Guidelines for Management of Severe Acute Malnutrition (SAM) Children at Nutrition Rehabilitation Center

National Rural Health Mission
Department of Health & Family Welfare
Government of Gujarat (GoG)
Year: - 2012

INTRODUCTION

Malnutrition, as a major public health and nutrition challenge faced by many developing countries, stands as a consequence of several key social and economic factors such as lack of education, inadequate health care services and ill-informed cultural behaviors. Underpinning all these is the fact that poverty, by and large, is the principal cause of poor feeding habits. In order to holistically address the issues surrounding malnutrition, a comprehensive understanding of the multi-dimensional complexities at play in society is crucial.

Indicators showing levels of nutritional status in children are often regarded as representative of the health and general well-being of a society at large. High levels of malnutrition in children, particularly in those under the age of two, tend to prevail in those countries where levels of socio-economic development are also low. It is estimated that improved feeding habits aimed to prevent or treat malnutrition could prevent 11 million child deaths globally per year [1]. Thus, efforts to address this issue are of paramount importance and have political, economic and cultural implications across all levels of societies for many developing nations.

India holds the dubious distinction of being the birthplace of a third of the world's entire population of malnourished children. Around 43 per cent of India's children are underweight, 48 percent are stunted and 20 percent of children are wasted as per NFHS- 3 report (Figure 1). Indeed, the average for developing countries in general is 27 per cent [2]. In fact, according to WHO, about fifty percent of infant and child mortality may be associated with malnutrition [3]

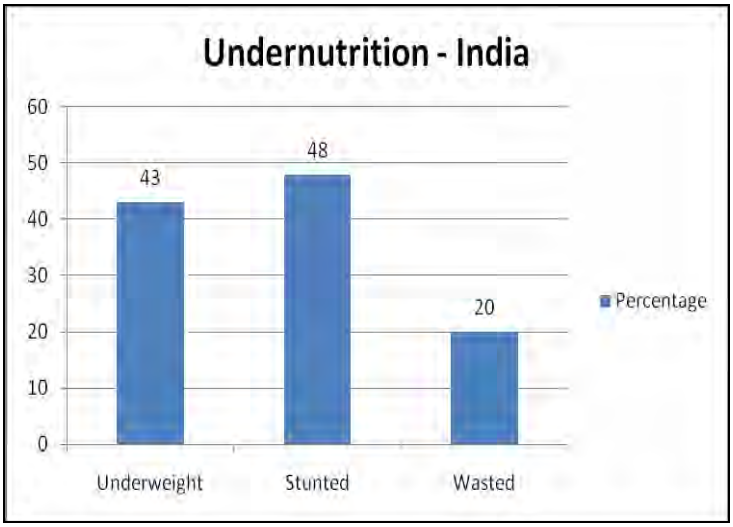


Figure 1: Prevalence of underweight, stunting and wasting among children under five years old in India (*Source: NFHS 3)*

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 at 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.

---

1 Maternal and child under nutrition: Global and regional exposures and health consequences. Lancet, 2008; 371 (9608): 243-60
2 Chatterjee P. Child malnutrition rises in India despite economic boom. Lancet, 2007; 369: 1417-8
3 www.who.org/india/countryhealthsystemprofile

Addressing under nutrition in children under five years

Under nutrition 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. Many of these deaths are on account of severe malnutrition. Strong evidence exists on synergism between under nutrition and child mortality due to common childhood illnesses including diarrhea, acute respiratory infections, malaria and measles. To prevent deaths due to severe acute malnutrition (SAM), specialized treatment and prevention interventions are required.

Programmatically, it is helpful to categorize children with SAM into 'complicated and uncomplicated' cases based on clinical criteria.

WHO and UNICEF in their joint statement have recommended two major approaches to address children with SAM:

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 specialized 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)[4] can be treated in their communities without being admitted to a health facility. Besides, children managed at specialized 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 under nutrition 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 under nutrition.

---

[4] Steve Collins, *Food and Nutrition Bulletin,* vol. 27, no. 3

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 are cared for. This Facility Based Unit is referred to as Nutritional Rehabilitation Centre[5] 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.

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

- District RCH officers, District Nodal Officer for Nutrition, District Program Coordinators, Program Associates
- 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 Nutritionists posted at NRCs or in pediatric wards.
- Other administrators and personnel involved directly or indirectly in monitoring or implementing the nutrition programme

[5] *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*.

Operational Guideline:

Planning and Implementation

Section 1

SECTION 1

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 counseling and support to identify the nutrition and health problems in their child.

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

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

A2. 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 should have 10-20 beds depending on the size of that ward. 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 counseling 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 counseling 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 bedded NRC is as follows:

Staff Position	Numbers for 10 bedded unit
• Medical officer/ Incharge	1
• Nursing staff/ Incharge	2
• Nutritionist (Contractual)	1
• Cook cum Care taker (Contractual)	2
• Attendant / Cleaners (Contractual)	1
• Medical Social Volunteer	1

Job Description

Medical officer: The Medical Officer can be any 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 the children admitted in the NRC. The MO will examine each patient every day and will attend to any emergency calls as per the need.

Nutrition Counsellor : The Nutrition Counsellor 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 Dietician along the Care taker and Cook 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).

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 Volunteer: The medical social volunteer 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, PDS and public welfare schemes as may be relevant to the child and the family

C1. List of Equipments and Supplies for Nutrition Rehabilitation Center

S. no	Item	Quantity	Unit Cost	Total Cost	Source
1	Length Board	1			
2	Electronic Weighing Machine	1			
3	MUAC Tapes	2			
4	Measuring Cups and Spoons	2 set			
5	LPG Connection and stove (4 burners)	1	7000	7000	
6	Storage Tins for Kitchen	10	100	1000	
7	Feeding Utensils- Katori, Spoon, plates, glasses	20	150	3000	

8	Cooking Utensils			5000	
9	Geyser for Bathrooms	1	5000	5000	
10	Refrigerator	1	10000	10000	
11	Water Purifier	1	10000	10000	
12	Water dispenser	1	5000	5000	
13	Mixer	1	6000	6000	
14	Heat Convector	1	1000	1000	
15	Room Thermometer	1	1000	1000	
16	Digital Thermometers for children	2	500	1000	
17	Baby Blankets	10	200	2000	
18	Blankets for Mothers	10	400	4000	
19	Mosquito nets	10	100	1000	
20	Bed sheets	20	100	2000	
21	Mattresses	10	500	5000	
22	Cots	10	2000	20000	
23	Chairs	4	1500	6000	
24	Table	2	3000	6000	
25	Soft Boards	2	1500	3000	
26	White Boards	2	2000	4000	
27	TV with DVD Player	1			
28	Panels of Protocol and treatment	-			
29	Dari, Chatai, aasan etc	2 each	100	2000	
30	Dustbin, doormats, Shoe racks	2 each	100	2000	
31	Trunks/ Bedside Cabinets	10	1000	10000	
32	SAM charts	30/ month			
33	Discharge and Follow up Cards	30/ month			
34	MIS Register	5			
35	Toys for Children		500	500	
36	Wall painting to make NRC child friendly.		7,000	7,000	
Total				**1,29,500**	

C2. Cost of setting up Nutrition Rehabilitation Center

Human Resources/ Running Cost per month in 1 facility

S.no	Staff	Positing on 10 beds	Unit Cost	Total Cost	Source
1	Medical Officer	1	Attached from District Hospital		
2	Nutritionist	1	8500	8500	
3	Staff Nurse/ ANM/ FHW	1	Attached from District Hospital		
4	Cook cum Care taker	2	3500	7000	
5	Attendant/ Cleaner	1	3000	3000	
6	Contingency	1	1500	1500	
Total	**Total Cost**		**16,500**	**20,000**	

Cost of Treatment / Child (20 children/ month in a 10 bedded center) 10/ children/ batch for 14- 21 days

S. No	**Item and Quantity**	**Unit Cost**	**Calculation**	**Total Cost (20 x Rs…. x 14 days)**
1	Food for Mother & Children	Rs 100/day	20 child x Rs 100 x 14 days	28,000
2	Wage loss compensation for mothers	Rs 50/mother/day	20 child x Rs 50 x 14 days	14, 000
4	Reimbursement of transportation cost to mothers for bringing the child to the facility (to and fro)	Rs 200/- per child	Rs 200 x 20 mothers	4,000
5	Incentive to ASHA/ AWW for accompanying the child to NRC	Rs 100/- per child	Rs 100 x 20 ASHA/ AWW	2,000
6	(Reimbursement of transportation cost to mothers for bringing the child to facility – to & fro) in follow up visits	Rs 200/ follow up visit / child	Rs 200 x 4 follow ups x 20 children	16,000
7	(Incentive to ASHA/ AWW for accompanying the child to NRC in follow up visits	Rs 100/ Follow up visit / child	Rs 100 x 4 follow ups x 20 children	8,000
8	Wage loss compensation for mothers in follow up visits	Rs 75/ Follow up visit / Child	Rs 75 x 4 follow ups x 20 children	6,000
Total				**64,000**

Cost of treating one child

Sr.no	Heads	For 10 Bedded Facility Based management of SAM
1	Fixed cost per month per NRC	20,000
2	Cost of treating per child /month inclusive of follow ups	64,000
Total		84,000
Cost of treating per child		**Rs 4200 per child**

D. Operational Steps in setting up of NRCs at 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 District Level

1. Designating Responsible Officer for the program.

Chief District Medical Officer (CDMO) will have overall responsibility for implementation and monitoring of the program. S/he will be supported by the District Program Associate whose job profile will be expanded to include coordination of facility based management of children with SAM. District RCH Officers and District Program Associate should be oriented on the implementation plan, operational guidelines, training material and IEC on SAM.
The District Program Associate 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.

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

Supportive Supervision

The staff of the NRC will require mentoring initially and regular supportive supervision thereafter. The district 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 form all NRCs in the state.

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/district level	**Indicators to be monitored at state level**
	Number of NRCs	✓	✓
	Admissions ● Gender disaggregated ● Referred by AWW/ASHA/Self/Pediatric ward or emergency	✓ ✓	
	Average length of stay in the NRC	✓	✓
	Bed Occupancy rate	✓	✓
	Average weight gain during the stay in the NRC	✓	✓
	Rate of referral to higher facility	✓	

	Recovery rate	✓	✓
	Case fatality rate	✓	✓
	Defaulter rate	✓	✓
	Relapse rate	✓	
	Non- respondents	✓	
	Death rate following discharge from NRC while still in program	✓	✓
	Average length of stay in the program	✓	✓

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 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.

A person is considered as a defaulter when he/she has not attended the NRC for 3 consecutive days.

Medical Transfer rate: The beneficiary is categorised as a transfer when she/he is transferred to a health structure outside the feeding programme (hospital, health centre etc.) regardless of the level of the health facility s/he is referred to.

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 patients (e.g. chronic disease) or to the programme, that need to be addressed

See annexure O4 for guidance on calculation of Case Fatality Rate, Bed Occupancy Rate, Average Length of Stay, Weight Gain (gm/kg/day) and Average weight gain (for the NRC).

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

E3. Acceptable levels of care[1]

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

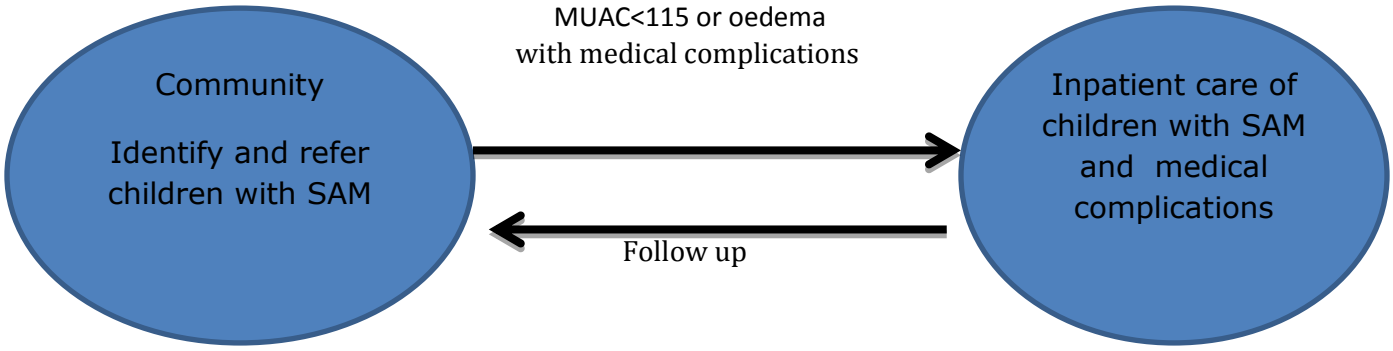
[1] Adapted from Sphere Standards

Technical Guideline

Section 2

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.



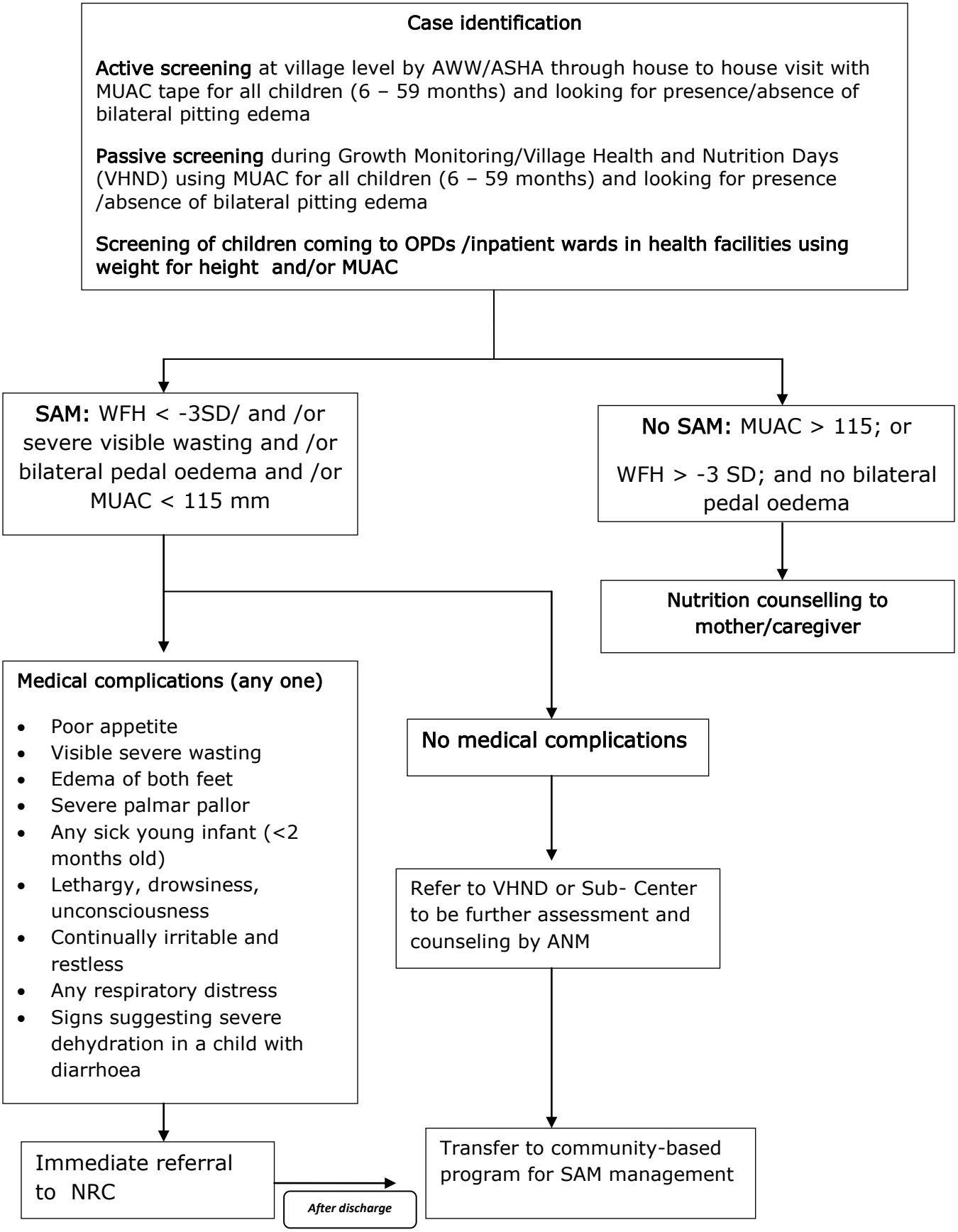
To reduce the barriers to access, reduce case fatality and improve programme impact, screening must take place in the community and before the onset of medical complications. Active case finding should be done in the community by the ANM and AWW and aided by the ASHA of the village. It is important to 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
SAM: WFH < -3SD/ and /or severe visible wasting and /or bilateral pedal oedema and /or MUAC < 115 mm
No SAM: MUAC > 115; or
WFH > -3 SD; and no bilateral pedal oedema
Nutrition counselling to mother/caregiver
Medical complications (any one)
Poor appetite
Visible severe wasting
Edema of both feet
Severe palmar pallor
Any sick young infant (<2 months old)
Lethargy, drowsiness, unconsciousness
Continually irritable and restless
Any respiratory distress
Signs suggesting severe dehydration in a child with diarrhoea
No medical complications
Refer to VHND or Sub- Center to be further assessment and counseling by ANM
Immediate referral to NRC
After discharge
Transfer to community-based program for SAM management

2. Admission Criteria

Criteria for Admission for Inpatient Treatment
Children 6-59 months
Any of the following: • MUAC <115mm with or without any grade of edema • WFH < -3 SD with or without any grade of edema • Bilateral pitting edema +/++ (children with edema +++ always need inpatient care) **WITH** **Any of the following complications** 1. Anorexia (Loss of appetite) 2. Fever (39 degree C) or Hypothermia (< 35 C) 3. Persistent vomiting 4. Severe dehydration based on history and clinical examination 5. Not alert, very weak, apathetic, unconscious, convulsions 6. Hypoglycemia 7. Severe Anemia (severe palmar pallor) 8. Severe pneumonia 9. Extensive superficial infection requiring IM medications 10. Any other general sign that a clinician thinks requires admission for further assessment or care In addition to above criteria if the caregiver is unable to take care of the child at home, the child should be admitted.
Infants < 6 months
Infant is too *weak or feeble* to suckle effectively (independently of his/her weight-for-length). **or** W/L (weight-for-length) < - 3 SD (in infants > 45 cm) **or** Visible severe wasting in infants < 45 cm **or** Presence of oedema both feet
Other reasons for inpatient enrolment
Readmission/Lack of response to treatment at CDNCs : Child previously discharged from in-patient care but meets admission criteria again
Return after default : 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 SAM Child 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 below gives the steps of triage.

3.2 Assessment at admission

Take a history concerning:
• Recent intake of food and fluids • Usual diet (before the current illness) • Breastfeeding • Duration and frequency of diarrhoea and vomiting • Type of diarrhoea (watery/bloody) • Loss of appetite • Family circumstances (to understand the child's social background) • Chronic cough • Contact with tuberculosis • Recent contact with measles • Known or suspected HIV infection • Immunization status
On examination, look for:
• Anthropometry- weight, height/ length, mid arm circumference • Edema

- Temperature
- Pulse, heart rate, respiratory rate
- Signs of dehydration
- Shock (cold hands, slow capillary refill, weak and rapid pulse)
- Palmar pallor
- Eye signs of vitamin A deficiency:

  - Dry conjunctiva or cornea,
  - Bitot's spots
  - Corneal ulceration
  - Keratomalacia

- Localizing signs of infection, including ear and throat infections, skin infection or pneumonia
- Mouth ulcers
- Skin changes of kwashiorkor:

  - Hypo or hyperpigmentation
  - Desquamation
  - Ulceration (spreading over limbs, thighs, genitalia, groin, and behind the ears)
  - Exudative lesions (resembling severe burns) often with secondary infection (including Candida).

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

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 (F75) 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 edema
  AND
- Return of appetite
  AND
- No nasogastric tube, infusions, no severe medical problems
  AND
- Is alert and reactive

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 (F75) to Catch up diet (F 100).The quantity of Catch up diet (F100) given is equal to the quantity of Starter diet (F75) 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 edema
- No other medical problem

5. Ten Steps for Management of SAM

MANAGEMENT STEPS	STABILISATION		REHABILITATION
	Day 1-2	Day 3-7	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 (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 14 & 15 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 & 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 degree 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 ReSoMal oral rehydration solution as follows, in amounts based on the child's weight:

How often to give ORS (ReSoMal)	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*

*The amount offered in this range should be based on child's willingness to drink and amount of ingoing 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 & RR by 5)
- Jugular veins engorged
- Puffiness of eye

Stop ORS if any of the following 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
- Tears

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

- For children less than 2 years, give approx 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:

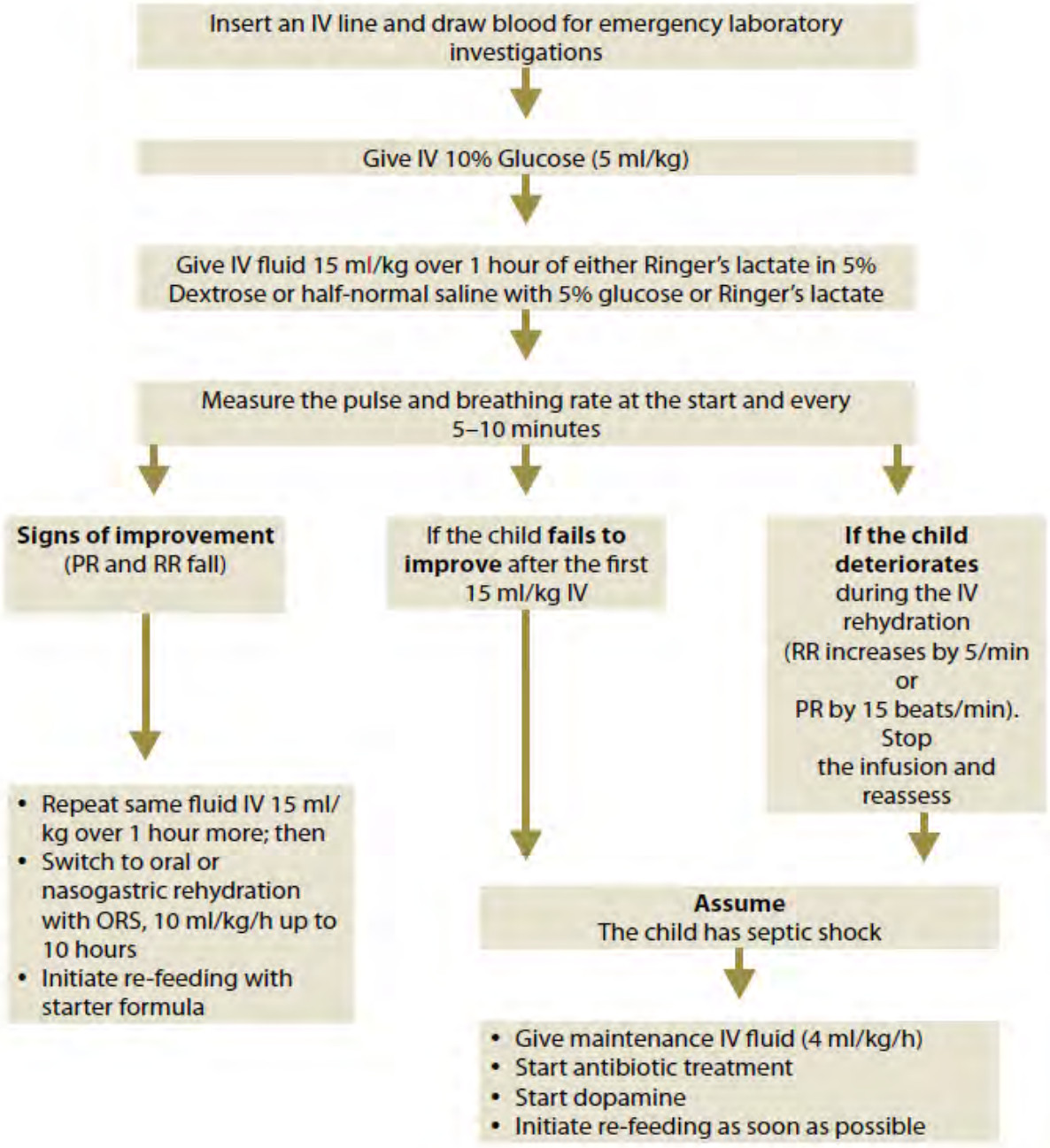
- Lethargic or unconscious **and**
- Has cold hands

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

- Weigh the child. Estimate the weight if child cannot be weighed or weight not known
- Give oxygen
- Make sure child is warm



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	• Inj. Ampicillin 50 mg/kg/dose 6 hrly and Inj. Gentamicin 7.5 mg/kg once a day for 7 days • Add Inj. Cloxacillin 100 mg/kg day 6 hrly if staphylococcal infection is suspected • Revise therapy based on sensitivity report
For septic shock or worsening/no improvement in initial hours	• 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. (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.)
Meningitis	• 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.
Dysentery	• 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

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 formula (F 100). 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 children with SAM

Cautious feeding in stabilization 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 Card given in annexure 14 & 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 stabilized. (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 Card*.

- 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: F-75 and F-100 are pharmaceutically prepared products (as per WHO guidelines) that deliver calories, proteins, electrolytes and minerals as required by children with SAM, promoting weight gain as well as functional and immunological recovery. Till the time commercially produced F 75, F 100 is freely available, similar diet can be prepared using locally available products as per the 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 T15.) 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 sign 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 diarrhea, fever and acute respiratory infections and how to recognize 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
- Immunization is up- to- date

If the child has not recovered in four months/ 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 opted for replacement feeds.

- Give good diet and micronutrients 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, t 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.

Annexures

Annexure O1

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	Relapse		
3	Recovered		
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 volunteer*		

C. Stock outs of supplies in last three months:

1._____

2. _____

3. _____

Annexure O2

Checklist for Monitoring Hygiene

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

Annexure O3

Checklist for Monitoring Ward Procedures

Observe	Yes	No	Comments
Feeding			
Are correct feeds served in correct amounts?			
Are feeds given at the prescribed times, even on nights and weekends?			
Are children held and encouraged to eat (never left alone to feed)?			
Are children fed with a cup (never a bottle)?			
Is food intake (and any vomiting/diarrhoea) recorded correctly after each feed?			
Are leftovers recorded accurately?			
Are amounts of Starter (F-75) diet kept the same throughout the initial phase, even if weight is lost?			
After transition, are amounts of Catch-up (F-100) diet given freely and increased as the child gains weight?			
Warming			
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?			
Weighing			
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?			

Checklist for Monitoring Ward Procedures

Giving antibiotics, medications, supplements

- Are antibiotics given as prescribed (correct dose at correct time)?
- When antibiotics are given, do staff immediately make a notation on the 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 (F-100) diet for 2 days, is the correct.
- Dose of iron given twice daily and recorded?

Ward environment

- Are surroundings welcoming and cheerful?
- Are mothers offered a place to sit and sleep?
- Are mothers taught/ encouraged to be involved in care?
- Are staffs consistently courteous?
- As children recover, are they stimulated and encouraged to move and play?

Annexure O4: Guidance for calculations

Case Fatality Rate

T*o 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.

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 8.2 kg at discharge; Ramu stayed for 17 days at the NRC

Weight gain for Ramu = (8.4 – 7.3) x 1000/7.3 x 17 = 8.8 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 05:

Monthly Reporting Form: Nutrition Rehabilitation Centres

Name of Health Facility:
Block: District:
Month: Year:
Number of beds:

	Male	Female	Total
A. ADMISSIONS			
SC /ST			
BPL			
Others			
Total Admissions			
A.1 Admission criteria			
WFH <-3 SD			
MUAC < 115 mm			
Bilateral Pitting Edema			
A.2 Referral By			
AWW			
ASHA			
ANM			
Self			
Paediatric ward/emergency			
A.3 Duration of stay			
< 7 Days			
7 – 15 days			
> 15 Days			
A 4 Bed Occupancy			
Bed Occupancy Rate			
A 5 Weight gain			
Achieved target weight (15% weight gain)			
B. Monthly Output			
1. Discharges from NRC			
2. Deaths			
3. Defaulters			
4. Non responders			
5. Deaths during follow up period after discharge from NRC)			
6. Relapse			
7. Children due for Follow-up			
8. Children for whom Follow-up done			

Annexure 06

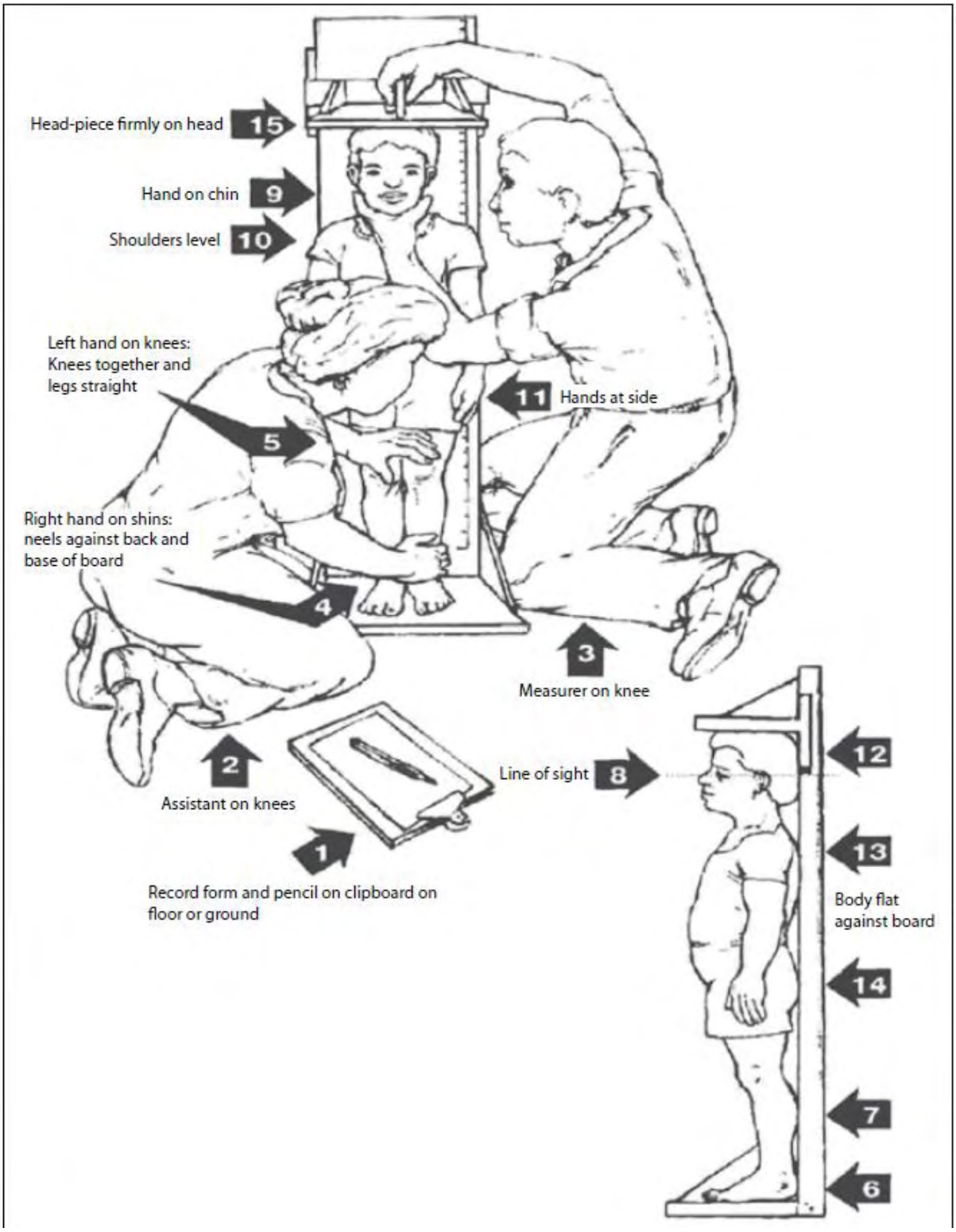
Quarterly reporting format for district

District:										**Period :**							
	NRC details				Human resources in place					Staff Trained (SAM package)		Outputs (Total numbers during the quarter)					
S.No.	Facility where NRC is located (PHC/CHC/ DH/Medical College) & Name	Date of operationalisation	No. of beds	Bed Occupancy rate in last quarter	MO	SN	NC	Cook	Attendant (Caretaker)	MO	SN	Admissions	Discharge with target weight gain	Referrals	Deaths	Defaulters	Children followed up

**MO: Medical Officer, SN: Staff Nurse, NC: Nutritionist cum Feeding Demonstrator*

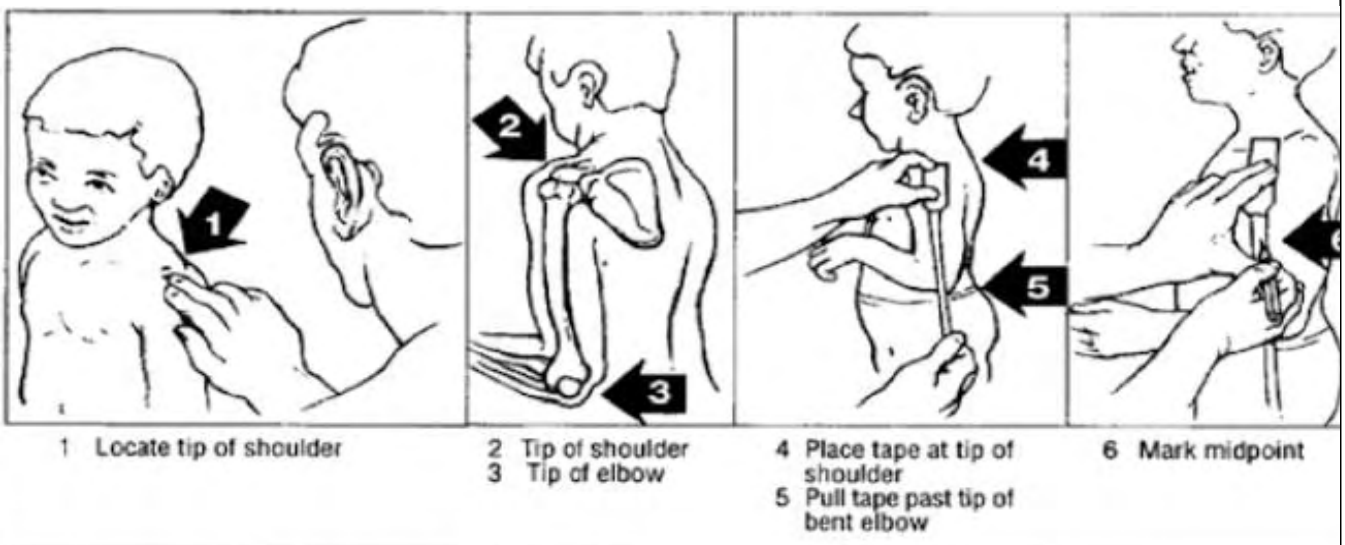
Signature of Medical Officer In-charge (NRC)

Annexure 07 : Measuring Height



Annexure 08:

Measuring Mid Upper Arm Circumference

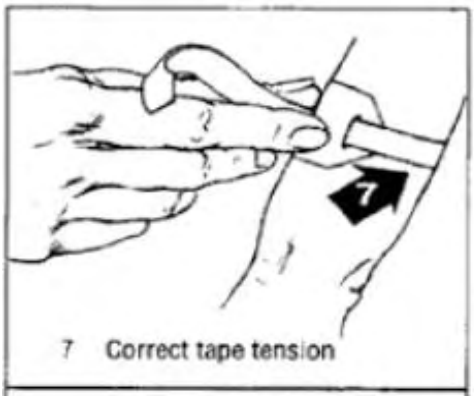


1 Locate tip of shoulder

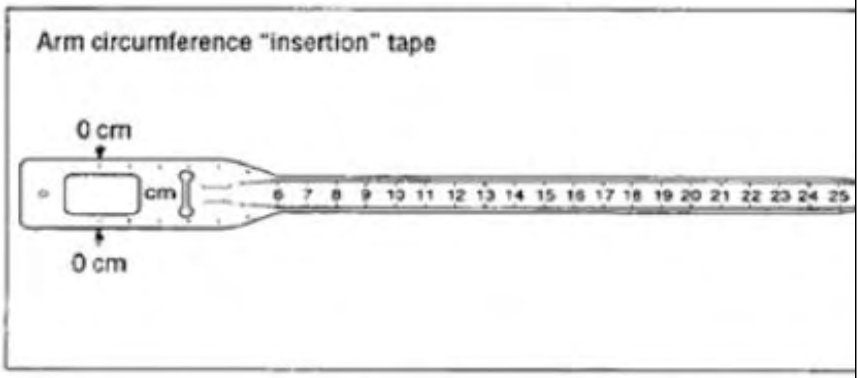
2 Tip of shoulder
3 Tip of elbow

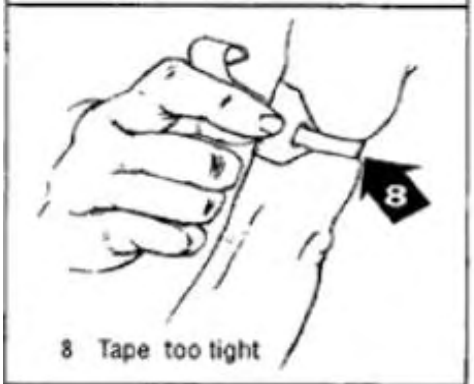
4 Place tape at tip of shoulder
5 Pull tape past tip of bent elbow

6 Mark midpoint



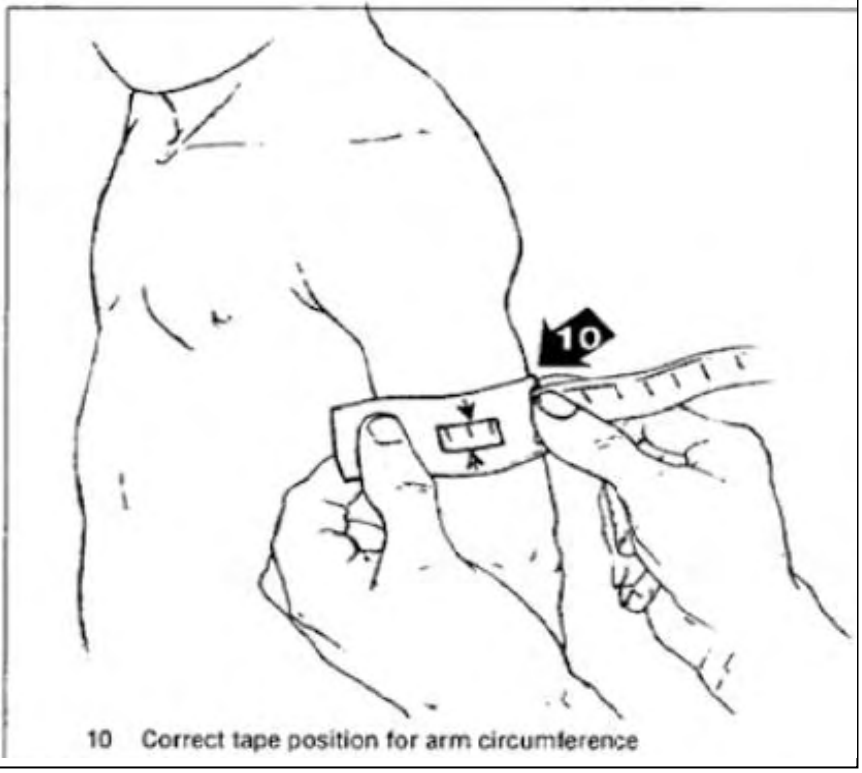
7 Correct tape tension





8 Tape too tight

9 Tape too loose



10 Correct tape position for arm circumference

Annexure 09

Weight-for-Length Reference Card (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 Card (87 cm and above)

Boys' weight (kg)					Height	Girls' weight (kg)				
-4 SD	-3 SD	-2 SD	-1 SD	Médian	(cm)	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.

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.

What foods to be offered for appetite test?

Appetite has been standardized using RUTF (Ready to Use Therapeutic Feeds). There is lack of scientific evidence regarding the feasibility of appetite test using locally prepared therapeutic feeds. Based on the nutritional needs, an experience from Pilot studies the suggested method of testing of appetite is as follows:

- **For children 7–24 months:** Offer 30-35 ml/kg of Catch-up diet (F-100). If the child takes more than 25 ml/kg then the child should be considered to have good appetite.
- **For children >12 months:** Following food items may be offered.

1. Local Therapeutic Feed (LTF)

How to prepare a. Roasted ground nuts 1000 gm b. Milk powder 1200 gm c. Sugar 1120 gm d. Coconut oil 600 gm
• 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

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 ore more

Annexure 12: Antibiotic Reference Chart

STATUS	ANTIBIOTICS
All admitted cases without any complications or complications other than shock, meningitis or dysentery	• Inj. Ampicillin 50 mg/kg/dose 6 hrly and Inj. Gentamicin 7.5 mg/kg once a day for 7 days. • Add Inj. Cloxacillin 100 mg/kg day 6 hrly if staphylococcal infection is suspected. • Revise therapy based on sensitivity report.
For septic shock or worsening/ no improvement in initial hours	• 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. (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.)
Meningitis	• 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.
Dysentery	• 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.

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/1)	413	419

Recipe for starter diet

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

**Adapted from IAP Guidelines 2006.*
*** Important note about adding water : Add just the amount of water needed to make 1000ml 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/100ml)	100
Protein (g/100 ml)	2.9
Lactose (g/100 ml)	4.2

Annexure 14

Starter (F-75) diet Reference Card

Weight of child (kg)	Volume of F-75 per feed (ml)[a]			Daily total (130 ml/kg)	80% of daily total[a] (minimum)
	Every 2 hours[b] (12 feeds)	Every 3 hours[c] (8 feeds)	Every 4 hours (6 feeds)		
2.0	20	30	45	260	210
2.2	25	35	50	286	230
2.4	25	40	55	312	250
2.6	30	45	55	338	265
2.8	30	45	60	364	290
3.0	35	50	65	390	310
3.2	35	55	70	416	335
3.4	35	55	75	442	355
3.6	40	60	80	468	375
3.8	40	60	85	494	395
4.0	45	65	90	520	415
4.2	45	70	90	546	435
4.4	50	70	95	572	460
4.6	50	75	100	598	480
4.8	55	80	105	624	500
5.0	55	80	110	650	520
5.2	55	85	115	676	540
5.4	60	90	120	702	560
5.6	60	90	125	728	580
5.8	65	95	130	754	605
6.0	65	100	130	780	625
6.2	70	100	135	806	645
6.4	70	105	140	832	665
6.6	75	110	145	858	685
6.8	75	110	150	884	705
7.0	75	115	155	910	730
7.2	80	120	160	936	750
7.4	80	120	160	962	770
7.6	85	125	165	988	790
7.8	85	130	170	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

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

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

[c] *After a day on 3-hourly feeds. 'If no vomiting, less diarrhoea, and finishing most feeds, change to 4-houly feeds.*

Annexure 15

Volume of F-75 for children with severe (+++) oedema

Weight with +++ oedema (kg)	Volume of F-75 per feed (ml)[a]			Daily total (100 ml/kg)	80% of daily total[a] (minimum)
	Every 2 hours[b] (12 feeds)	Every 3 hours[c] (8 feeds)	Every 4 hours (6 feeds)		
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

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

[b] *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.*

[c] *After a day on 3-hourly feeds. 'If no vomiting, less diarrhoea, and finishing most feeds, change to 4-houly feeds.*

Annexure 16

Catch-up (F-100) diet (Free Feeding) Reference Chart

Weight of child (kg)	Range of volumes per 4-hourly feed of F-100 (6 feeds daily)		Range of daily volumes of F-100	
	Minimum (ml)	Maximum (ml)[a]	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

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

Annexure 17: Home Made Alternative Food Items

Example of homemade culturally acceptable alternatives to Catch-up (F-100) 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 Total Protein/kg	1,442 kcal 29.6 gms

2. Halwa

Ingredients	Amount for 1 Kg
Wheat flour (atta)	200 gms
Lentils (dal) / Besan / Moong dal powder	100 gms
Oil (soya)	100 ml
Jaggery / Gur / Sugar	125 gms
Water to make a thick paste	600 ml
Total Calories/kg Total Calories/100 gm Total Protein/kg Total Protein /100 gm	2404 kcal 240 kcal 50.5 gms 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**
• Breast feed as often as the child wants, day and night, at least 8 times in 24 hours. • Do not give any other foods or fluids not even water	Breast feed as often as the child wants. • Give at least one katori serving* at a time: – Mashed roti/ rice/ bread / biscuit mixed in sweetened undiluted milk **OR** – 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 **OR** – Sevian/dalia/ halwa / kheer prepared in milk or any cereal porridge cooked in milk **OR** – Mashed boiled/ fried potatoes • Also give nutritious food between meals, such as: banana / biscuit / cheeko/ mango/ papaya as snacks *3 times per day if breast feed; 5 times per day if not breast feed.	• Breast feed as often as the child wants • Offer food from the family pot • Give at least 1½ katori serving* at a time of: – 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 **OR** – Mashed roti/ rice/bread/ biscuit mixed in sweetened undiluted milk **OR** – Sevian/dalia/ halwa/kheer prepared in milk or any cereal porridge cooked in milk **OR** – Mashed boiled/ fried potatoes • Also give nutritious food between meals, such as: banana / biscuit / cheeko/ mango/ papaya as snacks * 5 times per day	• Give family foods at 3 meals each day. • Also twice daily, give nutritious food between meals, such as: banana / biscuit / cheeko/ mango/papaya as snacks
Remembers: • Continue breastfeeding if the child is sick.	**Remembers:** • Keep the child in your lap and feed with your own hands • Wash you own and child's hands with soap and water every time before feeding	**Remembers:** • Ensure that the child finishes the serving • Wash your child's hands with soap and water every time before feeding	**Remembers:** • Ensure that the child finishes the serving • Teach your child wash his hands with soap and water every time before feeding

Annexure19: Guidance to identify Target Weight

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