



# OPERATIONAL GUIDELINES

## on Facility Based Management of Children with SEVERE ACUTE MALNUTRITION



Ministry of Health and Family Welfare  
Government of India, 2011





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## FOREWORD

Childhood undernutrition is an important public health and development challenge in India. Undernourished children have significantly higher risk of mortality and morbidity. Besides increasing the risk of death and disease, undernutrition also leads to growth retardation and impaired psychosocial and cognitive development.

Children with Severe Acute Malnutrition (SAM) have nine times higher risk of dying than well-nourished children. In India, the prevalence of SAM in children remains high despite overall economic growth. The National Family Health Survey-3 revealed that 6.4 percent of all children under-five years of age are severely wasted. With appropriate nutritional and clinical management, many of the deaths due to severe wasting can be prevented.

Under National Rural Health Mission, Nutrition Rehabilitation Centers have been set up at health facilities in many districts. Program managers have expressed a need to have clear operational guidelines on setting up and managing Nutrition Rehabilitation Centers. In response to this need, Reproductive and Child Health Programme, Ministry of Health and Family Welfare, Government of India in collaboration with the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO), child nutrition and health experts and program managers have drafted these guidelines.

These Operational Guidelines focus on the health facility-based approach for the management of SAM children, while recognizing the need for an integrated community and facility-based approach to provide timely and quality care to the large number of children with SAM. The Guidelines can be used by states where the initiative is still in the planning phase and also those where it is ongoing.

I am confident that these Operational Guidelines will prove to be useful for the state program managers, nutrition and health care professionals, and others involved in the planning, implementing and monitoring management of programmes for children with SAM. It would also provide assistance to service providers working in the facilities by way of key clinical protocols. I earnestly hope that the Guidelines would be used constructively at the national, state, district and sub-district levels for improving the survival, growth and development of children with SAM.

**Mr. P.K. Pradhan**

Secretary  
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## Abbreviations

<b>AHS</b>	Annual Health Survey
<b>AWW</b>	Anganwadi worker
<b>ASHA</b>	Accredited Social Health Activist
<b>CHC</b>	Community Health Centre
<b>F-IMNCI</b>	Facility Based Integrated Management of Newborn and Childhood Illnesses
<b>FRU</b>	First Referral Unit
<b>HIV</b>	Human Immunodeficiency Virus
<b>HFA</b>	Height-for-age
<b>IV</b>	Intravenous
<b>IU</b>	International Unit
<b>mcg</b>	micrograms
<b>MUAC</b>	Mid-Upper Arm Circumference
<b>NACO</b>	National AIDS Control Organisation
<b>NG</b>	Nasogastric
<b>NRC</b>	Nutrition Rehabilitation Centre
<b>NFHS</b>	National Family Health Survey
<b>OPD</b>	Outpatient Department
<b>ORS</b>	Oral Rehydration Solution
<b>PHC</b>	Primary Health Centre
<b>RCH</b>	Reproductive and Child Health
<b>ReSoMal</b>	Rehydration solution for malnourished children
<b>SAM</b>	Severe Acute Malnutrition
<b>SD</b>	Standard Deviation

<b>SRS</b>	Sample Registration System
<b>SST</b>	Supplementary Suckling Technique
<b>TOT</b>	Training of Trainers
<b>VHND</b>	Village Health and Nutrition Day
<b>WFA</b>	Weight-for-age
<b>WFH</b>	Weight-for-height
<b>WFL</b>	Weight –for- length
<b>WHO</b>	World Health Organization

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## INTRODUCTION

### Status of child undernutrition in India

Undernutrition is one of the most concerning health and development issues in India as in other parts of the world. Undernutrition encompasses stunting (chronic malnutrition), wasting (acute malnutrition) and deficiencies of micronutrients (essential vitamins and minerals). The high mortality and disease burden resulting from undernutrition call for urgent implementation of interventions to reduce their occurrence and consequences and this would include determined action on the social determinants of undernutrition.

NFHS 3 shows that the proportion of children who are stunted or underweight increases rapidly with the child's age from birth to age 20-23 months; peaking at age 20 months. Even during the first six months of life, when most infants are breastfed, 20-30 percent of children are underweight. It is notable that by age 18-23 months, when many

children are being weaned from breast milk, 30 percent of children are severely stunted and one-fifth are severely underweight.

The levels of child undernutrition is unacceptably high in almost all states, even though some states like Goa, Kerala, Manipur, Mizoram, Punjab and Sikkim have lower levels.

### Addressing undernutrition in children under five years

Undernutrition is associated with high rates of mortality and morbidity and is an underlying factor in almost one-third to half of all children under five years who die each year of preventable causes. Strong evidence exists on synergism between undernutrition and child mortality due to common childhood illnesses including diarrhoea, acute respiratory infections, malaria and measles. To

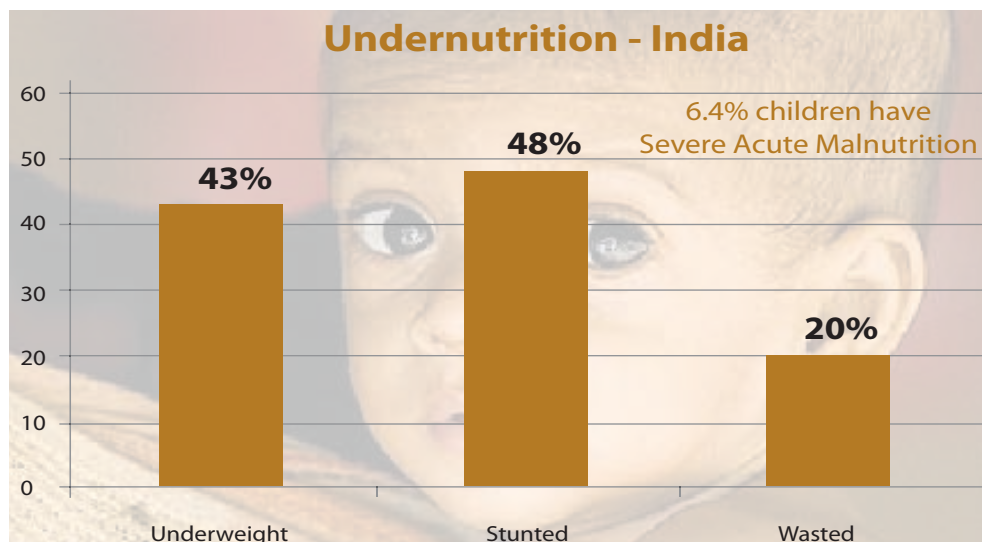
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### According to the National Survey (NFHS-3, 2005-06)

- ◆ 43 percent children under age of five years are underweight (low weight for age).
- ◆ 48 percent children under five are stunted (low height for age).
- ◆ 20 percent children under five years of age are wasted (low weight for height); Over 6 per cent of these children are severely wasted (<-3SD). Since 'wasting' denotes acute malnutrition, these children are said to have Severe Acute Malnutrition or SAM.

### In addition

- ◆ Nearly 70 percent children (6-59 months) have anaemia. Of these 26 percent are have mild anaemia, 40 percent have moderate anaemia and 3 percent have severe anaemia.
  - ◆ 22 percent newborns have low birth weight (below 2.5 Kgs).
-



Prevalence of underweight, stunting and wasting among children under five years old in India (Source: NFHS 3)

prevent deaths due to severe acute malnutrition (SAM), specialised treatment and prevention interventions are required.

Programmatically, it is helpful to categorise children with SAM into 'complicated and uncomplicated' cases based on clinical criteria as:

1. Facility/hospital-based care for children with SAM and medical complications.
2. Home/community-based care for children with SAM but without medical complications.

Children with SAM, when managed in specialised units with skilled manpower and adequate resources for nutrition rehabilitation have very high levels of survival. However with an estimated 8 million children with severe acute malnutrition, addressing the problem through facility based approach alone is unfeasible. There is ample evidence suggesting that large numbers of children with SAM that do not have medical complications (85–90% of all SAM children)<sup>1</sup> can be treated in their communities without being admitted to a health facility. Besides, children managed at specialised units located at health facilities also need to be followed up at their households and communities after being discharged for continued care and support; and to prevent the relapse. Therefore a community based programme, which complements and links

to facility based interventions should be put in place simultaneously. In other words, effective management of SAM must be based on the basic principle of "Continuum of Care" - from the home and community, to the health center/health facility and back again.

It must finally be recognized that although treatment is urgently needed for those who are severely undernourished, preventing child undernutrition is critical. NRCs will reduce child mortality but will not improve the general nutritional status of children in the community. From the perspective of health sector, the most important intervention is promotion of appropriate infant and young child feeding and nutrition practices and related maternal undernutrition.

## Understanding malnutrition

### What is malnutrition?

Malnutrition is a general term. It most often refers to undernutrition resulting from inadequate consumption, poor absorption or excessive loss of nutrients, but the term can also encompass over-nutrition, resulting from excessive intake of specific nutrients. In subsequent text, we would use the words malnutrition and undernutrition interchangeably. An individual will experience malnutrition if the appropriate amount of, or quality of nutrients comprising for a healthy diet are not consumed for an extended period of time.

<sup>1</sup> Steve Collins, *Food and Nutrition Bulletin*, vol. 27, no. 3.

## How can undernutrition be measured?

In children, undernutrition is synonymous with growth failure - undernourished children are shorter and lighter than they should be for their age/height. To get a measure of malnutrition in a population, young children are weighed and/or their height is measured and the results compared to those of a 'reference population' known to have grown well. Measuring weight and height is the most common way of assessing malnutrition in a given population. Such use of measurements of dimensions of the human body is known as anthropometry.

Anthropometry is a widely used, inexpensive and non-invasive measure of the general nutritional status of an individual or a population group. The three commonly used anthropometric indices are:

- ◆ Weight-For-Age (WFA).
- ◆ Length-For-Age or Height-For-Age (HFA).
- ◆ Weight-For-Length or Weight-For-Height (WFH).



Source: UNICEF/India-2006/Anita Khemka

## What are the types of undernutrition?

The three indices - weight-for-age, height/length-for-age, weight-for-height/length are used to identify three nutrition conditions: underweight, stunting and wasting, respectively. Each of the three nutrition indicators is expressed in standard deviation units (Z-scores) from the median of the reference population based on which undernutrition may be further classified as moderate or severe.

**Underweight:** Underweight, based on weight-for-age, is a composite measure of stunting and wasting and is recommended as the indicator to assess changes in the magnitude of malnutrition over time. This condition can result from either chronic or acute malnutrition, or both. Underweight is often used as a basic indicator of the status of a population's health as weight is easy to measure. Evidence has shown that the mortality risk of children who are even mildly underweight is increased, and severely underweight children are at even greater.

An underweight child has a weight-for-age Z-score that is at least two standard deviations (-2SD) below the median in the World Health Organization (WHO) Child Growth Standards.

**Stunting:** Failure to achieve expected height/length as compared to healthy, well-nourished children of the same age is a sign of stunting. Stunting is an indicator of linear growth retardation that results from failure to receive adequate nutrition over a long period or recurrent infections. It may be exacerbated by recurrent and chronic illness. It is an indicator of **past growth failure**. It is associated with a number of long-term factors including chronic insufficient nutrient intake, frequent infection, sustained inappropriate feeding practices and poverty. Stunting often results in delayed psycho-social and cognitive development and poor school performance. This in turn affects economic productivity at national level.

A stunted child has a height-for-age Z-score that is at least two standard deviations (-2SD) below the median for the WHO Child Growth Standards.

**Wasting:** Wasting represents a recent failure to receive adequate nutrition and may be affected by recent episodes of diarrhoea and other acute illnesses. Wasting indicates **current or acute**

**malnutrition** resulting from failure to gain weight or actual weight loss. Causes include inadequate food intake, incorrect feeding practices, disease, and infection or, more frequently, a combination of these factors. Wasting in individual children and population groups can change rapidly and shows marked seasonal patterns associated with changes in food availability or disease prevalence to which it is very sensitive.

A wasted child has a weight-for-height Z-score that is at least two standard deviations (-2SD) below the median for the WHO Child Growth Standards.

### Severe Acute Malnutrition (SAM)

Severe acute malnutrition is defined by very low weight-for-height/length (Z- score below -3SD of the median WHO child growth standards), a mid-upper arm circumference <115 mm, or by the presence of nutritional oedema.

SAM increases significantly the risk of death in children under five years of age. It can be an indirect cause of child death by increasing the case fatality rate in children suffering from common illnesses such as diarrhea and pneumonia. Children who are severely wasted are 9 times more likely to die than well-nourished children.

Using the new WHO Child Growth Standards in developing country situations results in a 2–4 times increase in the number of infants and children falling below -3 SD weight for height/length compared to using the former NCHS reference. Using the new standards increase the levels of malnourished children; however it also leads to earlier detection of malnutrition and in a less severe state; thereby providing an opportunity for faster recovery and lower case fatality rates.

### Impact of undernutrition

Children suffering from undernutrition begin their lives with a significant disadvantage. As mentioned above, child malnutrition significantly contributes to under-five mortality as undernourished children have increased susceptibility to infections and hence frequent episodes of illness and longer recovery period.

Besides increasing risk of mortality, undernutrition leads to growth retardation and impaired psychosocial and cognitive development.

This further impacts on education attainment. The degree of cognitive impairment is directly related to the severity of stunting and Iron Deficiency Anaemia.

Without treatment, children who are affected by moderate or severe acute malnutrition during the critical stage of life between conception and age 2, if not provided with timely and quality care, will find it difficult to achieve their full potential.

Scientific evidence has shown that beyond the age of 2-3 years, many effects of chronic undernutrition are irreversible. This means that to break the intergenerational transmission of poverty and undernutrition, children at risk must be reached during their first two years of life.

### Purpose of the operational guideline

The purpose of this Operational Guideline is to support state health authorities, programme managers and health care professionals with recommendations on appropriate management of children with SAM in the health facilities. Facility based management includes setting up and managing within the health facility premises, a functional space where these children

#### Diagnostic criteria for SAM in children aged 6–60 months

Indicator	Measure	Cut-off
Severe wasting	Weight-for-height	< -3SD
Severe wasting	MUAC <sup>2</sup>	< 115mm
Bilateral oedema	Clinical sign	

*Reference: WHO/UNICEF Joint Statement*

<sup>2</sup> Mid-upper arm circumference



are cared for. This Facility Based Unit is referred to as Nutritional Rehabilitation Centre<sup>3</sup> or NRC in the document. While the scale and design may vary in a given situation, it is intended that the document provide the basis for a consistent set of principles that can be used by all states for facility based management of children with SAM. The Operational Guideline focuses on the Facility/Hospital based approach for the management of SAM children under 5 years of age based on the WHO and revised IAP protocols.

**Scope of Operational Guidelines:** These operational guidelines are for the provision of care in the facility for those children who are sick and have severe acute malnutrition. We recognise the need for interventions at the community level for those children who have severe acute malnutrition but do not qualify for admission into a facility. We also recognise the need for more elaborate guidelines to detect SAM cases and for follow up of children discharged from the facility after treatment for SAM. These aspects are briefly touched upon in these guidelines, but they need much more elaboration in separate guidelines for community level care providers. To keep this document focused and user-friendly, we limit the scope of these operational guidelines to addressing care for the SAM child at the facility.

The guideline is divided in two sections:

**Section 1:** Operational Guideline

**Section 2:** Technical Guideline

This first section (operational guideline) focuses on objectives of facility based management of children with SAM and the required infrastructure, equipment, supplies, human resources and monitoring tools, where as second section (technical guideline) provides criteria for admission and discharge, emergency management and basic treatment protocols when dealing with a child with severe acute malnutrition.

These operational guideline are meant for:

- ◆ State officials responsible for management of child health programs (State RCH officers, State Child Health Consultants, Nodal Officer Nutrition, State Child Health Officers, State Program Managers.
- ◆ District RCH officers, District Nodal Officer for Nutrition, District Program Manager, District Child Survival Coordinator.
- ◆ Hospital administrators such as Medical Superintendents, Principal Medical Officers, in-Charge Pediatricians at District and Sub-District hospitals.
- ◆ Health personnel like Medical Officers, Nurses, and nutrition counsellor posted at NRCs or in pediatric wards.
- ◆ Other administrators and personnel involved directly or indirectly in monitoring or implementing the nutrition programme.

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<sup>3</sup> NRC refers to a unit for 'inpatient, centre based' care of children with severe malnutrition. Many states use different terminologies for this unit; these guidelines are valid for all such facilities.



# 1

SECTION

# Operational Guidelines:

**Planning and Implementation**



# 1

## Section

# SETTING-UP OF NUTRITION REHABILITATION CENTER (NRC) IN A HEALTH FACILITY

SAM is an important preventable and treatable cause of morbidity and mortality in children below five years of age in India. A number of state governments have taken the lead and are in the process of scaling up the establishment of NRCs with the intention to improve the quality of care being provided to children with SAM and to reduce child mortality.

**Nutrition Rehabilitation Center (NRC)** is a unit in a health facility where children with Severe Acute Malnutrition (SAM) are admitted and managed. Children are admitted as per the defined admission criteria and provided with medical and nutritional therapeutic care. Once discharged from the NRC, the child continues to be in the Nutrition Rehabilitation program till she/he attains the defined discharge criteria from the program (described in technical guidelines).

In addition to curative care, special focus is given on timely, adequate and appropriate feeding for children; and on improving the skills of mothers and caregivers on complete age appropriate caring and feeding practices. In addition, efforts are made to build the capacity of mothers/caregivers through counselling and support to identify the nutrition and health problems in their child.

In-patient management of SAM children is highly effective in reducing case fatality rates, but even under the best circumstances inpatient management will not be able to handle the entire caseload of children with SAM in a given district. Other issues may include problem of access to the health facility and long hospital stay requiring caregivers to stay away from home and work for many days.

Therefore a community based programme for the management of severe acute malnutrition should be in place to complement the delivery of services by Nutrition Rehabilitation Centers. More importantly mechanisms need to be in place to regularly monitor the growth of children so that wasting and growth faltering can be detected in their early stages and corrective measures taken before the child progresses to severe grades of undernutrition.

## A1. Objectives of facility based management of SAM

1. To provide clinical management and reduce mortality among children with severe acute malnutrition, particularly among those with medical complications.
2. To promote physical and psychosocial growth of children with severe acute malnutrition (SAM).
3. To build the capacity of mothers and other care givers in appropriate feeding and caring practices for infants and young children
4. To identify the social factors that contributed to the child slipping into severe acute malnutrition.

## A2. Services provided at the facility

The services and care provided for the in-patient management of SAM children include:

- ◆ 24 hour care and monitoring of the child.
- ◆ Treatment of medical complications.

- ◆ Therapeutic feeding.
- ◆ Providing sensory stimulation and emotional care.
- ◆ Social assessment of the family to identify and address contributing factors.
- ◆ Counseling on appropriate feeding, care and hygiene.
- ◆ Demonstration and practice- by -doing on the preparation of energy dense child foods using locally available, culturally acceptable and affordable food items.
- ◆ Follow up of children discharged from the facility.

### A3. Planning for NRCs in a state

The total number of NRCs that would be required to manage children with SAM and medical complications in a state will depend upon the prevalence of SAM, expected incidence and case load of children with SAM with medical complications, existing health infrastructure, accessibility, and population inequities.

It is suggested that states should prioritize the establishment of NRCs in ‘**High Need Areas**’. This can include Tribal districts, and High Focus Districts identified under NRHM, districts with high under-five mortality (based on SRS or Annual Health Survey Data) and districts with high undernutrition rates. On the basis of available skilled human resources (financial, human and physical) states can plan for scaling up to a state wide coverage.

The NRCs should be established at Medical College Hospitals and District Hospitals. Sub-District Hospitals and Community Health Centres can be considered where facilities are geared to manage paediatric emergencies and complications in children with SAM. Medical College Hospitals that do facility based management should in addition function as a training facility for capacity building of medical and para-medical staff besides playing a mentoring role and providing supportive supervision to the NRCs.

### A 4. Planning for NRCs in a district

Within a district identified for establishing NRCs , the location and the numbers can be decided based on

#### Planning for NRCs in a district

**Example 1:** Calculations of beds for management of SAM children with medical complications for a district with two million population:

Total population of the district	2 million
Total under 5 population (14%)	280,000
Total under 5 children with SAM (8%*)	22,400
Total SAM with Medical Complications (10%)	2,240
Average stay in Hospital for management of acute complications 10 days	
Total bed days 2240 X 10	22400
Total beds required = Total bed days/365 days (22400/365) (with 100% bed occupancy)	60

**Therefore one NRC of about 20 beds at the district hospital, supplemented with about 4 NRCs of 10 beds each at FRUs/CHCs/sub-divisional hospitals need to be set up for managing the expected number of children with SAM.**

*(This calculation is only indicative).*

Each state must calculate the required number of beds based on the state specific percentage of severely malnourished children under five years. The data is available in NFHS 3.

**Generally, 10-15% of children with SAM have medical complications require inpatient care, varying according to location and context. Number of facilities and beds can be decided taking into consideration the local situation.**

similar factors as for the state and include expected case load of SAM children with medical complications, existing health infrastructure, accessibility, and population inequities. Following example clarifies the required numbers of beds to manage all children with SAM and complications in a given district, and suggest their distribution within the district:

## A 5. Location and size of NRC

NRC is a special unit, located in a health facility and dedicated to the initial management and nutrition rehabilitation of children with severe acute malnutrition. At a district hospital/medical college hospital, the NRC would have 10-20 beds and at a FRU/CHC the NRC would have 6-10 beds. The unit should be a distinct area within the health facility and should be in proximity to the pediatric ward/in-patient facility.

The NRC should have the following:

- ◆ **Patient area** to house the beds; in NRC adult beds are kept so that the mother can be with the child.
- ◆ **Play and counselling area** with toys; audiovisual equipment like TV, DVD player and IEC material.
- ◆ **Nursing station**
- ◆ **Kitchen and food storage** area attached to ward, or partitioned in the ward, with enough space for cooking, feeding and demonstration.
- ◆ **Attached toilet and bathroom facility** for mothers and children along with two separate hand washing areas.

The approximate covered area of the NRC should be about 150 square feet per bed, plus 30% for ancillary area. A 10 bedded NRC should have a covered area of about 1950 square feet; this will include the patient area, play and counselling area, nursing station, kitchen, storage space, two bathrooms and two toilets.

NRC should have a cheerful, stimulating environment; it should be child friendly. Walls can be brightly painted and decorated. Ward should have sufficient space for all mothers/caregivers staying with the children to sit together and be given cooking and feeding demonstration.

### The following civil work is required

- ◆ **Floor surfaces:** Floor surfaces should be easily cleanable and should minimize the growth of microorganisms.
- ◆ **Walls:** As with floors, the ease of cleaning and durability of wall surfaces must be considered.
- ◆ **Water supply:** Unit should have 24 hour uninterrupted running water supply.
- ◆ **Power supply:** Unit should have a 24 hour uninterrupted stabilized power supply.
- ◆ **Lighting:** Should be well lit.
- ◆ **Ventilation:** Should be adequately ventilated, especially for the kitchen area.
- ◆ **Mosquito and fly screen:** Windows should be covered with mosquito and fly covers.

## B1. Human resources

The suggested staff requirement for the smooth functioning of a 10/20 bedded NRC is as follows:

Staff Position	Numbers for 10 bedded unit	Numbers for 20 bedded unit
Medical officer	One	Two
Nursing staff	Four	Eight
Nutrition counsellor	One	Two
Cook cum Care taker	One	Two
Attendant/cleaners	Two	Two
Medical social worker	One	One

### Job description

**Medical officer:** The Medical Officer (MO) should be a qualified medical doctor (MBBS) trained in facility based management of SAM. Medical Officer will be the overall in-charge of the unit and will be responsible for clinical management of children admitted in the NRC. The MO will examine each patient every day and will attend to emergency calls as per the need.

**Nutrition Counsellor:** The will function as a supervisor of the unit; trainer and counsellor for the staff posted in the NRC as well as mothers/caregivers. S/he will chart out specific therapeutic diet plan for each child as per the guidelines in consultation with the Medical Officer. S/he will also be responsible for monitoring the preparation and distribution of feeds as per diet charts, maintaining NRC records in registers, preparing reports of the NRC and in diet and treatment sheets.

Nutrition counsellor will assess the feeding problem in each child and give individual counselling to mothers. The nutrition counsellor will bring all mothers and caregivers of the admitted children together and give demonstration on making low-cost nutritious energy dense culturally acceptable child foods; and also provide group counselling on various topics like nutrition and malnutrition, hygiene and sanitation, infant and young child feeding practices, immunization, family planning etc. The nutrition counsellor will also provide counselling and demonstrate to mothers on structured play therapy for psychosocial stimulation to engage children in play therapy for at least 30 minutes each day. S/he will also provide group counselling to mothers of all children admitted in the health facility (eg; pediatric or general ward) and also to mothers of children presenting in outpatients department on designated days (eg. immunization day). This would also ensure optimum utilization of nutrition counsellor as the estimated workload at NRC does leave time for these additional functions.

**Nurse:** The nurses posted in the unit will be responsible for nursing care including weight record; measure, mix and dispense feed; give oral drugs; supervise intra venous fluids; assess clinical signs and fill the multichart with all the routine information. The nurse will also counsel mothers/caregivers on the emotional needs of her child and encourage them to give sensory stimulation. She is also in charge of the structured play therapy.

**Cook cum Care taker:** The cook cum care taker will prepare special diet for children as prescribed by the medical officer under the supervision of the Nutrition counsellor. The cook will also involve mothers and care givers of admitted children in preparation of food. Under the supervision of Nutrition counsellor,

they will make local purchase of food items. They can also help cook food for attendants.

**Attendant/Cleaner:** The cleaners are responsible for managing the cleaning duties and the provision of detergents, hand soaps, chlorine etc. Floors should be cleaned every day with soap and water. Toilets should be disinfected with 0.5% active chlorine solution.

**Medical Social Worker:** The medical social worker should make a social assessment of the family and the community in which the child lives. If needed, she will work together with the family to advise them on their eligibilities and social rights in order to improve their living situation and prevent further malnutrition and impoverishment. She can facilitate linkages with local Anganwadi, Public Distribution System and public welfare schemes as may be relevant to the child and the family.

## B2. Training of staff

Training should be planned at two levels as a simultaneous process.

### Pre-service training

The SAM training package should be included in the pre-service teaching of doctors and nurses. It should be included in the training schedule of undergraduate students and interns during their postings in the Department of Paediatrics. Staff nurses' training schools should also include the guideline in their training schedules. State governments may need to issue necessary directives/instructions to medical directorates in this regard.

### In-service training for the existing staff

The training needs of different levels of staff would vary. The three categories of staff with different training needs are as follows:

- ◆ Medical Officer and Nursing Staff
- ◆ Nutrition Counsellor
- ◆ Cook and Care Taker
- ◆ AWW/ASHA

The existing staff of Pediatric wards of the District Hospitals/NRCs and Medical Colleges should be provided 'in-service' training in a phased manner. The



objective of the training effort would be to ensure that all medical officers and nurses attending to children, including those posted in NRC are trained in **Facility Based Care of Severely Malnourished Children**.

The training package on **Facility Based Care of Severe Acute Malnutrition** intends to be incremental and complementary to F-IMNCI.

**It consists** of the following:

- ◆ Participant Manual
- ◆ Facilitator’s Guide
- ◆ Wall Charts
- ◆ Videos

The training is focused on applied skill development. Around 50% of training time is spent building skills by “hands-on training” involving actual case management and counselling, the remaining 50% is spent in classroom sessions, building theoretical understanding of management protocols. The hands-on training is undertaken through clinical training sessions in hospitals.

States may conduct orientation or training of nutrition counsellor on Infant and Young Child Feeding and Nutrition Management of children with severe acute malnutrition using appropriate training packages. The training should be conducted by a team comprising of a physician, nurse and nutritionist who have the experience of working in NRC or managing children with SAM.

Orientation of ASHAs and ANMs on growth monitoring, identification of children with SAM using MUAC and community based management and follow up should be conducted during monthly meetings.

An orientation meeting of 1 to 2 days may be organized for District Programme Managers and key personnel such as senior health functionaries and

other stake holders to orient them about ‘Facility Based Management of Severe Acute Malnutrition’ and its implementation plan.

The care taker and cook will be trained on the job by the nutrition counsellor.

## Training of trainers

For training of the medical officers and nurses it would be essential to have adequate number of trainers within the state and districts. The TOT for State and District facilitators will be facilitated by National Facilitators of the SAM package or Facilitators of F-IMNCI after suitable orientation.

## Number to be trained

Keeping in view the ‘participant to facilitator ratio’ of 1:4-6 (one trainer to 4 – 6 participants) and availability of adequate number of facilitators at all times, it is recommended that a total of 16-18 participants should be included for each training.

## Training institutions

Since training is mainly skill based, the clinical sessions need to be done by the Departments of Paediatrics in Medical Colleges/District Hospitals or NRCs. Another benefit of selecting the medical colleges as regional training centre would be in the pre-service training of undergraduate students.

## Organizing trainings

1. **State level training** may be organized as **Training of trainers (TOT)** in order to develop a pool of trainers who have undergone the Training of Trainers course (Faculty of Medical Colleges; Departments of Pediatrics).
2. **Training of Medical Officers, Nurses and Nutrition Counsellor** working in the NRCs and those posted in Pediatrics Ward at District Hospitals or CHCs should be organized. All postgraduates and nurses working in

Type of training	Personnel to be trained	Duration	Package to be used	Place of Training
Facility Based Care of Severe Acute Malnutrition	Medical Officer and Nurses	3 days	Training Package on ‘Facility Based Care of Severe Acute Malnutrition’	Medical College/NRC; Facility managing severely malnourished children as ‘inpatients’

Paediatric ward a teaching hospital will be trained in management of such cases as part of their training.

### Training on Facility Based Care of Severe Acute Malnutrition

**Trainees:** Medical Officers, Staff Nurses (Nutrition Counsellor may be included in the training).

**Venue:** Training shall be organized at a medical college hospital with at least 5-10 sick children with SAM admitted at any time.

**Duration of training:** 3 days for Medical Officers, Staff Nurses and Nutrition Counsellor.

**Trainers:** Senior pediatricians of Medical Colleges; National F-IMNCI Facilitators.

**Participant facilitator ratio:** 6:1

**Number of participants:** 16 -18 per workshop.

3. The States should project their funding requirements for the following in NRHM/RCH-II-PIPs:
  - ◆ TA/DA and honorarium to trainees and trainers as per RCH norms for training of medical officers and nurses.
  - ◆ **Translation, printing and supply of training material:** Soft copies of the training package will be made available to the states for facilitating training. These can be printed by the states depending on the projected requirement. The funding for the same may be included under 'Child Health Trainings' in State NRHM/RCH-II budget.
  - ◆ **Field-level monitoring support, follow up and coordination:** States may indicate funds required for monitoring and follow up visits/meetings, coordination and other related activities for successful implementation of the trainings.

## C1. List of equipment and supplies

Given below is a list of equipments that would be required for the smooth functioning of the NRC. However, much of these equipments may already be available at the health facility and can be mobilized for the NRC, while supplies may be purchased as part of medicines and drug supply of the hospital.

### Details of the equipments and supplies for NRC

Essential Ward Equipments
Glucometer - (1)
Thermometers (preferably low-reading) – (2)
Weighing scales (Digital) (3: one each to be kept in Ward, Outpatient and Emergency area)
Infantometer (1 each for OPD and NRC)
Stadiometer (to measure standing height) (1)
Resuscitation equipments
Suction equipment (low pressure)

Other Ward Equipments
IV stands
Almirahs
Shoe rack & dustbin
Room heaters
IEC – Audio/visual materials (TV; DVD player)
Toys for structural play (Safe, Homemade toys can be used as well)
Clock
Calculator
Reference height and weight charts

Kitchen Equipments	
Cooking Gas Dietary scales (to weigh to 5 gms.), Measuring jars Electric Blender (or manual whisks), Water Filter Refrigerator	
Utensils (large containers, cooking utensils, feeding cups, saucers, spoons, jugs etc.)	
Pharmacy Supplies	Estimated cost Monthly (Rs.)
<b>Antibiotics:</b> (Ampicillin/Amoxycillin/Benzyl penicillin Chloamphenicol Cotrimoxazole Gentamycin Metronidazole Tetracycline or Chloramphenicol eye drops Atropine eye drops	Will vary, depending on Bed Occupancy
ORS Electrolyte and minerals Potassium chloride Magnesium chloride/sulphate Iron syrup Multivitamin Folic acid Vitamin A syrup Zinc Sulfate or dispersible Zinc tablets Glucose (or sucrose) IV fluids (Ringer's lactate solution with 5% glucose; 0.45% (half normal) saline with 5% glucose; 0.9% saline (for soaking eye pads)	
<b>Consummables</b> Cannulas, IV sets, paediatric nasogastric tubes	
Kitchen Supplies	Estimated cost Monthly (Rs.)
Supply for making Starter and Catch up Diet Dried Skimmed Milk Whole dried milk Fresh whole milk Puffed rice Vegetable oil Foods similar to those used in home (for teaching/use in transition to home foods)	Will vary, depending on Bed Occupancy
Other costs (Estimated monthly expenditure)	
<b>Stationery</b> (printing of formats, growth charts, registers, etc.), Display material	
<b>Cleaning and bathroom supplies</b>	
<b>Maintenance cost</b>	

## C 2. Cost of setting up Nutrition Rehabilitation Centers

### Indicative costs

The indicative cost given below includes cost of ward equipments, kitchen equipments, medical supplies, kitchen supplies and maintenance cost.

**Salaries:** Salary of the staff should be budgeted as per the existing salary scales in the state.

**Wage compensation:** Wage compensation is to be given to the mother/caregiver for the duration of the

stay at NRC, as per the basic daily wages in the state. Mother or the caregiver staying with the child should be provided food from the health facility.

In addition to the costs mentioned above, the states may include the following costs under appropriate budget lines.

**Transport:** To and back transport for the mother and the child with SAM (and ASHA if she accompanies the mother and child to the NRC) children should be provided through JSSK. This includes visits for follow up as well as referrals to higher facilities.

Budget estimate (for a 10 bedded NRC)				
S. No.	Items	Unit cost	Total cost	Remarks
<b>A. One-time Expenditure</b>				
A1	Civil Work (Renovation)			
	1.1 Ward	25,000	25,000	
	1.2 Kitchen	20,000	20,000	
	1.3 Bathroom and Toilets	15,000	15,000	
A2	Cots and Mattresses	2,500	25,000	
A3	Essential Ward Equipments	50,000	50,000	List provided in Section C
A4	Other Ward Equipments	35,000	35,000	
A5	Kitchen Equipments	30,000	30,000	
Total (one-time expenditure)			2,00,000	
<b>B. Recurrent Expenditure</b>				
B1	Kitchen Supplies	15,000	1,80,000	List provided in Section C
B2	Pharmacy Supplies and Consumables	15,000	1,80,000	
B3	Other Costs			
	Wage Compensation and food for mother/care giver	Rs. 100/day	3,60,000	
	Maintenance of equipments, Linen, Cleaning supplies	3,500	42,000	
	Contingency	1,500	18,000	
	Subtotal	64,500	7,80,000	
<b>C. Human Resources</b>				
	Medical officer (one)	30,000	3,60,000	To be budgeted as per salary scale in the state
	Nurses (four)	40,000	4,80,000	
	Nutrition Counsellor (one)	15,000	180,000	
	Cook cum Care Taker (one)	5,000	60,000	
	Attendant (two)	7,000	84,000	
	Subtotal		11,64,000	
<b>Total Recurrent Expenditure (per year)</b>			<b>19,44,000</b>	

**Training:** The training load (for Facility Based Management of SAM) should be estimated and the requisite budget for three days training can be included under Child Health Trainings.

**ASHA incentives:** Incentives of Rs. 50 can be provided to ASHA for accompanying the child to the NRC and motivating the mother to stay for at least 7 days till the child is stabilized and has started to eat. Additional incentive of Rs. 50 may be given for each follow up visit by the child, up to a maximum of three visits.

## D. Operational steps in setting up of NRCs at state and district level

Facility management of severe acute malnutrition is an important child health intervention to be implemented as part of NRHM/RCH-II. Training for staff working in these facilities should be part of the overall training plan under RCH-Phase II/NRHM.

### D1. Institutional arrangements at state level

#### 1. Designate a nodal officer for nutrition

The setting up of facility based unit for management of SAM implementation would require coordination at all levels: right from Anganwadi and sub centre to district. It is therefore suggested that at state level, the existing Nodal Officer Child Health may be designated as nodal officer for nutrition interventions and the State RCH Officer/Director as the overall in charge for the implementation.

#### 2. Set up a state co-ordination group

A State Co-ordination Group should be formed which includes members from the Departments of Medical Education, Health and WCD, Development Partners, professional bodies and senior faculty members of medical colleges. Existing platforms such as State level Child Health Resource Groups may be used. The mandate of the coordination group would be to (i) provide technical support for planning and implementation of nutrition interventions (ii) facilitate convergence between various departments for training, referrals and linkages,

(iii) review progress of the implementation every quarter based on monitoring indicators.

The State Coordination Group will function from the Directorate of Health and Family Welfare. The group will provide technical advice on all matters related to program implementation, monitoring and evaluation, training content for different levels of health functionaries for the NRCs. This group would provide leadership and guidance for qualitative implementation and scaling up of the NRCs as well as review the functioning of NRCs.

#### 3. Select priority districts for implementation

The program should be implemented in a well-planned manner as it requires time and resources. It is therefore suggested that the NRCs be established in a phased manner starting with districts with high levels of malnutrition.

In view of this being a resource intensive intervention, establishment of NRCs should be well phased and strategic in their location.

#### 4. Identify the state nodal institute for training

The institute must have adequate case load of SAM cases and good facilities for training. They must have a dedicated trained staff and the institute should itself be following the technical guidelines and protocols for managing sick children with SAM. Medical colleges will be designated as State Nodal institution for the following purposes:

- i. Capacity building of staff and administrators:
  - ◆ Establishing the state trainer pool.
  - ◆ Training in administration/managerial issues for state and district managers.
  - ◆ Refresher courses or continuing medical education (CME) once every year.
- ii. On-going support:
  - ◆ Mentoring the staff after training, through on site visits.
  - ◆ Assess and ensure quality of care in NRCs in their jurisdiction.

#### 5. Orientation workshop

State Nodal Officer should organize a 1-2 days orientation workshop for the state and district officials

and coordinators to discuss the implementation plan and informing them about technical and operational details, training material and how to monitor and implement the guidelines.

## 6. Arrange printing and supply of training material

Training materials on facility based management of SAM have been developed by a group of experts and approved at the central level. Soft copies of modules, charts, booklets, videos and facilitators guides are now available for conducting the training. Requirement of funding for printing the training material may be reflected as part of state PIPs. In addition, also make available wall charts on clinical protocols that should be displayed on the walls of the NRC to act as job –aides.

## 7. Create pool of state level trainers

Depending on number of children with SAM, states should work out their requirement for state level trainers. A pool of State Master Trainers may be established to conduct trainings and also to monitor post training utilization of skills. Existing F-IMNCl trainers in the state, after suitable orientation, can be utilized as State Master Trainers.

## 8. Monitoring, follow-up and review of implementation

Once the units are made functional, utilization of services and quality of care being provided in the unit should be monitored on a regular basis. Details of the monitoring indicators and reporting formats are provided in the following pages.

## 9. IEC activities

Improving community behaviour, for example in infant and young child feeding practices and child care and maternal nutrition, is an important objective of this program. Besides, there is a need to promote recognition and appreciation of severity of SAM among families. This should be achieved through IEC/BCC activities as a part of RCH/NRHM BCC strategy. The messages should be consistent with technical protocols and guidelines. Major emphasis should be laid on appropriate feeding practices and early care seeking by the families for sick children with malnutrition. Wall charts for assessment and

management of sick children with SAM should be displayed in the out-patient department, in-patient department and emergency room for regular use of health providers.

## D2. Institutional arrangements at district level

### 1. Designate a district co-ordinator

District RCH officer will have overall responsibility for implementation and monitoring of the program. S/he will be supported by the District Child Health/IMNCl Nodal officer whose job profile will be expanded to include coordination of facility based management of children with SAM. District RCH Officers and District Coordinators should be oriented on the implementation plan, operational guidelines, training material and IEC on SAM.

The District Co-ordinator will be having the following responsibility: (i) Plan the establishment of NRCs (ii) coordinate and plan trainings (iii) Ensure adequate funding and supplies to all NRCs (iv) monitor district implementation on a regular basis, (v) review progress of training on a quarterly basis, (vi) ensure uninterrupted timely supply of drugs and equipment and maintenance of equipment.

### 2. Develop a detailed plan for the district

Each district will need to formulate a detailed time-lined and budgeted training as well as implementation and monitoring plan. The training plan will reflect in detail the overall training workload and gradual coverage of all the medical officers and nurses in the paediatric wards of District Hospitals and and Medical Colleges and all NRCs at Medical Colleges, District and Sub District Hospitals. In addition, selection of training sites, number of trainers and training materials, training calendar, referral, and monitoring and review arrangements should be addressed well in advance.

The plan should be reflected in the child health component of the PIP. As with the state plan, the district plan for this intervention should be planned and presented together with the District NRHM/RCH II plan, not in isolation.

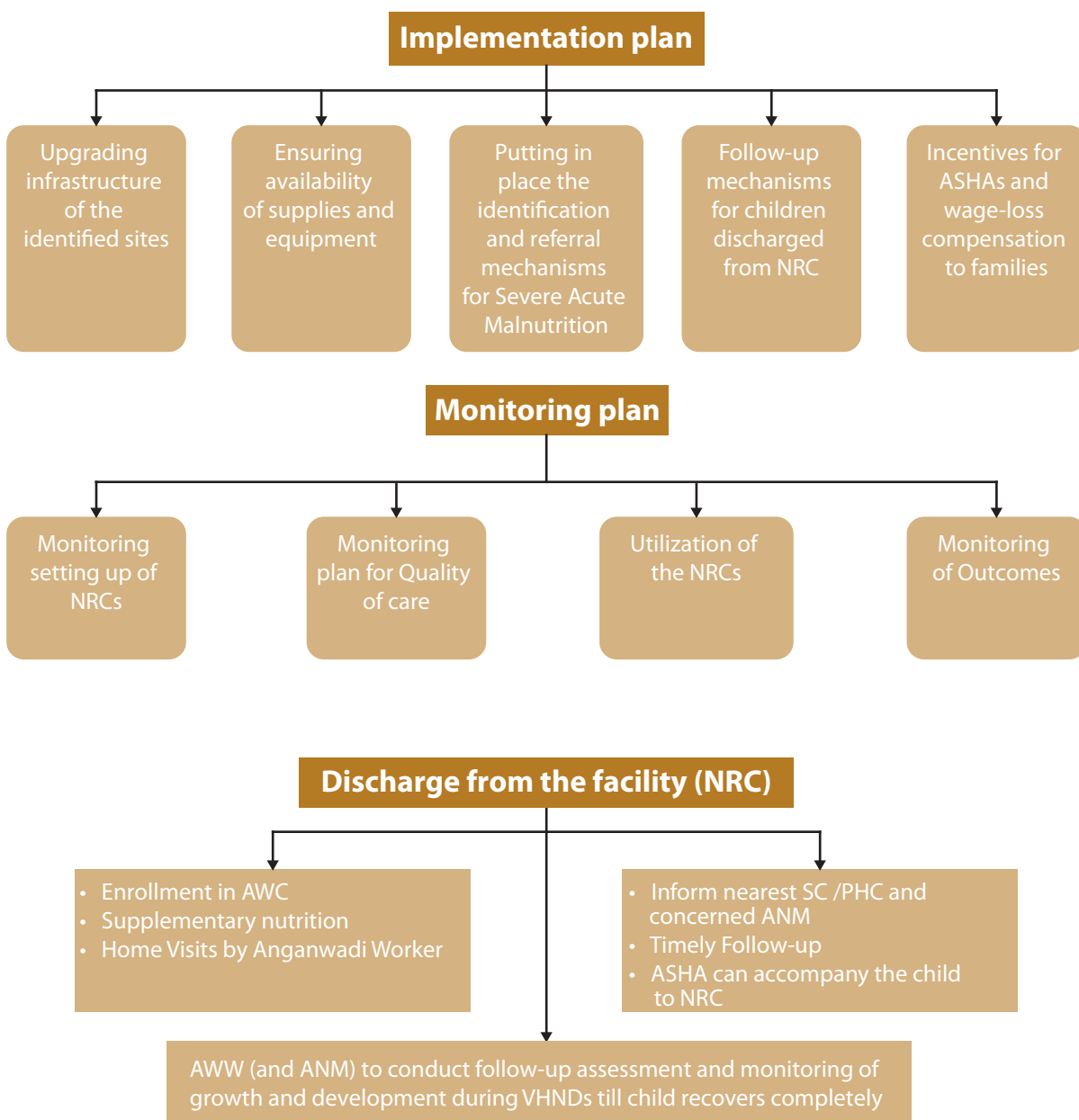
### 3. Follow up of children discharged from NRC

It is important for NRC to put in place an effective tracking and reporting systems so that children do not get lost and defaulters and deaths do not go unreported. The person designated the responsibility for NRCs supervision and monitoring in the district/ state should ensure that children are followed up after discharge and smooth referral is possible from community to hospital and back.

Children discharged from NRC should be followed up at the community level to ensure appropriate

feeding, follow up at the NRC for scheduled visits and to identify children who are not responding to treatment for referral to the facility level. NRC should have a complete list of PHCs, Subcentres and Anganwadis in its catchment area, so they can refer the child to the appropriate health facility closest to their community.

Close collaboration and information sharing between NRC and community based care (at PHC, Sub-center and AWC) are essential. The list of SAM children discharged from NRC should be shared with area specific ANM and ICDS supervisors. These children should be enrolled in the AWC and given



supplementary food as per the guidelines. The AWWs should prioritize these children for home visits, every week in the first 4 weeks and then once in 2 weeks till the child is discharged from the program. During the home visits, AWW should observe feeding and provide appropriate counseling and support to the mothers. These children should be weighed every week at AWC. The ASHA and AWW should ensure that these children return for the scheduled follow ups at the NRC. The ANM will also follow up the children discharged from NRC during the VHNDs till they exit from the nutrition rehabilitation program.

The follow up at the NRC could be included in a common incentive package for the ASHA and the family.

#### 4. Future linkage with community based management

For the management of children with severe malnutrition it is desirable to have a community-based and a facility-based component, so that severely malnourished children with no complications can be treated in the community, while those with complications can be referred to an inpatient treatment facility with trained staff. Community based management of SAM is also required for continuing the management of SAM children discharged from the health facility.

### E1. Monitoring and supervision

#### 1. Supportive supervision

The staff of the NRC will require mentoring initially and regular supportive supervision thereafter. The states should identify and designate responsibility for supportive supervision and clearly define the frequency and process of supervision.

The trained medical officer should supervise the staff of the NRC and provide hands on training and feedback based on the analyses of monthly data from the NRC.

Medical colleges, district quality assurance team and trainers for SAM management should also be involved for supportive supervision and monitoring of NRCs in district or state. One of the Apex institutions in the state should be identified as the nodal centre for NRCs that not only provides trainings, but also

periodic guidance based on data collated from all NRCs in the state.

For supervision of individual NRCs, the checklist is attached in the Annexure 1-3. The checklist has four components:

- a. Review of NRC effectiveness – based on their records and monthly reports.
- b. Checklist for monitoring food preparation.
- c. Checklist for monitoring ward procedures.
- d. Checklist for monitoring hygiene.

#### 2. Monitoring program effectiveness

##### State level managerial support

To ensure optimum performance of NRCs in the states State Coordination group referred to in D1.2 will set up and manage the reporting and review mechanism, and will generate quarterly analysis report on various trends in the district hospitals/NRCs and medical colleges. This data should be analyzed and shared with relevant stakeholders to strengthen the NRCs and nutrition interventions in general.

##### Monthly reports

Each month the data from the NRCs should be collected on a standard reporting format (annexure 5 and 6) and transmitted electronically to the district Programme Management Unit. From the district the compiled information of the NRCs on the prescribed format should be transmitted electronically to the State Coordination Group (SCG). The group will compile and analyse the reports and give feedback to the NRCs. In addition to general monthly information, the NRCs should provide quarterly report with information on supplies, staffing and training needs.

For the identification and follow up of the children with SAM, there is a need for linkages with the front line workers especially the Anganwadi worker. States should consider generating unique identification number for children with SAM for this purpose. The Anganwadi centres should also submit a monthly report on the following:

- ◆ Name, age and sex of children with SAM detected using MUAC.
- ◆ Name, age and sex of children with SAM under follow up (i.e. those discharged from the NRC).



## E2. Monitoring indicators

It is suggested that the following gender and age disaggregated indicators be used for monitoring the quality of service being provided by the NRC.

	Indicators to be monitored at NRC	Indicators to be monitored at district/state level	Indicators to be monitored at national level
Number of NRCs	✓	✓	✓
Admissions			
◆ Gender disaggregated	✓		
◆ Referred by frontline worker/Self/Paediatric ward or emergency	✓		
Bed Occupancy rate	✓	✓	✓
Average length of stay in the NRC	✓		
Weight gain during stay in the NRC	✓		
Rate of referral to higher facility	✓	✓	✓
Case fatality rate	✓	✓	✓
Defaulter rate	✓	✓	✓
Relapse rate	✓		
Non- responders	✓		
Death rate following discharge from NRC	✓		

## Definition of key terms

### Admission Indicators

**New admission:** an admitted patient who has never been in the programme before.

**Re-admission:** a defaulter who has come back to the program within 2 months.

**Relapse:** a patient who has been discharged as cured from the programme within the last 2 months but is again eligible for admission to NRC. A large number of relapses are often a sign of food insecurity.

### Exit Indicators

Exit indicators provide information about the proportion of patients completing the treatment successfully or not successfully (recovered, defaulter, death). They are calculated as a percentage of the total number of exits (discharges) during the reporting month.

**Recovery (or cured) rate:** Number of beneficiaries that have reached discharge criteria within the reporting period divided by the total exits.

**Defaulter rate:** Number of beneficiaries that defaulted during the reporting period divided by the total exits.

Defaulter will be a child with SAM admitted to the ward but absent (from the ward) for three consecutive days without been discharged.

**Non-respondent:** This exit category includes those beneficiaries who fail to respond to the treatment e.g. the patient remains for a long period of time under the target weight. If after investigation there are no specific reasons for failure or actions that can be taken to improve the treatment, the patient should be referred to an appropriate higher level facility. When the number of cases in this category is high it may indicate underlying problems related to the patient (e.g. chronic disease) or to the programme, and need to be addressed.

The following process indicators could be used to monitor the availability of services - HR, supplies, reporting and training needs. These can be obtained from NRCs on a quarterly basis

- ◆ Staff in position
- ◆ Staff position lying vacant for more than one month
- ◆ Staff trained in management of SAM
- ◆ Staff in position for more than a month but not trained
- ◆ Stock outs of
  - Antibiotics
  - Consumables

*See Annexure 4 for guidance on calculation of Case Fatality Rate, Bed Occupancy Rate, Average Length of Stay, Weight Gain and Average weight gain for the NRC.*

### E3. Acceptable levels of care<sup>4</sup>

Performance of NRCs may be assessed based on the criteria described below. All excess mortality should always be investigated. Lessons learned could save a

number of lives; analysis of reports could point out to the need for training of the staff and help change the entrenched practices. The overall functioning of the NRCs can be monitored against the sphere standards.

Indicators	Acceptable	Not acceptable
Recovery rate	>75%	<50%
Death rate	<5%	>15%
Defaulter rate	<15%	>25%
Weight gain(g/kg/d)	>=8g	<8g
Length of stay (weeks)	1-4	<1 and >6

<sup>4</sup> Adapted from Sphere Standards.

# Annexure 1

## Supervisory checklist for NRCs

Name of NRC:

District:

Date of visit:

Supervised by:

No. of beds:

### A. Record and Reports Review: (Based on last Quarterly report)

	Indicator	Number in last quarter	Rate
1	Admissions		
2	Recovered		
3	Relapse		
4	Deaths		
5	Defaulters		
6	Average length of stay (days)		
7	Bed Occupancy rate		
8	Average weight gain (gm/kg/day)		

### B. Staff position:

Staff Position	In Position	Vacant
Medical officer		
Nursing staff		
Nutrition counsellor		
Cook cum Care taker		
Attendant/cleaners		
Medical social worker*		

### C. Stock outs of supplies in last three months:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

## Annexure 2

### Checklist for monitoring hygiene

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

## Annexure 3

### Checklist for monitoring ward procedures

Observe	Yes	No	Comments
<b>Feeding</b>			
Are correct feeds served in correct amounts?			
Are feeds given at the prescribed times, even on nights and weekends?			
Are children held and encouraged to eat (never left alone to feed)?			
Are children fed with a cup (never a bottle)?			
Is food intake (and any vomiting/diarrhoea) recorded correctly after each feed?			
Are leftovers recorded accurately?			
Are amounts of Starter diet kept the same throughout the initial phase, even if weight is lost?			
After transition, are amounts of Catch-up diet given freely and increased as the child gains weight?			
<b>Warming</b>			
Is the room kept between 25° - 30° C (to the extent possible)?			
Are blankets provided and children kept covered at night?			
Are safe measures used for re-warming children?			
Are temperatures taken and recorded correctly?			
<b>Weighing</b>			
Are scales functioning correctly?			
Are scales standardized weekly?			
Are children weighed at about the same time each day?			
Are they weighed about one hour before a feed (to the extent possible)?			
Do staff adjust the scale to zero before weighing?			
Are children consistently weighed without clothes?			
Do staff correctly read weight to the nearest division of the scale?			
Do staff immediately record weights on the child's case sheets?			
Are weights correctly plotted on the Weight Chart?			

Observe	Yes	No	Comments
<b>Giving antibiotics, medications, supplements</b>			
Are antibiotics given as prescribed (correct dose at correct time)?			
When antibiotics are given, do staff immediately make a notation on the daily care charts?			
Is folic acid given daily and recorded?			
Is vitamin A given according to schedule?			
Is a multivitamin given daily and recorded?			
After children are on Catch-up diet for 2 days, is the correct.			
Dose of iron given twice daily and recorded?			
<b>Ward environment</b>			
Are surroundings welcoming and cheerful?			
Are mothers offered a place to sit and sleep?			
Are mothers taught/encouraged to be involved in care?			
Are staffs consistently courteous?			
As children recover, are they stimulated and encouraged to move and play?			

## Annexure 4

### Guidance for calculation of indicators included in supervisory checklist and reporting formats

#### Case Fatality Rate

To calculate the case-fatality rate:

- ◆ Determine the number of children (patients) admitted to the ward in the past month(s).
- ◆ Determine the number of those children (patients) who died. (Wait to count deaths until the outcomes for the patients are known.)
- ◆ Divide the number of deaths by the number of children admitted and express the result as a percentage.

The objective of a NRC should be to achieve a case-fatality rate of less than 5%. A case fatality of >20% is unacceptable and causes of death should be reviewed.

#### Bed Occupancy Rate

To calculate the average bed occupancy rate for a reporting period, two data item are needed.

##### **(Inpatient Days of Care/Bed Days Available) x 100**

Definitions of these two items are as follows:

**Inpatient Days of Care:** Total Inpatient Days is the sum of each daily inpatient census for the time period examined. For e.g., if the time period examined is taken as a week, and the daily inpatient census was as follows: Day 1 = 7, Day 2 = 8, Day 3 = 6, Day 4 = 10, Day 5 = 10 Day 6 = 9, Day 7 = 8, then the Total Inpatient Days of care for one week would be 7+8+6+10+10+9+8.

**Bed Days available:** The maximum number of inpatient days of care that would have been provided if all beds were filled during the year. If 10 beds were available for use each day during the year, bed days available would be 10 x 365 = 3650. For one week it will be 10 x 7 = 70.

#### Average Length of Stay

**(Total inpatient days of care/Total admissions) = Average length of stay** (in days)

**Total Inpatient Days of Care** - Sum of each daily inpatient census for the time period examined. For instance, if the time period examined is a week, and the daily inpatient census was as follows: Day 1 = 7, Day 2 = 8, Day 3 = 6, Day 4 = 10, Day 5 = 10 Day 6 = 9, Day 7 = 8, then the Total Inpatient Days of care for one week would be 7+8+6+10+10+9+8 or 58 total inpatient days or 204 total inpatient days.

**Total Admissions** - The total number of individuals formally accepted into inpatient units of the hospital during the time period examined.

#### Weight Gain (g/kg/d)

**Weight gain = {discharge weight in gms – minimum weight in gms}/{minimum weight in kg x number of days between date of minimum weight and discharge day}**

The rate of weight gain for an individual is calculated as the discharge weight minus the minimum weight multiplied by 1000 to convert the weight gain to grams. This is then divided by the admission weight to give grams of weight gained per kilo body weight. Lastly, this total weight gain is divided by the number of days from the date of minimum weight to the date of discharge, to give g/kg/d.

e.g. Ramu a two year boy was admitted and weighed 7.3 kg at admission and 8.4 kg at discharge; Ramu stayed for 17 days at the NRC.

Weight gain for Ramu =  $(8.4 - 7.3) \times 1000 / 7.3 \times 17 = 8.8 \text{ gm/kg/day}$ .

**Ramu's weight gain is 9 gm/kg/day**

#### Average Weight Gain (of the NRC for the month)

Sum of weight gains (g/kg/d) of all the children discharged during the month/total number of children discharged during the month.



## Annexure 5

### Monthly reporting format: nutrition rehabilitation centres

Name of Health Facility:

Block:

District:

Month:

Year:

Number of beds:

	Male	Female	Total
<b>A. Admissions</b>			
SC /ST			
BPL			
<b>Total Admissions</b>			
<b>A.1 Admission criteria</b>			
-3 SD WFH			
MUAC < 115 mm			
Bilateral pitting oedema			
<b>A.2 Referral By</b>			
Frontline worker			
Self			
Paediatric ward/emergency			
<b>A.3 Duration of stay</b>			
< 7 Days			
7 – 15 days			
> 15 Days			
<b>A.4 Bed Occupancy</b>			
Bed Occupancy Rate			
<b>A. 5 Weight gain</b>			
Achieved target weight (15% weight gain)			
<b>B. Monthly Output</b>			
1. Discharges from NRC			
2. Defaulters			
3. Non responders			
4. Deaths			
5. Children due for follow-up (in the month)			
6. Children followed-up during the month			
7. Deaths during follow up period (after discharge from NRC)			
8. Relapse			

*\*This format is to be maintained at the NRC. The data should be analysed and used for improving the quality of care on a continuous basis.*



2

SECTION

# Technical Guidelines



# 2

## Section

# CLINICAL PROTOCOLS

## 1. Screening for SAM in the community

Active and early case finding is an important determinant of case fatality rate, programme coverage and the programme impact. Community mobilization is crucial for active and early case-finding.

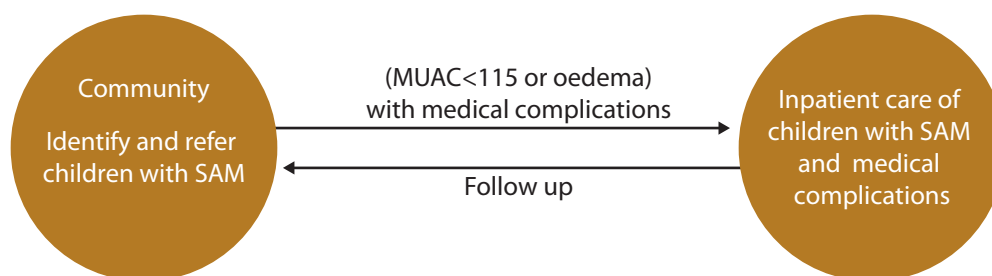
To reduce the barriers to access, reduce case fatality and improve programme impact, screening must take place in the community and before the onset of medical complications. Active case finding should be done in the community by the ANM and AWW and aided by the ASHA of the village. It is important to supplement active case-finding with community sensitization which would lead to self-referral.

Frontline community workers (AWW, ASHA, ANM) can identify children with SAM by using simple coloured plastic strips that are designed to measure mid upper arm circumference (MUAC). They should also be able to recognise nutritional oedema of the feet, which is another sign of this condition. Regular growth monitoring at the Anganwadi centre or during Village Health and Nutrition Day is an opportunity for active case finding.

Once identified, these children with SAM need further assessment to determine if they require referral to health facility and facility based care or whether they can be managed at community level with visits as outpatients to a health centre or facility.

Besides active case finding in the community (through regular growth monitoring at AWC or during VHND) all possible contact opportunities with children should be exploited including home visits, immunisation outreach sessions, visit to sub centres and all levels of health facilities. Assessing the nutrition status of all sick children presenting to health facility should be emphasized and wherever possible, included in physical examination guidelines/formats.

The weight for height/length charts for identifying children with SD scores  $< -3SD$  are attached as annexure 9 and 10.

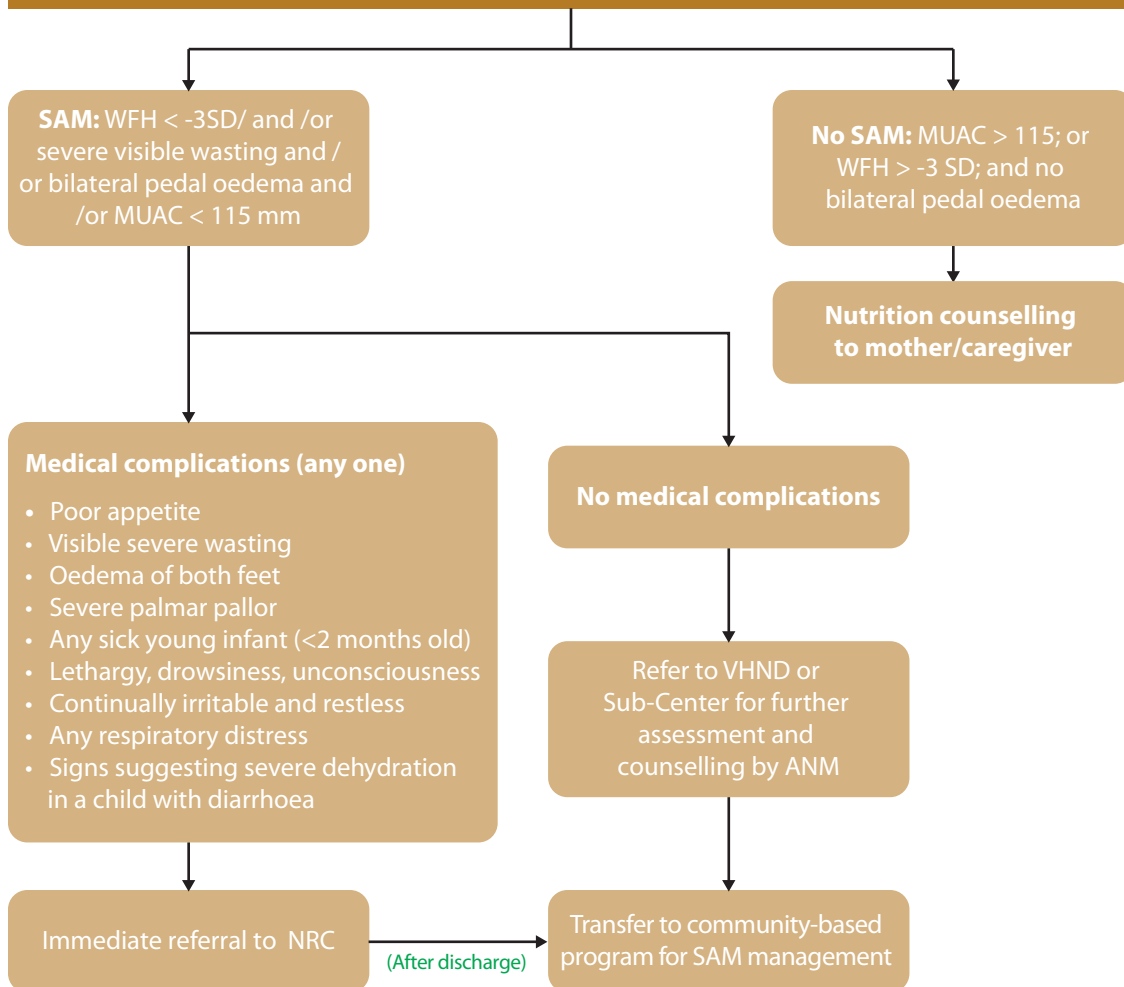


## Case identification

**Active screening** at village level by AWW/ASHA through house to house visit with MUAC tape for all children (6 – 59 months) and looking for presence/absence of bilateral pitting edema.

**Passive screening** during Growth Monitoring/Village Health and Nutrition Days (VHND) using MUAC for all children (6–59 months) and looking for presence/absence of bilateral pitting edema.

**Screening of children coming to OPDs /inpatient wards in health facilities using weight for height and/or MUAC**



## 2. Admission criteria

Criteria for admission for inpatient treatment
<b>Children 6-59 months</b>
Any of the following: <ul style="list-style-type: none"><li>◆ MUAC &lt;115mm with or without any grade of oedema</li><li>◆ WFH &lt; -3 SD with or without any grade of oedema</li><li>◆ Bilateral pitting oedema +/- (children with oedema +++ always need inpatient care)</li></ul>
<b>WITH</b>
Any of the following complications: <ol style="list-style-type: none"><li>1. Anorexia (Loss of appetite)</li><li>2. Fever (39 degree C) or Hypothermia (&lt;35 C)</li><li>3. Persistent vomiting</li><li>4. Severe dehydration based on history and clinical examination</li><li>5. Not alert, very weak, apathetic, unconscious, convulsions</li><li>6. Hypoglycemia</li><li>7. Severe Anemia (severe palmar pallor)</li><li>8. Severe pneumonia</li><li>9. Extensive superficial infection requiring IM medications</li><li>10. Any other general sign that a clinician thinks requires admission for further assessment or care</li></ol>
In addition to above criteria if the caregiver is unable to take care of the child at home, the child should be admitted.
<b>Infants &lt; 6 months</b>
Infant is too <i>weak or feeble</i> to suckle effectively (independently of his/her weight-for-length). <b>or</b> WfL (weight-for-length) <-3SD (in infants >45 cm) <b>or</b> Visible severe wasting in infants <45 cm <b>or</b> Presence of oedema both feet
<b>Other reasons for inpatient enrolment</b>
<b>Readmission:</b> Child previously discharged from in-patient care but meets admission criteria again.
<b>Return after default:</b> Child who returns after default (away from in-patient care for 2 consecutive days) and meets the admission criteria.

### 3. Management of medical complications in a child with SAM presenting at a health facility

The majority of the deaths in the hospital occur within 24 hours of admission, many of these deaths can be prevented if the critically ill children are identified as soon as they are admitted and their treatment is started immediately.

A child with SAM and medical complications could come as a referral from a community health worker (ANM, AWW or ASHA) or from a peripheral health facility (PHC, CHC) or may come directly to the health facility (self-referral). Each SAM child should be immediately screened to identify medical complications and its severity.

#### 3.1. Triage

**Triage is the process of rapidly screening sick children.** Triage must be done for all paediatric patients coming to the health facility. The first step is to check every child for emergency signs and provide emergency treatment as necessary keeping in mind the **ABCD steps: Airway, Breathing, Circulation, Coma, Convulsion, and Dehydration.**

The chart next page gives the steps of triage:

#### 3.2. Assessment at admission

Take a history concerning	On examination, look for
<ul style="list-style-type: none"> <li>◆ Recent intake of food and fluids</li> <li>◆ Usual diet (before the current illness)</li> <li>◆ Breastfeeding</li> <li>◆ Duration and frequency of diarrhoea and vomiting</li> <li>◆ Type of diarrhoea (watery/bloody)</li> <li>◆ Chronic cough</li> <li>◆ Loss of appetite</li> <li>◆ Family circumstances (to understand the child's social background)</li> <li>◆ Contact with tuberculosis</li> <li>◆ Recent contact with measles</li> <li>◆ Known or suspected HIV infection.</li> <li>◆ Immunizations</li> </ul>	<ul style="list-style-type: none"> <li>◆ Anthropometry- weight, height/length, mid arm circumference</li> <li>◆ Oedema</li> <li>◆ Pulse, heart rate, respiratory rate</li> <li>◆ Signs of dehydration</li> <li>◆ Shock (cold hands, slow capillary refill, weak and rapid pulse)</li> <li>◆ Palmar pallor</li> <li>◆ Eye signs of vitamin A deficiency:               <ul style="list-style-type: none"> <li>■ Dry conjunctiva or cornea,</li> <li>■ Bitot's spots</li> <li>■ Corneal ulceration</li> <li>■ Keratomalacia</li> </ul> </li> <li>◆ Localizing signs of infection, including ear and throat infections, skin infection or pneumonia</li> <li>◆ Mouth ulcers</li> <li>◆ Skin changes of kwashiorkor:               <ul style="list-style-type: none"> <li>■ Hypo or hyperpigmentation</li> <li>■ Desquamation</li> <li>■ Ulceration (spreading over limbs, thighs, genitalia, groin, and behind the ears)</li> <li>■ Exudative lesions (resembling severe burns) often with secondary infection (including Candida).</li> </ul> </li> </ul>



## Triage

### ASSESS FOR EMERGENCY SIGNS (In all Cases)

#### TREAT:

- ◆ Check for head/neck trauma before treating child
- ◆ Do not move neck if cervical spine injury possible
- ◆ Give appropriate treatment for +ve emergency signs
- ◆ Call for help
- ◆ Draw blood for Glucose, malaria smear, Hb

#### AIRWAY AND BREATHING

- ◆ Not Breathing or Gasping or
- ◆ Central cyanosis or
- ◆ Severe respiratory distress

Any sign  
positive

Manage airway  
Provide basic life support (Not breathing/gasping)  
Give oxygen  
Make sure child is warm\*

#### CIRCULATION

- Cold hands with:
- ◆ Capillary refill longer than 3 secs, and
  - ◆ Weak and fast pulse

If Positive

Check for Severe  
Acute Malnutrition

- ◆ If the child has any bleeding, apply pressure to stop the bleeding. Do not use a tourniquet.
  - ◆ Give oxygen
  - ◆ Make sure child is warm\*
  - ◆ Insert IV and begin giving fluids rapidly
- If not able to insert peripheral IV, insert an umbilical or intraosseous line

#### IF SEVERE ACUTE MALNUTRITION

(Age ≥2 months)

##### If lethargic or unconscious:

- ◆ Insert IV line and give IV glucose and fluids

##### If not lethargic or unconscious:

- ◆ Give glucose orally or by NG tube.
- ◆ Proceed immediately to full assessment and treatment.

#### COMA CONVULSING

- ◆ Coma or
- ◆ Convulsing (now)

If Coma or  
Convulsing

#### Manage airway

- ◆ Position the child
- ◆ Check and correct hypoglycaemia
- ◆ If convulsions continue give IV calcium in young infants
- ◆ If convulsions continue give anticonvulsants

#### SEVERE DEHYDRATION (ONLY WITH DIARRHOEA)

- Diarrhoea plus any two of these:
- ◆ Lethargy
  - ◆ Sunken eyes
  - ◆ Very slow skin pinch

Diarrhoea Plus Two  
Signs Positive

Check for Severe  
Acute Malnutrition

- ◆ Make sure child is warm\*
- ◆ Insert IV line and begin giving fluids rapidly following PLAN C

#### IF SEVERE ACUTE MALNUTRITION (Age ≥2 Months)

- ◆ Do not start IV immediately
- ◆ Proceed immediately to full assessment and treatment.

\*Check temperature; if baby is cold to touch, rewarm

#### IF THERE ARE NO EMERGENCY SIGNS LOOK FOR PRIORITY SIGNS:

These children need prompt assessment and treatment

- |  |   |   |
|--|---|---|
| ◆ Tiny baby (<2 months)                | ◆ Trauma or other urgent surgical condition | ◆ Restless, continuously irritable, or lethargy |
| ◆ Bleeding                             | ◆ Referral (urgent)                         | ◆ Poisoning                                     |
| ◆ Pallor (severe)                      | ◆ Oedema of both feet                       | ◆ Burns (major)                                 |
| ◆ Malnutrition: Visible severe wasting | ◆ Temperature <36.5°C or > 38.5°C           |   |
| ◆ Respiratory distress                 |   |   |

NON-URGENT: Proceed with assessment and further treatment according to child's priority

**Note:** If a child has trauma or other surgical problems, get surgical help or follow surgical guidelines.

### 3.3. Laboratory tests

Following laboratory tests should be done for the children admitted to a health facility for management of SAM.

#### Laboratory Tests

- ◆ Blood glucose
- ◆ Haemoglobin or packed cell volume in children with severe palmar pallor
- ◆ Serum electrolytes eg; (sodium, potassium, and calcium whenever possible)
- ◆ Screening for infections:
  - Total and differential leukocyte count, blood culture
  - Urine routine examination
  - Urine culture
  - Chest x-ray
  - Mantoux test
  - Screening for HIV after counseling (only when suspected , based on history and clinical signs and symptoms)
  - Any other specific test required based on geographical location or clinical presentation e.g. Celiac Disease, malaria etc.

## 4. Principles of hospital-based management

The principles of management of SAM are based on 3 phases: **Stabilization Phase, Transition Phase and Rehabilitative Phase.**

**Stabilisation Phase:** Children with SAM without an adequate appetite and/or a major medical complication are stabilized in an in-patient facility. This phase usually lasts for 1–2 days. The feeding formula used during this phase is Starter diet which promotes recovery of normal metabolic function and nutrition-electrolytic balance. All children must be carefully monitored for signs of overfeeding or over hydration in this phase.

**Transition Phase:** This phase is the subsequent part of the stabilization phase and usually lasts for 2-3 days. The transition phase is intended to ensure that the child is clinically stable and can tolerate an increased energy and protein intake. The child moves to the Transition Phase from Stabilization Phase when there is:

- ◆ At least the beginning of loss of oedema  
AND
- ◆ Return of appetite  
AND
- ◆ No nasogastric tube, infusions, no severe medical problems  
AND
- ◆ Is alert and active

The ONLY difference in management of the child in transition phase is the change in type of diet. There is gradual transition from Starter diet to Catch up diet (F 100). The quantity of Catch up diet (F100) given is equal to the quantity of Starter diet given in stabilization Phase.

**Rehabilitation Phase:** Once children with SAM have recovered their appetite and received treatment for medical complications they enter Rehabilitation Phase. The aim is to promote rapid weight gain, stimulate emotional and physical development and prepare the child for normal feeding at home. The child progresses from Transition Phase to Rehabilitation Phase when:

- ◆ S/he has reasonable appetite; finishes > 90% of the feed that is given, without a significant pause
- ◆ Major reduction or loss of oedema
- ◆ No other medical problem

## 5. Ten steps for management of SAM

Management steps	Stabilisation		Rehabilitation	
	Day 1-2	Day 3-7	Day 7-14	Week 2-6
1. Treat/prevent hypoglycaemia				
2. Treat/prevent hypothermia				
3. Treat/prevent dehydration				
4. Correct imbalance of electrolytes				
5. Treat infections				
6. Correct deficiencies of micronutrients		no iron	with iron	
7. Start cautious feeding				
8. Rebuild wasted tissues (catch-up growth)				
9. Provide loving care and play				
10. Prepare for follow-up				

## 5.1. Treatment of hypoglycaemia

Estimate Blood Glucose levels by using glucometer or drawing blood sample for lab. tests.



If blood glucose is low (< 54 mg/dl) or hypoglycaemia is suspected, immediately give the child a 50 ml bolus of 10% glucose or 10% sucrose (1 rounded teaspoon of sugar in 3½ tablespoons of water). Glucose is preferable because the body can use it more easily.

- ◆ If the child can drink, give the 50 ml bolus orally.
- ◆ If the child is alert but not drinking, give the 50 ml by NG tube.
- ◆ If the child is lethargic, unconscious, or convulsing, give 5 ml/kg body weight of sterile 10% glucose by IV, followed by 50 ml of 10% glucose or sucrose by NG tube.
- ◆ If the IV dose cannot be given immediately, give the NG dose first. (*\* If the child will be given IV fluids for shock, there is no need to follow the 10% IV glucose with an NG bolus, as the child will continue to receive glucose in the IV fluids.*)
- ◆ Start feeding with 'Starter diet' 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 amount (refer to Annexure T9 & 10 for calculation of the amount of feed).
- ◆ Keep child warm (described in step-2) as hypoglycemia and hypothermia coexist.
- ◆ Administer antibiotics as hypoglycaemia may be a feature of underlying infection (as described in step-5).
- ◆ If blood glucose is normal (> 54mg/dl), start giving 'Starter Diet', 2 hourly. (*Refer to Annexure 13 and 14 for calculation of the amount of feed.*)

## 5.2. Treatment of hypothermia

### Take temperature

(Preferably using a low-reading thermometer; range 29°C – 42°C)



**If axillary temperature is below 35°C**

**Or**

**Rectal temperature is below 35.5°C**



- ◆ Start feeding immediately (or start rehydration if needed).
- ◆ Re-warm. Put the child on the mother's bare chest (skin to skin contact: kangaroo technique) and cover them, OR clothe the child including the head, cover with a warmed blanket and place a heater or lamp nearby.
- ◆ Remove wet clothing/bedding
- ◆ Feed 2-hourly (12 feeds in 24 hours).
- ◆ Treat hypoglycaemia,
- ◆ Give 1st dose of antibiotics

### Monitor during re-warming

- ◆ Take temperature every two hours: stop re-warming when it rises above 36.50C
- ◆ Take temperature every 30 minutes if heater is used

### If rectal temperature < 32°C



### Treat for Severe Hypothermia

- ◆ Give warm humidified oxygen.
- ◆ Give 5 mL/kg of 10% dextrose IV immediately or 50 ml of 10% dextrose by nasogastric route (if intravenous access is difficult).
- ◆ Provide heat using radiation (overhead warmer), or conduction (skin contact) or convection (heat convector). Avoid rapid rewarming, monitor temperature every 30 minutes
- ◆ Give warm feeds immediately, if clinical condition allows the child to take orally, else administer the feeds through a nasogastric tube. Start maintenance IV fluids (prewarmed), if there is feed intolerance/contraindication for nasogastric feeding.
- ◆ Rehydrate using warm fluids immediately, when there is a history of diarrhea or there is evidence of dehydration.
- ◆ Start intravenous antibiotics

Do not use hot water bottles due to danger of burning fragile skin.

### 5.3a. Treatment of dehydration in the children with SAM, without shock

Give oral rehydration solution as follows, in amounts based on the child's weight:

How often to give ORS*	Amount to give
Every 30 minutes for first 2 hours	5 ml/kg weight
Alternate hours for up to 10 hours	5-10 ml/kg**

\* Reduced osmolarity ORS is used; add 15 ml of potassium chloride to one litre ORS (15 ml contains 20 mmol/L of potassium)

\*\* The amount offered should be based on child's willingness to drink and amount of ongoing losses in stool.

Starter diet is given in alternate hours (eg. 2, 4, 6) with reduced osmolarity ORS (eg. 3, 5, 7) until the child is rehydrated.

Signs to check every half hour for the first two hours, then hourly:

- ◆ Respiratory rate
- ◆ Pulse rate
- ◆ Urine frequency
- ◆ Stool or vomit frequency
- ◆ Signs of hydration

Signs of over hydration:

- ◆ Increased respiratory rate and pulse. (Both must increase to consider it a problem –increase of pulse by 15 & respiratory rate by 5)
- ◆ Jugular veins engorged
- ◆ Puffiness of eye

Stop ORS if any of the above mentioned signs appear.

**Signs of improved hydration status** (any 3 of the following):

- ◆ Child is no longer thirsty
- ◆ Child is less lethargic
- ◆ Slowing of respiratory and pulse rates from previous high rate
- ◆ Skin pinch is less slow
- ◆ Child has tears

**If diarrhoea continues** after rehydration, give ORS after each loose stool to replace ongoing losses:

- ◆ For children less than 2 years, give approximately 50 ml after each loose stool
- ◆ For children 2 years and older, give 100 ml after each loose stool

**Breast feeding** is continued with increased frequency if the child is breastfed.

## 5.3b Management of severely acute malnourished child, with shock

**A severely malnourished child is considered in shock if s/he is:**

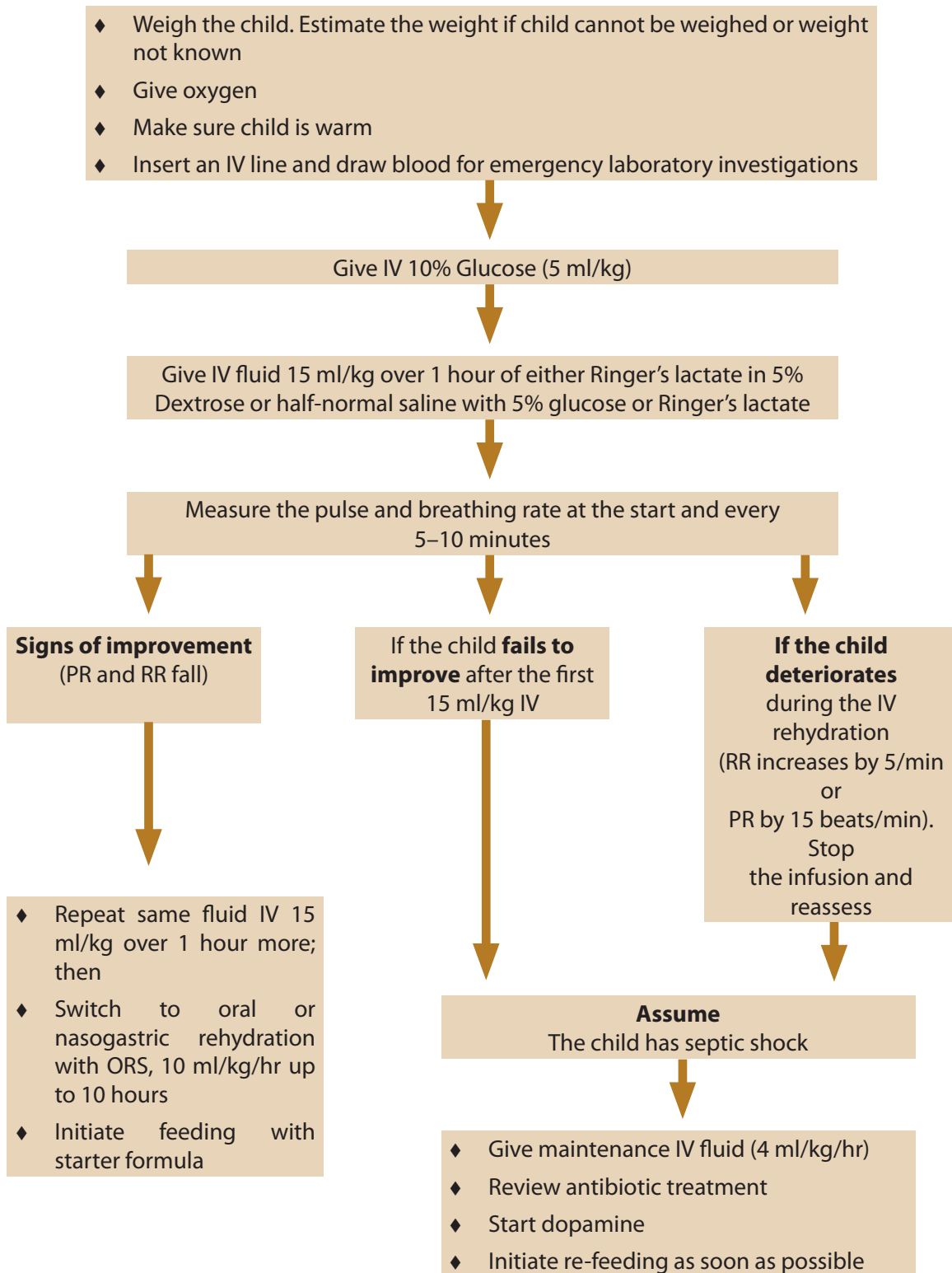
- ◆ Lethargic or unconscious and
- ◆ Has cold hands

**Plus either:**

- ◆ Slow capillary refill (more than 3 seconds)  
Or
- ◆ Weak or fast pulse



**Give this treatment only if the child has signs of shock and is lethargic or has lost consciousness**



## 5.4. Correction of electrolyte imbalance

Normally the body uses energy to maintain appropriate balance of potassium inside the cells and sodium outside the cells. In severely malnourished children the level of sodium in the cells rises and potassium leaks out due to reductive adaptation.

Therefore all severely malnourished children should be given potassium to make up for what is lost. Magnesium is essential for potassium to enter the cells and be retained. Malnourished children already have excess sodium in their cells, so sodium intake should be restricted.

In order to correct electrolyte imbalance:

- ◆ Give supplemental potassium at 3–4 meq/kg/day for at least 2 weeks. Potassium can be given as syrup potassium chloride; the most common preparation available has 20meq/15ml. It should be diluted with water.
- ◆ On day 1, give 50% magnesium sulphate IM once (0.3 mL/kg) up to a maximum of 2 ml. Thereafter, give extra magnesium (0.4 – 0.6 mmol/kg/daily) orally. If oral commercial preparation is not available you can give injection magnesium sulphate (50%); 0.2–0.3 ml/kg orally as magnesium supplements mixed with feeds. Give magnesium supplements for 2 weeks.
- ◆ Give food without added salt to avoid sodium overload.
- ◆ **Do not treat oedema with diuretics**

## 5.5. Treatment of infections

### If the child appears to have no complications give:

Oral amoxicillin 15mg/kg 8-hourly for 5 days

**If child has complications** (eg; septic shock, hypoglycaemia, hypothermia, skin infections or dermatosis, respiratory or urinary tract infections, or lethargic/sickly appearance), select antibiotic as shown in the table below:

Status	Antibiotics
All admitted cases with any complications other than shock, meningitis or dysentery	<ul style="list-style-type: none"> <li>◆ Inj. Ampicillin 50 mg/kg/dose 6 hrly and Inj. Gentamicin 7.5 mg/kg once a day for 7 days</li> <li>◆ Add Inj. Cloxacillin 100 mg/kg day 6 hrly if staphylococcal infection is suspected</li> <li>◆ Revise therapy based on sensitivity report</li> </ul>
For septic shock or worsening/no improvement in initial hours	<ul style="list-style-type: none"> <li>◆ Give third generation cephalosporins like Inj. Cefotaxime 150 mg/kg/day in 3 divided doses or Ceftriaxone 100 mg/kg/day in 2 divided doses along with Inj Gentamicin 7.5 mg/kg in single dose.</li> <li>◆ Do not give second dose until child is passing urine.)</li> </ul>
Meningitis	<ul style="list-style-type: none"> <li>◆ IV Cefotaxime 50mg/kg/dose 6hrly or Inj Ceftriaxone 50 mg/kg 12 hrly plus Inj. Amikacin 15 mg/kg/day divided in 8 hrly doses.</li> </ul>
Dysentery	<ul style="list-style-type: none"> <li>◆ Give Ciprofloxacin 15mg/kg in two divided doses per day for 3 days. If child is sick or has already received ciprofloxacin, give Inj. Ceftriaxone 100 mg/kg once a day or divided in 2 doses for 5 days</li> </ul>

**Duration of antibiotic therapy** depends on the diagnosis i.e.

Suspicion of clinical sepsis: at least 7 days

Urinary tract infection: 7–10 days

Culture positive sepsis: 10–14 days

Meningitis: at least 14–21 days

Deep seated infections like arthritis and osteomyelitis: at least 4 weeks.

If clinical condition does not improve after 5 days of antibiotics treatment, reassess the child (check for sites of infection and potentially resistant organisms) and take appropriate measures. If there is partial improvement after 5 days, complete a full 10-day course.

## 5.6. Micronutrient supplementation

**Vitamin A:** Give Vitamin A in a single dose to all SAM children unless there is evidence that child has received vitamin A dose in last 1 month.

Recommended oral dose of Vitamin A according to child's age

Age	Vit. A dose
< 6 months	50 000 IU
6–12 months or if weight <8Kg	100 000 IU
>12 months	200 000 IU

- ◆ Give same dose on Day 1, 2 and 14 if there is clinical evidence of vitamin A deficiency.
- ◆ Children more than twelve months but having weight less than 8 kg should be given 100,000 IU orally irrespective of age.
- ◆ Oral treatment with vitamin A is preferred, except for initial treatment of. For oral administration, an oil-based formulation is preferred.
- ◆ IM treatment should be used in children with severe anorexia, oedematous malnutrition, or septic shock. Only water-based formulations and half of oral dose should be used.

Other micronutrients should be given daily for at least 2 weeks:

- ◆ **Multivitamin supplement** (should contain vitamin A, C, D, E and B12 and not just vitamin B-complex): Twice Recommended Daily Allowance
- ◆ **Folic acid:** 5 mg on day 1, then 1 mg/day
- ◆ **Elemental Zinc:** 2 mg/kg/day
- ◆ **Copper:** 0.3 mg/kg/day (if separate preparation not available use commercial preparation containing copper)
- ◆ **Iron:** Start daily iron supplementation after two days of the child being on Catch up diet. Give elemental iron in the dose of 3 mg/kg/day in two divided doses, preferably between meals. (Do not give iron in stabilization phase.)

## 5.7. Feeding child with SAM

### Cautious feeding in stabilisation phase

- ◆ Feeding should begin as soon as possible after admission with 'Starter diet' until the child is stabilized. This is a phase when the child recovers normal metabolic function and nutrition-electrolytic balance and but there is NO weight gain. Severely malnourished children cannot tolerate usual amounts of protein and sodium at this stage, or high amounts of fat. Starter diet is low in protein and sodium and high in carbohydrate, which is more easily handled by the child and provides much-needed glucose. contains 75 kcal and 0.9 g protein per 100 ml. (Recipe for preparing 'Starter diet' is given in annexure 13)
- ◆ Give starter formula , calculating the required daily amount for each child using Starter diet Reference Chart given in annexure 14 and 15.
- ◆ Give 8-12 feeds over 24 hours
- ◆ If the child has gross oedema, reduce the volume to 100 ml/kg/day (see feed chart for amounts)
- ◆ If the child has poor appetite, coax and encourage the child to finish the feed. If eating 80% or less of the amount offered, use a nasogastric tube. If in doubt, see feed chart for intakes below which tube feeding is needed.
- ◆ Keep a 24-hour intake chart. Measure feeds carefully. Record leftovers.
- ◆ If the child is breastfed, encourage continued breastfeeding but also give starter formula.
- ◆ Transfer to starter formula as soon as appetite has returned (usually within one week) and oedema has been lost or is reduced
- ◆ Weigh daily and plot weight.

## 5.8. Catch up growth in rehabilitation phase

### Feeding for catch up growth

Catch-up diet is started to rebuild wasted tissues once the child is stabilised. (Recipe in annexure 13) Catch-up diet contains more calories and protein: 100 kcal and 2.9 g protein per 100 ml. During this phase there is rapid weight gain. The required daily amount for each child can be calculated using **Catch-up diet Reference Chart** (Annexure 16).

- ◆ Change to catch-up diet: For 2 days, replace starter formula with the same amount of catch-up diet ;on the next day increase each feed by 10ml until some feed remains uneaten.
- ◆ Give 8 feeds over 24 hours. These can be 5 feeds of catch-up diet and 3 specially modified family meals, high in energy and protein.
- ◆ Encourage the child to eat as much as possible, so the child can gain weight rapidly. If the child is finishing everything, offer more and increase subsequent feeds. Make sure that the child is actively fed.
- ◆ Weigh daily and plot weight.

**Note:** Children with SAM require Starter diet (also called F-75 diet) followed by catch-up diet (also called F-100) for promotion of weight gain as well as functional and immunological recovery. F-75 and F-100 refers to the specific combination of calories proteins, electrolytes and minerals that should be delivered to children with SAM as per WHO guidelines made available for this purpose. These diets can be prepared using locally available products as per recipes given in annexure 13

## 5.9. Structured play therapy and loving care

- ◆ Emotional and physical stimulation can substantially reduce the risk of permanent mental retardation and emotional impairment.
- ◆ After the first few days of treatment, the child should spend prolonged periods with other children on large play mats and with the mother.
- ◆ Each play session should include language and motor activities, and activities with toys. (Examples of simple toys for structured play therapy are provided in the annexure 20.) Teach the child local songs and games using the fingers and toes. Encourage the child to laugh, vocalise and describe what he or she is doing. Encourage the child to perform the next appropriate motor activity, for example, help the child to sit up; roll toys out of reach to encourage the child to crawl after them; hold the child's hands and help him or her to walk.
- ◆ Physical activity promotes the development of essential motor skills and may also enhance growth. For immobile children, passive limb movements should be done at regular intervals. For mobile children, play should include such activities as rolling or tumbling on a mattress, kicking and tossing a ball, and climbing stairs etc. Duration and intensity of physical activities should increase as the child's condition improves.
- ◆ Mothers and care givers should be involved in all aspects of management of her child. Mothers can be taught to: prepare food; feed children; bathe and change; play with children, supervise play sessions and make toys.
- ◆ Mothers must be educated about the importance of play and expression of her love as part of the emotional, physical and mental stimulation that the children need.

## 5.10. Prepare for discharge and follow up

The average stay in a hospital setting varies between 10 to 15 days (but can be longer), depending on each child's medical recovery. However the child requires follow up for another 4-6 months for full recovery, depending upon the child's progress at home. Therefore parent/caregivers must be prepared for discharge and follow up.

- ◆ Before being discharged from the facility, child must become accustomed to eating family meals. While the child is in the ward, gradually reduce and eventually stop the feeds of Catch-up diet, while adding or increasing the mixed diet of home foods, until the child is eating as s/he will eat at home.
- ◆ Ensure that parent/caregiver understands the causes of malnutrition and how to prevent its recurrence by following correct breastfeeding and feeding practices (frequent feeding with energy and nutrient dense foods).
- ◆ Treatment for helminthic infections should be given to all children before discharge. Give a single dose of any one of the following antihelminthics orally:
  - 200 mg. albendazole for children aged 12–23 months, 400 mg albendazole for children aged 24 months or more.
  - 100 mg mebendazole twice daily for 3 days for children aged 24 months or more.
- ◆ Before discharge, inform the ANM posted at the nearest PHC or sub-centre in order to ensure follow up. ASHAs and AWWs are an important link in community based follow up of the child till full recovery takes place. **All SAM children should be followed up by health providers in the program till s/he reaches weight-for-height of – 1SD.**
- ◆ Make a plan with the parent for follow-up visits. Regular check-ups should be made at 2 weeks in first month and then monthly thereafter until weight for height reaches -1 SD or above. If a problem is detected or suspected, visit/s can be made earlier or more frequently until the problem is resolved.



## 6. Discharge criteria

### Criteria for discharge

- ◆ Discharge criterion for all infants and children is 15 % weight gain and no signs of illness.
- ◆ This should be achieved through facility based care in NRC when community based programme is not in place.

### Discharge from Nutrition Rehabilitation Centre

#### Child

- ◆ Oedema has resolved
- ◆ Child has achieved weight gain of > 15% (*See Annexure 19 for target weight at 15% weight gain*) and has satisfactory weight gain for 3 consecutive days (>5 gm/kg/day)
- ◆ Child is eating an adequate amount of nutritious food that the mother can prepare at home
- ◆ All infections and other medical complications have been treated
- ◆ Child is provided with micronutrients
- ◆ Immunization is updated

#### Mother/caregiver

- ◆ Knows how to prepare appropriate foods and to feed the child
- ◆ Knows how to give prescribed medications, vitamins, folic acid and iron at home
- ◆ Knows how to make appropriate toys and play with the child
- ◆ Knows how to give home treatment for diarrhoea, fever and acute respiratory infections and how to recognise the signs for which medical assistance must be sought
- ◆ Follow-up plan is discussed and understood

Where community based programme is well functioning, child can be transferred from facility based care to community based care for achieving target weight gain of 15%, based on the following criteria :

- ◆ Child has completed antibiotic treatment
- ◆ Has good appetite (eating at least 120-130 cal/kg/day)
- ◆ Has good weight gain (of at least 5g/kg/day for three consecutive days) on exclusive oral feeding
- ◆ No oedema
- ◆ Caretakers sensitized to home care and education has been completed
- ◆ Immunisation is up-to-date

If the child has not recovered in four months s/he is classified as a “Non-Responder”.

### Failure to Respond

Criteria	Approximate time after admission
◆ Failure to regain appetite	Day 4
◆ Failure to start to lose oedema	Day 4
◆ Oedema still present	Day 10
◆ Failure to gain at least 5 g/kg/day for 3 successive days after feeding freely on Catch-up diet.	

## 7. Management of SAM children less than 6 months of age

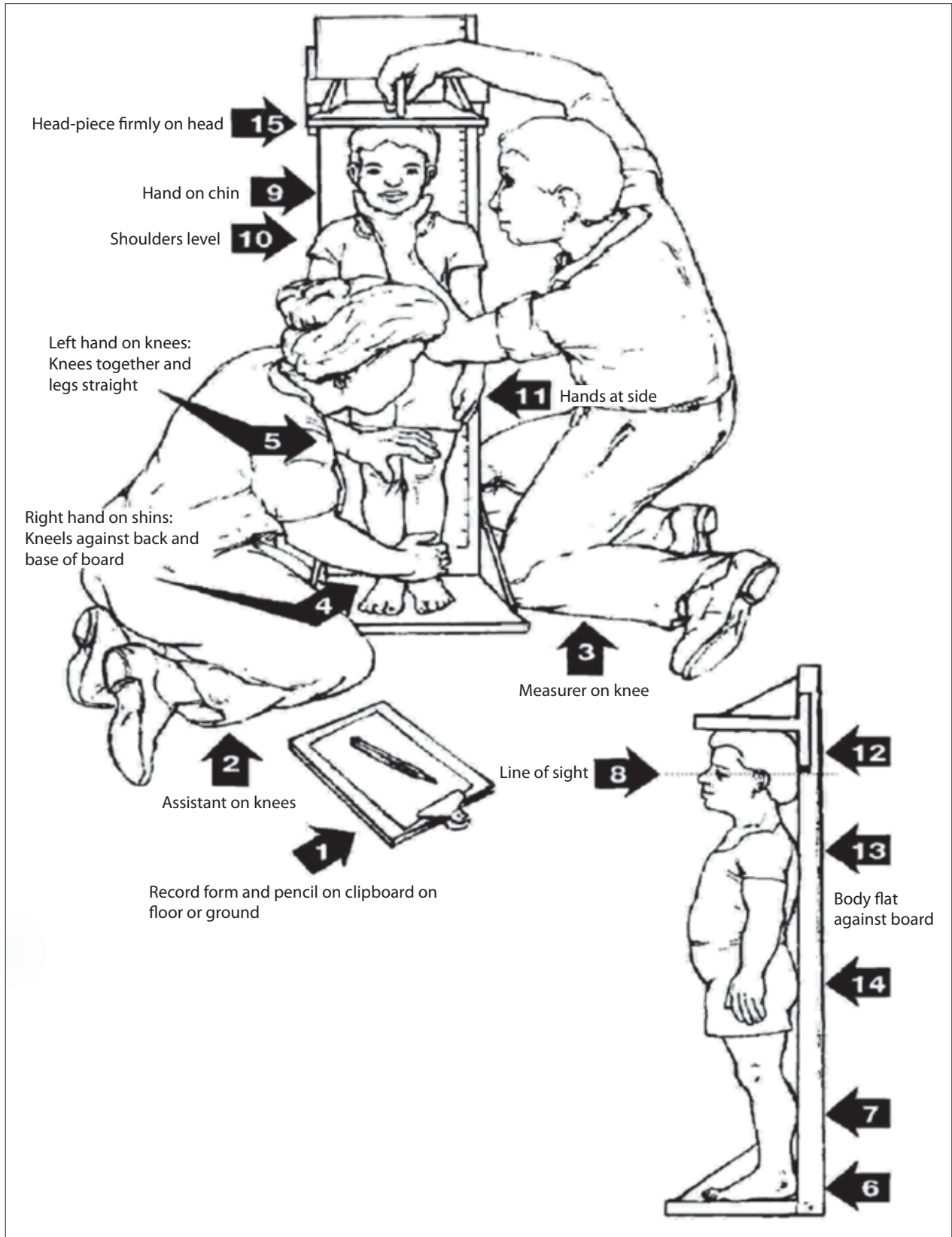
- ◆ Initial steps of management i.e. hypoglycemia, hypothermia, dehydration, infection, septic shock are same as for older children.
- ◆ Feed the infant with appropriate milk feeds for initial recovery and metabolic stabilization. Wherever possible breastfeeding or expressed milk is preferred in place of Starter diet. If the production of breast milk is insufficient initially, combine expressed breast milk and non-cereal Starter diet initially. For non-breastfed babies, give Starter diet feed prepared without cereals.
- ◆ Provide support to re-establish breastfeeding as soon as possible. Support and help to express breast milk if the infant is too weak to suckle.
- ◆ Give supplementary milk feeds if breast milk is not enough or if breastfeeding is not possible or mother is HIV +ve and has opted for replacement feeds.
- ◆ Give good diet and micronutrient supplements to the mother.
- ◆ In the rehabilitation phase, provide support to mother to give frequent feeds and try to establish exclusive breast feeding. In artificially fed without any prospects of breastfeeds, the infant should be given diluted Catch-up diet. [**Catch-up diet diluted by one third extra water to make volume 135 ml in place of 100 ml**].
- ◆ On discharge the non-breastfed infants should be given locally available animal milk with cup and spoon. The infant formulas are very expensive and should only be advised if the parents can afford this.
- ◆ Discharge the infant from the facility when gaining weight for 5 days and has no medical complications.
- ◆ *Relactation through Supplementary Suckling Technique* - Supplementary Suckling Technique (SST) is a technique which can be used as a strategy to initiate relactation in mothers who have developed lactation failure.

## 8. Management of SAM in HIV exposed/HIV infected and TB infected children

- ◆ SAM may occur in children who are HIV exposed/HIV infected. Basic principles & steps of management is same as described earlier.
- ◆ Treatment of malnutrition should be started at a minimum two weeks before the introduction of anti-retroviral drugs and other long term treatment to diminish the risk of serious side effects. Preferably anti-retroviral treatment should be delayed until the recovery phase is well established.
- ◆ Children with HIV should be given co-trimoxazole prophylaxis against pneumocystis pneumonia. This is inadequate antibiotic cover for the severely malnourished patient; amoxicillin should be given in addition to prophylactic doses of co-trimoxazole.
- ◆ Once SAM is being treated satisfactorily, treatment for HIV and/or TB (as indicated) should be started; national guidelines are to be followed.
- ◆ Cotrimoxazole prophylaxis is to be continued as per NACO guidelines.
- ◆ For severe pneumonia in HIV infected children give adequate anti-staphylococcal and gram-negative antibiotic coverage (e.g. ampicillin and gentamicin). For pneumonia with severe hypoxia, consider Pneumocystis pneumonia. Add high-dose cotrimoxazole (trimethoprim 5 mg/kg/dose, sulfamethoxazole 25 mg/kg/dose) 6-hrly for 3 weeks.

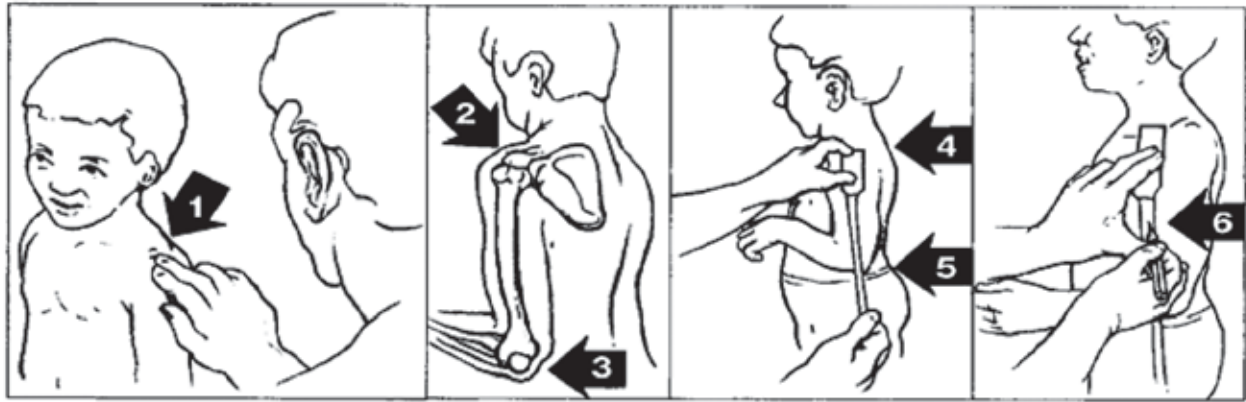
# Annexure 7

## Measuring height

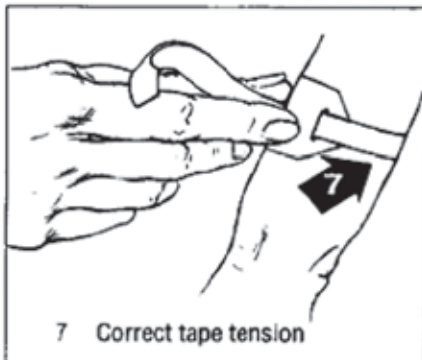


# Annexure 8

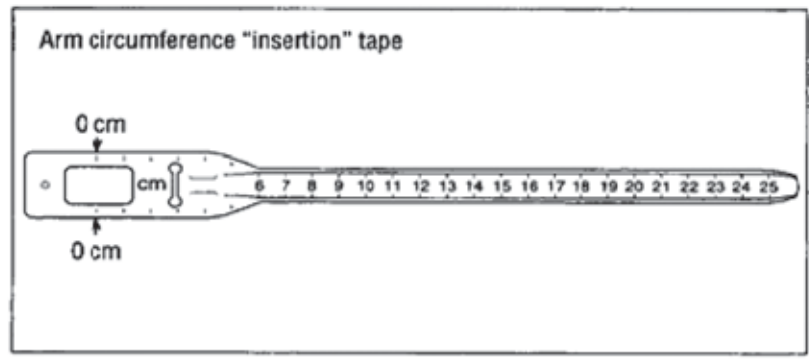
## Measuring mid upper arm circumference



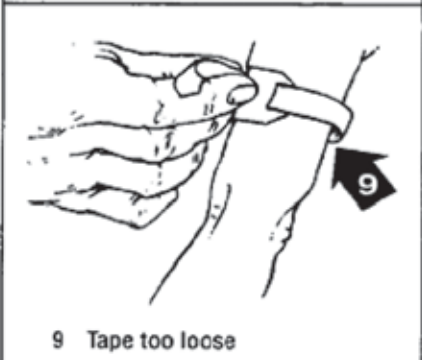
1 Locate tip of shoulder  
 2 Tip of shoulder  
 3 Tip of elbow  
 4 Place tape at tip of shoulder  
 5 Pull tape past tip of bent elbow  
 6 Mark midpoint



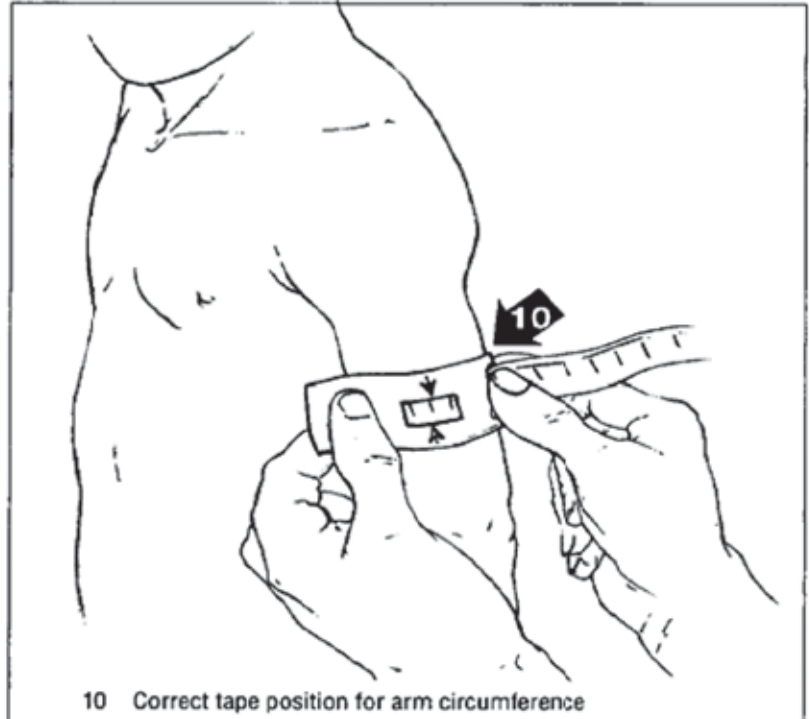
7 Correct tape tension



8 Tape too tight



9 Tape too loose



10 Correct tape position for arm circumference

## Annexure 9

### Weight-for-length reference chart (below 87 cm)

Boys' weight (kg)					Length	Girls' weight (kg)				
-4 SD	-3 SD	-2 SD	-1 SD	Médian	(cm)	Médian	-1 SD	-2 SD	-3 SD	-4 SD
1.7	1.9	2.0	2.2	2.4	45	2.5	2.3	2.1	1.9	1.7
1.8	2.0	2.2	2.4	2.6	46	2.6	2.4	2.2	2.0	1.9
2.0	2.1	2.3	2.5	2.8	47	2.8	2.6	2.4	2.2	2.0
2.1	2.3	2.5	2.7	2.9	48	3.0	2.7	2.5	2.3	2.1
2.2	2.4	2.6	2.9	3.1	49	3.2	2.9	2.6	2.4	2.2
2.4	2.6	2.8	3.0	3.3	50	3.4	3.1	2.8	2.6	2.4
2.5	2.7	3.0	3.2	3.5	51	3.6	3.3	3.0	2.8	2.5
2.7	2.9	3.2	3.5	3.8	52	3.8	3.5	3.2	2.9	2.7
2.9	3.1	3.4	3.7	4.0	53	4.0	3.7	3.4	3.1	2.8
3.1	3.3	3.6	3.9	4.3	54	4.3	3.9	3.6	3.3	3.0
3.3	3.6	3.8	4.2	4.5	55	4.5	4.2	3.8	3.5	3.2
3.5	3.8	4.1	4.4	4.8	56	4.8	4.4	4.0	3.7	3.4
3.7	4.0	4.3	4.7	5.1	57	5.1	4.6	4.3	3.9	3.6
3.9	4.3	4.6	5.0	5.4	58	5.4	4.9	4.5	4.1	3.8
4.1	4.5	4.8	5.3	5.7	59	5.6	5.1	4.7	4.3	3.9
4.3	4.7	5.1	5.5	6.0	60	5.9	5.4	4.9	4.5	4.1
4.5	4.9	5.3	5.8	6.3	61	6.1	5.6	5.1	4.7	4.3
4.7	5.1	5.6	6.0	6.5	62	6.4	5.8	5.3	4.9	4.5
4.9	5.3	5.8	6.2	6.8	63	6.6	6.0	5.5	5.1	4.7
5.1	5.5	6.0	6.5	7.0	64	6.9	6.3	5.7	5.3	4.8
5.3	5.7	6.2	6.7	7.3	65	7.1	6.5	5.9	5.5	5.0
5.5	5.9	6.4	6.9	7.5	66	7.3	6.7	6.1	5.6	5.1
5.6	6.1	6.6	7.1	7.7	67	7.5	6.9	6.3	5.8	5.3
5.8	6.3	6.8	7.3	8.0	68	7.7	7.1	6.5	6.0	5.5
6.0	6.5	7.0	7.6	8.2	69	8.0	7.3	6.7	6.1	5.6
6.1	6.6	7.2	7.8	8.4	70	8.2	7.5	6.9	6.3	5.8
6.3	6.8	7.4	8.0	8.6	71	8.4	7.7	7.0	6.5	5.9
6.4	7.0	7.6	8.2	8.9	72	8.6	7.8	7.2	6.6	6.0
6.6	7.2	7.7	8.4	9.1	73	8.8	8.0	7.4	6.8	6.2
6.7	7.3	7.9	8.6	9.3	74	9.0	8.2	7.5	6.9	6.3
6.9	7.5	8.1	8.8	9.5	75	9.1	8.4	7.7	7.1	6.5
7.0	7.6	8.3	8.9	9.7	76	9.3	8.5	7.8	7.2	6.6
7.2	7.8	8.4	9.1	9.9	77	9.5	8.7	8.0	7.4	6.7
7.3	7.9	8.6	9.3	10.1	78	9.7	8.9	8.2	7.5	6.9
7.4	8.1	8.7	9.5	10.3	79	9.9	9.1	8.3	7.7	7.0
7.6	8.2	8.9	9.6	10.4	80	10.1	9.2	8.5	7.8	7.1
7.7	8.4	9.1	9.8	10.6	81	10.3	9.4	8.7	8.0	7.3
7.9	8.5	9.2	10.0	10.8	82	10.5	9.6	8.8	8.1	7.5
8.0	8.7	9.4	10.2	11.0	83	10.7	9.8	9.0	8.3	7.6
8.2	8.9	9.6	10.4	11.3	84	11.0	10.1	9.2	8.5	7.8
8.4	9.1	9.8	10.6	11.5	85	11.2	10.3	9.4	8.7	8.0
8.6	9.3	10.0	10.8	11.7	86	11.5	10.5	9.7	8.9	8.1

## Annexure 10

### Weight-for-height reference chart (87 cm and above)

Boys' weight (kg)					Height (cm)	Girls' weight (kg)				
-4 SD	-3 SD	-2 SD	-1 SD	Médian		Médian	-1 SD	-2 SD	-3 SD	-4 SD
8.9	9.6	10.4	11.2	12.2	87	11.9	10.9	10.0	9.2	8.4
9.1	9.8	10.6	11.5	12.4	88	12.1	11.1	10.2	9.4	8.6
9.3	10.0	10.8	11.7	12.6	89	12.4	11.4	10.4	9.6	8.8
9.4	10.2	11.0	11.9	12.9	90	12.6	11.6	10.6	9.8	9.0
9.6	10.4	11.2	12.1	13.1	91	12.9	11.8	10.9	10.0	9.1
9.8	10.6	11.4	12.3	13.4	92	13.1	12.0	11.1	10.2	9.3
9.9	10.8	11.6	12.6	13.6	93	13.4	12.3	11.3	10.4	9.5
10.1	11.0	11.8	12.8	13.8	94	13.6	12.5	11.5	10.6	9.7
10.3	11.1	12.0	13.0	14.1	95	13.9	12.7	11.7	10.8	9.8
10.4	11.3	12.2	13.2	14.3	96	14.1	12.9	11.9	10.9	10.0
10.6	11.5	12.4	13.4	14.6	97	14.4	13.2	12.1	11.1	10.2
10.8	11.7	12.6	13.7	14.8	98	14.7	13.4	12.3	11.3	10.4
11.0	11.9	12.9	13.9	15.1	99	14.9	13.7	12.5	11.5	10.5
11.2	12.1	13.1	14.2	15.4	100	15.2	13.9	12.8	11.7	10.7
11.3	12.3	13.3	14.4	15.6	101	15.5	14.2	13.0	12.0	10.9
11.5	12.5	13.6	14.7	15.9	102	15.8	14.5	13.3	12.2	11.1
11.7	12.8	13.8	14.9	16.2	103	16.1	14.7	13.5	12.4	11.3
11.9	13.0	14.0	15.2	16.5	104	16.4	15.0	13.8	12.6	11.5
12.1	13.2	14.3	15.5	16.8	105	16.8	15.3	14.0	12.9	11.8
12.3	13.4	14.5	15.8	17.2	106	17.1	15.6	14.3	13.1	12.0
12.5	13.7	14.8	16.1	17.5	107	17.5	15.9	14.6	13.4	12.2
12.7	13.9	15.1	16.4	17.8	108	17.8	16.3	14.9	13.7	12.4
12.9	14.1	15.3	16.7	18.2	109	18.2	16.6	15.2	13.9	12.7
13.2	14.4	15.6	17.0	18.5	110	18.6	17.0	15.5	14.2	12.9
13.4	14.6	15.9	17.3	18.9	111	19.0	17.3	15.8	14.5	13.2
13.6	14.9	16.2	17.6	19.2	112	19.4	17.7	16.2	14.8	13.5
13.8	15.2	16.5	18.0	19.6	113	19.8	18.0	16.5	15.1	13.7
14.1	15.4	16.8	18.3	20.0	114	20.2	18.4	16.8	15.4	14.0
14.3	15.7	17.1	18.6	20.4	115	20.7	18.8	17.2	15.7	14.3
14.6	16.0	17.4	19.0	20.8	116	21.1	19.2	17.5	16.0	14.5
14.8	16.2	17.7	19.3	21.2	117	21.5	19.6	17.8	16.3	14.8
15.0	16.5	18.0	19.7	21.6	118	22.0	19.9	18.2	16.6	15.1
15.3	16.8	18.3	20.0	22.0	119	22.4	20.3	18.5	16.9	15.4
15.5	17.1	18.6	20.4	22.4	120	22.8	20.7	18.9	17.3	15.6

# Annexure 11

## Appetite test

The complications in malnutrition lead to loss of appetite. Appetite test helps in identifying SAM children with medical complications who will need hospitalization. Children who have good appetite can get nutritional rehabilitation in community settings.

### Appetite test feed

Based on the nutritional needs, the suggested method of testing of appetite is as follows:

- ◆ **For children 7–12 months:** Offer 30-35 ml/kg of Catch-up diet. If the child takes more than 25 ml/kg then the child should be considered to have good appetite.
- ◆ **For children >12 months:** Feed locally prepared with the following food items may be offered.
  - a. Roasted ground nuts 1000 gm
  - b. Milk powder 1200 gm
  - c. Sugar 1120 gm
  - d. Coconut oil 600 gm

#### How to prepare

- ◆ Take roasted ground nuts and grind them in mixer
- ◆ Grind sugar separately or with roasted ground nut
- ◆ Mix ground nut, sugar, milk powder and coconut oil
- ◆ Store them in air tight container
- ◆ Prepare only for one week to ensure the quality of feed
- ◆ Store in refrigerator

### How to do appetite test?

- ◆ Do the test in a separate quiet area.
- ◆ Explain to the mother/caregiver how the test will be done.
- ◆ The mother/caregiver should wash her hands.
- ◆ The mother sits comfortably with the child on her lap and offers therapeutic food.
- ◆ The child should not have taken any food for the last 2 hrs.
- ◆ The test usually takes a short time but may take up to one hour.
- ◆ The child must not be forced to take the food offered.
- ◆ When the child has finished, the amount taken is judged or measured.

### Amount of local therapeutic feed that a child with SAM should take to PASS the appetite test

Body weight (kg)	Weight in grams
Less than 4 kg	15 g or more
4–7 kg	25 g or more
7–10 kg	33 g or more



## Annexure 12

### Antibiotic reference chart

Status	Antibiotics
<b>All admitted cases without any complications or complications other than shock, meningitis or dysentery</b>	<ul style="list-style-type: none"> <li>◆ Inj. Ampicillin 50 mg/kg/dose 6 hrly and Inj. Gentamicin 7.5 mg/kg once a day for 7 days.</li> <li>◆ Add Inj. Cloxacillin 100 mg/kg day 6 hrly if staphylococcal infection is suspected.</li> <li>◆ Revise therapy based on sensitivity report.</li> </ul>
<b>For septic shock or worsening/no improvement in initial hours</b>	<ul style="list-style-type: none"> <li>◆ Give third generation cephalosporins like Inj. Cefotaxime 150 mg/kg/day in 3 divided doses or Ceftriaxone 100 mg/kg/day in 2 divided doses along with Inj Gentamicin 7.5 mg/kg in single dose.</li> <li>◆ (If child is not passing urine, gentamicin may accumulate in the body and cause deafness. Do not give second dose until child is passing urine.)</li> </ul>
<b>Meningitis</b>	<ul style="list-style-type: none"> <li>◆ IV Cefotaxime 50mg/kg/dose 6hrly or Inj Ceftriaxone 50 mg/kg 12 hrly plus Inj. Amikacin 15 mg/kg/day divided in 8hrly doses.</li> </ul>
<b>Dysentery</b>	<ul style="list-style-type: none"> <li>◆ Give Ciprofloxacin 15mg/kg in two divided doses per day for 3 days. If child is sick or has already received ciprofloxacin, give Inj. Ceftriaxone 100 mg/kg once a day or divided in 2 doses for 5 days.</li> </ul>

## Annexure 13

### Composition for starter and catch up diet (as per WHO Recommended F-75 and F-100)

Contents per 100 ml	Starter diet	Catch-up diet
Protein (g)	0.9	2.9
Lactose (g)	1.3	4.2
Potassium (mmol)	4.0	6.3
Sodium (mmol)	0.6	1.9
Magnesium (mmol)	0.43	0.73
Zinc (mg)	2.0	2.3
Copper (mg)	0.25	0.25
% energy from protein	5	12
% energy from fat	36	53
Osmolarity (mOsmol/l)	413	419

#### Recipe for starter diet

Contents (per 1000 ml)	Starter diet	Starter diet (Cereal based)
Fresh Cow's milk or equivalent milk (e.g. toned dairy milk) (ml)	300	300
Sugar (g)	100	70
Cereal flour:		
Powdered puffed rice (g)	–	35
Vegetable oil (ml)	20	20
Water: make up to (ml)**	1000	1000
Energy (kcal/100 mL)	75	75
Protein (g/100 mL)	0.9	1.1
Lactose (g/100 mL)	1.2	1.2

\* Adapted from IAP Guidelines 2006.

\*\* **Important note about adding water:** Add just the amount of water needed to make 1000 ml of Starter diet. Do not simply add 1000 ml of water, as this will make the diet too dilute. A mark for 1000 ml should be made on the mixing container for the diet, so that water can be added to the other ingredients up to this mark.

#### Recipe for catch up diet

Contents (Per 1000 ml)	Catch-up diet
Cow's milk/toned dairy milk (ml)	900
Sugar (g)	75
Vegetable oil (g)	20
Water to make (ml)	1000
Energy (kcal/100 mL)	100
Protein (g/100 mL)	2.9
Lactose (g/100 mL)	4.2

## Annexure 14

### Starter diet reference chart

Weight of child (kg)	Volume of Starter diet per feed (ml) <sup>a</sup>			Daily total (130 ml/kg)	80% of daily total <sup>a</sup> (minimum)
	Every 2 hours <sup>b</sup> (12 feeds)	Every 3 hours <sup>c</sup> (8 feeds)	Every 4 hours (6 feeds)		
2.0	20	30	45	260	210
2.2	25	35	50	286	230
2.4	25	40	55	312	250
2.6	30	45	55	338	265
2.8	30	45	60	364	290
3.0	35	50	65	390	310
3.2	35	55	70	416	335
3.4	35	55	75	442	355
3.6	40	60	80	468	375
3.8	40	60	85	494	395
4.0	45	65	90	520	415
4.2	45	70	90	546	435
4.4	50	70	95	572	460
4.6	50	75	100	598	480
4.8	55	80	105	624	500
5.0	55	80	110	650	520
5.2	55	85	115	676	540
5.4	60	90	120	702	560
5.6	60	90	125	728	580
5.8	65	95	130	754	605
6.0	65	100	130	780	625
6.2	70	100	135	806	645
6.4	70	105	140	832	665
6.6	75	110	145	858	685
6.8	75	110	150	884	705
7.0	75	115	155	910	730
7.2	80	120	160	936	750
7.4	80	120	160	962	770
7.6	85	125	165	988	790
7.8	85	130	170	1014	810
8.0	90	130	175	1040	830
8.2	90	135	180	1066	855
8.4	90	140	185	1092	875
8.6	95	140	190	1118	895
8.8	95	145	195	1144	915
9.0	100	145	200	1170	935
9.2	100	150	200	1196	960
9.4	105	155	205	1222	980
9.6	105	155	210	1248	1000
9.8	110	160	215	1274	1020
10.0	110	160	220	1300	1040

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

<sup>b</sup> Feed 2-hourly for at least the first day. Then, when little or no vomiting, modest diarrhoea (<5 watery stools per day), and finishing most feeds, change to 3-hourly feeds.

<sup>c</sup> After a day on 3-hourly feeds. If no vomiting, less diarrhoea, and finishing most feeds, change to 4-hourly feeds.

## Annexure 15

### Volume of starter diet for children with severe (+++) oedema

Weight with +++ oedema (kg)	Volume of Starter diet per feed (ml) <sup>a</sup>			Daily total (100 ml/kg)	80% of daily total <sup>a</sup> (minimum)
	Every 2 hours <sup>b</sup> (12 feeds)	Every 3 hours <sup>c</sup> (8 feeds)	Every 4 hours (6 feeds)		
3.0	25	40	50	300	240
3.2	25	40	55	320	255
3.4	30	45	60	340	270
3.6	30	45	60	360	290
3.8	30	50	65	380	305
4.0	35	50	65	400	320
4.2	35	55	70	420	335
4.4	35	55	75	440	350
4.6	40	60	75	460	370
4.8	40	60	80	480	385
5.0	40	65	85	500	400
5.2	45	65	85	520	415
5.4	45	70	90	540	430
5.6	45	70	95	560	450
5.8	50	75	95	580	465
6.0	50	75	100	600	480
6.2	50	80	105	620	495
6.4	55	80	105	640	510
6.6	55	85	110	660	530
6.8	55	85	115	680	545
7.0	60	90	115	700	560
7.2	60	90	120	720	575
7.4	60	95	125	740	590
7.6	65	95	125	760	610
7.8	65	100	130	780	625
8.0	65	100	135	800	640
8.2	70	105	135	820	655
8.4	70	105	140	840	670
8.6	70	110	145	860	690
8.8	75	110	145	880	705
9.0	75	115	150	900	720
9.2	75	115	155	920	735
9.4	80	120	155	940	750
9.6	80	120	160	960	770
9.8	80	125	165	980	785
10.0	85	125	165	1000	800
10.2	85	130	170	1020	815
10.4	85	130	175	1040	830
10.6	90	135	175	1060	850
10.8	90	135	180	1080	865
11.0	90	140	185	1100	880
11.2	95	140	185	1120	895
11.4	95	145	190	1140	910
11.6	95	145	195	1160	930
11.8	100	150	195	1180	945
12.0	100	150	200	1200	960

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

<sup>b</sup> Feed 2-hourly for at least the first day. Then, when little or no vomiting, modest diarrhoea (<5 watery stools per day), and finishing most feeds, change to 3-hourly feeds.

<sup>c</sup> After a day on 3-hourly feeds. If no vomiting, less diarrhoea, and finishing most feeds, change to 4-hourly feeds.

## Annexure 16

### Catch-up diet reference chart

Weight of child (kg)	Range of volumes per 4-hourly feed of Catch-up diet (6 feeds daily)		Range of daily volumes of Catch-up diet	
	Minimum (ml)	Maximum (ml) <sup>a</sup>	Minimum (150 ml/kg/day)	Maximum (220 ml/kg/day)
2.0	50	75	300	440
2.2	55	80	330	484
2.4	60	90	360	528
2.6	65	95	390	572
2.8	70	105	420	616
3.0	75	110	450	660
3.2	80	115	480	704
3.4	85	125	510	748
3.6	90	130	540	792
3.8	95	140	570	836
4.0	100	145	600	880
4.2	105	155	630	924
4.4	110	160	660	968
4.6	115	170	690	1012
4.8	120	175	720	1056
5.0	125	185	750	1100
5.2	130	190	780	1144
5.4	135	200	810	1188
5.6	140	205	840	1232
5.8	145	215	870	1276
6.0	150	220	900	1320
6.2	155	230	930	1364
6.4	160	235	960	1408
6.6	165	240	990	1452
6.8	170	250	1020	1496
7.0	175	255	1050	1540
7.2	180	265	1080	1588
7.4	185	270	1110	1628
7.6	190	280	1140	1672
7.8	195	285	1170	1716
8.0	200	295	1200	1760
8.2	205	300	1230	1804
8.4	210	310	1260	1848
8.6	215	315	1290	1892
8.8	220	325	1320	1936
9.0	225	330	1350	1980
9.2	230	335	1380	2024
9.4	235	345	1410	2068
9.6	240	350	1440	2112
9.8	245	360	1470	2156
10.0	250	365	1500	2200

<sup>a</sup> Volumes per feed are rounded to the nearest 5 ml.

## Annexure 17

### Home made alternative food items

Example of homemade culturally acceptable Catch-up diet.

#### 1. Khichri

Ingredients	Amount for 1 Kg Khichri
Rice	120 gms
Lentils (dal)	60 gms
Edible Oil	70 ml
Potato	100 gms
Pumpkin	100 gms
Leafy Vegetable	80 gms
Onion (2 medium size)	50 gms
Spices (ginger, turmeric, coriander powder)	According to taste
Water	1000 ml
Total Calories/kg	1,442 kcal
Total Protein/kg	29.6 gms

#### 2. Halwa

Ingredients	Amount for 1 Kg
Wheat flour (atta)	200 gms
Lentils (dal)/Besan/Moong dal powder	100 gms
Oil	100 ml
Jaggery/Gur/Sugar	125 gms
Water to make a thick paste	600 ml
Total Calories/kg	2404 kcal
Total Calories/100 gm	240 kcal
Total Protein/kg	50.5 gms
Total Protein/100 gm	5.05 gm

## Annexure 18

### Feeding recommendations as per IMNCI

Guidelines			
Up to 6 months	6 to 12 months	12 months – 2 years	2 years and older
<ul style="list-style-type: none"> <li>◆ Breast feed as often as the child wants, day and night, at least 8 times in 24 hours.</li> <li>◆ Do not give any other foods or fluids not even water.</li> </ul>	<p>Breast feed as often as the child wants.</p> <ul style="list-style-type: none"> <li>◆ Give at least one katori serving* at a time:               <ul style="list-style-type: none"> <li>- Mashed roti/ rice/bread/ biscuit mixed in sweetened undiluted milk <b>OR</b></li> <li>- Mashed roti/rice/ bread mixed in thick dal with added ghee/oil or khichri with added oil/ghee. Add cooked vegetables also in the servings <b>OR</b></li> <li>- Sevian/dalia/halwa/ kheer prepared in milk or any cereal porridge cooked in milk <b>OR</b></li> <li>- Mashed boiled/ fried potatoes</li> </ul> </li> <li>◆ Also give nutritious food between meals, such as: banana/biscuit/ cheeko/mango/papaya as snacks</li> </ul> <p>*3 times per day if breast feed; 5 times per day if not breast feed.</p>	<ul style="list-style-type: none"> <li>◆ Breast feed as often as the child wants</li> <li>◆ Offer food from the family pot</li> <li>◆ Give at least 1½ katori serving* at a time of:               <ul style="list-style-type: none"> <li>- Mashed roti/rice/ bread mixed in thick dal with added ghee/oil or khichri with added oil/ghee. Add cooked vegetables also in the servings <b>OR</b></li> <li>- Mashed roti/ rice/bread/ biscuit mixed in sweetened undiluted milk <b>OR</b></li> <li>- Sevian/dalia/halwa/ kheer prepared in milk or any cereal porridge cooked in milk <b>OR</b></li> <li>- Mashed boiled/ fried potatoes</li> </ul> </li> <li>◆ Also give nutritious food between meals, such as: banana/biscuit/ cheeko/mango/papaya as snacks</li> </ul> <p>* 5 times per day</p>	<ul style="list-style-type: none"> <li>◆ Give family foods at 3 meals each day.</li> <li>◆ Also twice daily, give nutritious food between meals, such as: banana/biscuit/ cheeko/mango/papaya as snacks</li> </ul>
<p><b>Remember:</b></p> <ul style="list-style-type: none"> <li>◆ Continue breastfeeding if the child is sick.</li> </ul>	<p><b>Remember:</b></p> <ul style="list-style-type: none"> <li>◆ Keep the child in your lap and feed with your own hands</li> <li>◆ Wash your own and child's hands with soap and water every time before feeding</li> </ul>	<p><b>Remember:</b></p> <ul style="list-style-type: none"> <li>◆ Ensure that the child finishes the serving</li> <li>◆ Wash your child's hands with soap and water every time before feeding</li> </ul>	<p><b>Remember:</b></p> <ul style="list-style-type: none"> <li>◆ Ensure that the child finishes the serving</li> <li>◆ Teach your child to wash hands with soap and water every time before feeding</li> </ul>

## Annexure 19

### Guidance to identify target weight

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

\* Or weight, free of oedema.

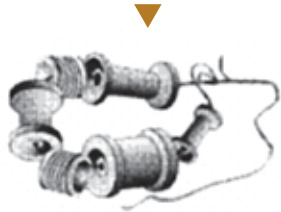


# Annexure 20

## Examples of simple toys (adapted from WHO guidelines)

### Ring on a string (from 6 months)

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



### Rattle (from 12 months)

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



### Drum (from 12 months)

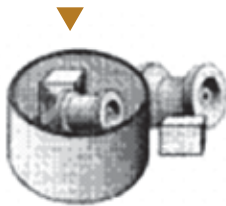
Any tin with a tightly fitting lid.

### Mirror (from 18 months)

A tin lid with no sharp edges.

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

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



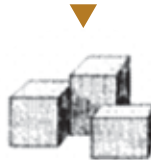
### Posting bottle (from 12 months)

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



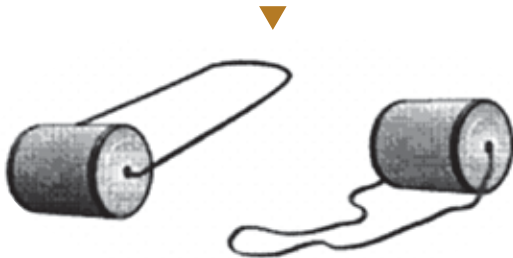
### Blocks (from 9 months)

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



### Push-along toy (from 12 months)

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



### Stacking bottle tops (from 12 months)

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



### Pull-along toy (from 12 months)

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

### Nesting toys (from 9 months)

Nest the bottom of two bottles of identical shape, but different size. The smaller bottle should be placed inside the large bottle.



### Doll (from 12 months)

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



### Book (from 18 months)

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



### Puzzle (from 18 months)

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









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