferred from In patient care	Cured	Died	Defaulted	Admitted to ward	Transferred for further care	
6-11												
12-23												
≥24												
Total												

Monthly stock return / Request form - H 1158

Page 1

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* මෙම තොරතුරු, එවිසි ග්‍රෑෂන් ප්‍රාදේශීය වෛද්‍ය සැපයුම් අංශ හා රෝහල් වලින් පමණි (ඓතිහාසික අවකාශය යටතේ ඇති රෝහල් සහ අනෙකුත් රෝහල්).

This information should be sent from RMSD and Hospitals (Line Ministry & other hospitals) only.

இத்தகவல்கள் பிராந்திய மருத்துவ பிரிவு (டி.ம.வி.பி) மற்றும் வைத்தியசாலைகளிலிருந்த (மத்திய அமைச்சர் மற்றும் வேறு) மட்டும் அனுப்பப்பட வேண்டும்.

ஏற்கனவே கையொப்பம் :- Signature	ஏற்கனவே கையொப்பம் :- Signature
உறுதி தேதி :- Date	உறுதி தேதி :- Date

Annex 26:

Guide to family food for child aged 6 months to 5 years

Servings for each age group per day

Food group	6 - 8+ months	9 - 11+ months	12 - 23+months	2 - 5 years
Cereals	1- 1½ (FBDG 2011)	1½- 2 (FBDG 2011)	1½- 2 (FBDG 2011)	2 or more servings (FBDG 2011)
* Breast milk	Provide after meals and ensure that child is adequately hungry at least for about 2 hours before a main meal			
Milk products e.g. curd, yoghurt, cheese if breast milk is not provided	½ - 1	1	1	1-2
Fish, meat and eggs	1	1-2	1-2	2
Lentils, pulses, nuts,	1	1	1-2	1-2
Fruits	1	1-2	1-2	1-2
Vegetables,	1	1-2	1-2	1-2
Green leafy vegetables	1	1	1	1
Fat based foods	One teaspoon /meal	1-2 teaspoon /meal	Small amounts	Small amounts
Sugar based foods – optional (Eg. Sweets)	Not recommended		If given - A small amount after meals	
Salt	Not recommended		Less salt	
* in-case of formula fed infants	500 – 600ml	500-600ml	2	2

One serving = 1 cup = 200ml, 1 table spoon = 15ml

Energy requirement of children 1-5 years

- 950-1475 kcal/day (male children)
- 850-1325 kcal/day (female children)

Amount and frequency of food to offer - A summary

Age	Texture	Frequency	Average amount for each main meal
<6 months	Exclusive breastfeeding (If growth faltering is present despite adequate breastfeeding complementary food can be started between 4-6 months).		
6+-8+ months	Start with well mashed rice. Gradually make it coarser.	• 2-3 main meals & 1-2 snacks a day (one snack between two main meals). • Breast feeds – preferably after meals from 7th month onwards. • Allow adequate time between two meals to let the baby get hungry.	Start with 2-3 teaspoonfuls per feed increasing gradually to a little more than ½ of a 200 ml cup
9-11+ months	Chopped or coarsely mashed foods and foods baby can pick up using fingers (finger foods)	• 3 main meals & 1-2 snacks a day (one snack between two main meals). • Breastfeeds - after meals. • Allow adequate time between two meals to let the baby get hungry.	¾ of a 200ml cup
12-23+ months	Nutritious adult foods (if necessary chopped or coarsely mashed)	• 3 main meals & one to two snacks a day (one snack between two main meals). • 2-3 Breastfeeds a day- after meals. • Allow adequate time between two meals to let the baby get hungry.	1 full 200ml cup or a bit more
24- 60 months	Nutritious adult foods	• 3 main meals & one to two snacks a day (one snack between two main meals). • 2-3 Breastfeeds a day - after meals. • Allow adequate time between two meals to let the baby get hungry.	More than 1 full 200ml cup

Annex 27:

Community mobilization

The success of the nutrition rehabilitation programme depends on creation of good understanding of the programme by the communities and attaining of high coverage of the target population. This in turn depends on clear description of the target population and effective communication of the objective of the programme to the community and creating a mechanism for their participation in decision making processes. This will help avoid misunderstanding and attracting the wrong target group to the programme. Public Health Midwife is involved with case finding and follow up of children enrolled in the rehabilitation programme. The following steps need to be put in place to support effective community mobilization – community sensitization, case finding, follow-up and ongoing sensitization.

1. Community sensitization:

Community sensitization on the importance of regular growth monitoring and promotion of children under 5 years of age promotes good understanding of the programme objectives and approaches.

2. Case finding:

All weighing posts need to be used to identify new cases and ensure that children who need to benefit from the programme actually get the benefit. During the weighing session active case finding and referral to MOH for confirmation should be done. Nutrition month can be used for annual screening of under five children.

At the child welfare clinic a list should be maintained of the children who were referred for management of SAM (name and address of the child, PHM area, date referred, hospital).

3. Follow up:

Children identified to be included in the programme need to be followed up for their regular attendance, defaulting and changes in their situation. PHM plays a critical role in follow up of these cases. She should obtain the information on referred cases from the list maintained at the child welfare clinic and update her records (CHDR B portion, growth monitoring register) accordingly and follow up these children for compliance.

Annex 28:

Content of sensitisation messages on SAM

The following points should be explained:

Undernourished children, especially those with severe acute undernutrition are much more likely to contract illnesses, with or without complications, than their well nourished counterparts. With appropriate and timely nutrition management in hospitals, clinics, homes and regular follow-up care, growth and development of many children can be improved.

What the programme does:

- The programme cares for severe and acutely undernourished children and offers them therapeutic food and thereafter supplementary food that will allow them to recover. Target group is children from birth to 5 years.
- The programme identifies and enrolls children to the programme by measuring weight, length/height and comparing them to a normal healthy child. This shows whether they need special food or not.

How the programme operates:

- The mother, father or care giver brings the child to the field weighing post of the Public Health Midwife, where appropriate screening will be done mainly by measuring weight. The children who are likely to have severe acute undernutrition are then referred to the Child Welfare Clinic of the MOH for confirmation of the condition by length/height measurement and clinical assessment. Those who are confirmed to be suffering from severe acute undernutrition (SAM) are then referred by the MOH to the hospital for special therapeutic food programme.
- If the child is severely undernourished with no other complications, he/she is given special therapeutic food to take home.
- The mother / care giver should feed the special food to the child according to the advice given by the hospital. They are advised on how to prepare the food and feed the child and keep him/her healthy.
- They have to return to the clinic regularly for follow up.
- When the child gets better and his/her weight increases, they are discharged from the hospital programme and then will be referred back to the MOH for follow up.

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