



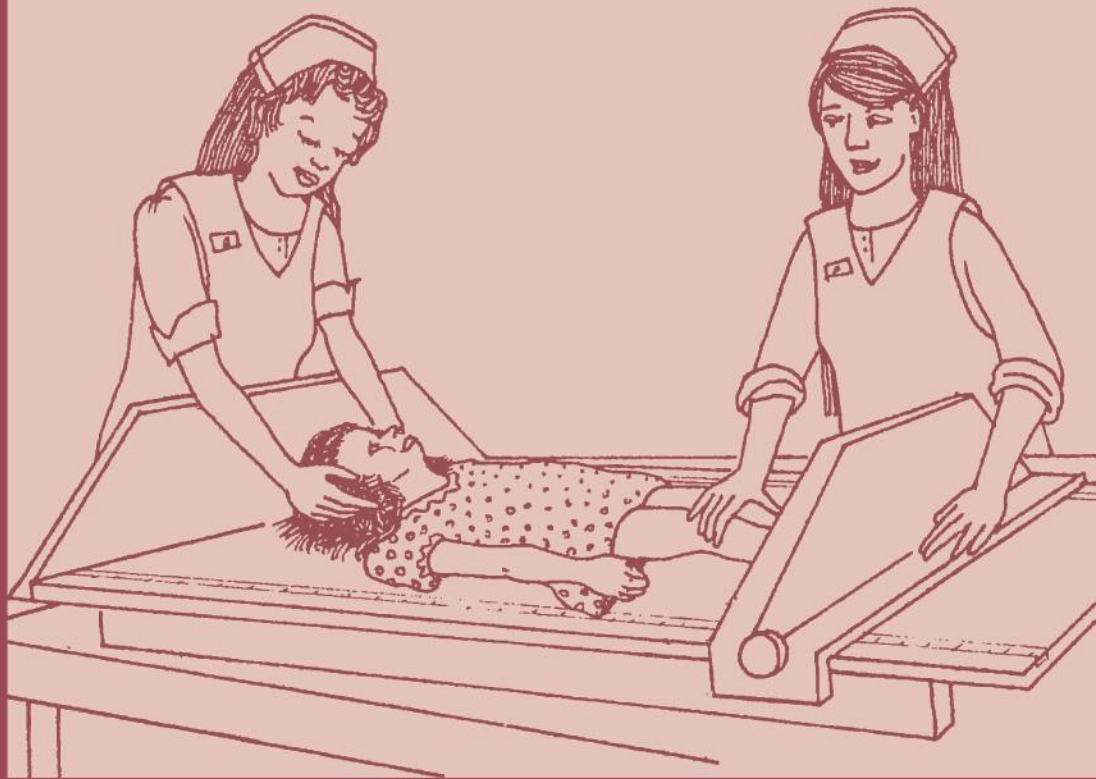
सत्यमेव जयते



National Rural Health Mission

# Facility Based Care of **Severe Acute Malnutrition**

Facilitator Guide



Ministry of Health and Family Welfare  
Government of India, 2013





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for

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भारत सरकार  
स्वास्थ्य और परिवार कल्याण मंत्रालय  
निर्माण भवन, नई दिल्ली . 110 108

Government of India  
Ministry of Health & Family Welfare  
Nirman Bhawan, New Delhi - 110 108

## MESSAGE



Smt. Anuradha Gupta, IAS  
Additional Secretary &  
Mission Director NRHM

The National Rural Health Mission is being implemented across the country and undertaking massive efforts for the reduction of child mortality. Improvement of nutrition status of children is critical to child survival, provides enhanced growth opportunities and avenues for increased life expectancy. Under NRHM, nutritional interventions are an integral component of child health programme and include promotion of IYCF practices, micronutrient supplementation, and facility based management of children with Severe Acute Malnutrition through Nutritional Rehabilitation Centres.

Children with Severe Acute Malnutrition (SAM) have nine times higher risk of dying than well-nourished children. An effort has been made towards treatment and recovery of such children under various Nutritional Rehabilitation Centres established since 2006 in many States and to restore them to path of healthy development. The National Family Health Survey -3 revealed that 6.4 percent of all children under-five years of age are severely wasted. With appropriate nutritional and clinical management, many of the deaths due to severe wasting can be prevented.

Quality training of Staff of NRCs is crucial for management of Severely Malnourished Children and their rehabilitation. The training manuals are designed with expert inputs from UNICEF, WHO, other child health experts across the country. I am sure it would enhance technical and management expertise for treatment of Children with Severe Acute Malnutrition. I urge the States to use these modules and undertake trainings as prescribed for realisation of the goal of Facility based Rehabilitation of SAM children.

I compliment Child Health Division for bringing out the training Manual

Anuradha Gupta





National Rural Health Mission



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## MESSAGE



**Dr. Rakesh Kumar, IAS**  
Joint Secretary (RCH)

The nutritional status of the people is an internationally recognized as an indicator of national development. Nutrition is both an input into and output of indicator of the development process. A well-nourished, healthy workforce is a pre-condition for successful economic and social development and as such promoting nutritional status of the people is of utmost importance.

Under National Rural Health Mission, Nutrition Rehabilitation Centres (NRCs) have been set up at health facilities in many districts. Programme Managers have expressed a need for comprehensive training modules in order to ensure optimal operationalizing Nutrition Rehabilitation Centres. In response to this need, Reproductive and Child Health Programme, Ministry of Health and Family Welfare, Government of India in collaboration with United Nations Children's Fund (UNICEF) and the World Health Organization (WHO), in consultation with domain experts and program managers have drafted these modules.

Children with Severe Acute Malnutrition (SAM) have nine times higher risk of dying than well-nourished children. In India, the prevalence of SAM in children remains high despite overall economic growth. Many Nutritional Rehabilitation Centres are operational in the States at district and below district level facilities. A validated training curriculum based on scientific evidence would help in building technical expertise of health service providers and take this important initiative forwards.

I am confident, these modules will be instrumental in developing a technically sound workforce.

November 2012  
New Delhi

  
Dr. Rakesh Kumar





## Contributors

### Writing Team Members:

- 1 Dr. S. Aneja, Kalawati Saran Children's Hospital
- 2 Dr. Praveen Kumar, Kalawati Saran Children's Hospital
- 3 Dr. Nidhi Chaudhary, WHO India
- 4 Dr. Dheeraj Shah, University College of Medical Sciences, New Delhi
- 5 Dr. Sriram Krishnamurthy, JIPMER, Puducherry

### Reviewers for the Manual:

- 1 Dr. Ajay Khera, Deputy Commissioner Child Health & Immunisation, MoHFW, GoI
- 2 Dr. Sila Deb, Deputy Commissioner Child Health, MOHFW, GoI
- 3 Dr. Deepti Agarwal, Consultant Child Health, MOHFW, GoI
- 4 Dr. Shinjini Bhatnagar, AIIMS, New Delhi
- 5 Dr. H.P.S. Sachdev, Sitaram Bhartia Institute of Science & Research, New Delhi
- 6 Ms. Anuja Agrawala, AIIMS, New Delhi
- 7 Dr. Panna Choudhary, Past President, Indian Academy of Paediatrics
- 8 Dr. V.K. Anand, UNICEF India
- 9 Dr. Piyush Gupta, University College of Medical Sciences, New Delhi
- 10 Dr. T. Sundararaman, National Health Systems Resource Centre, New Delhi
- 11 Dr. Padam Khanna, National Health Systems Resource Centre, New Delhi



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# SECTION A

## GUIDELINES FOR FACILITATING TRAINING ON FACILITY BASED CARE OF SAM

### 1. INTRODUCTION TO THE FACILITATOR GUIDE

#### What is the purpose of this guide?

National Operational Guideline on Facility Based Management of Children with Severe Acute Malnutrition (MOHFW, 2011) recommends that various cadres of health service providers working in the Nutrition rehabilitation Centres (NRCs) be provided relevant knowledge and skills for managing children with malnutrition.

This guide has been developed to assist the National and State level facilitators in planning and conducting trainings on ‘Facility Based Care Of Severe Acute Malnutrition’. The Facilitator Guide complements the Participant Manual. As facilitators read through this guide, they will find stepwise description of activities, explanations, tips on important points to be emphasized during training as well as exercises that promote participants’ understanding and learning. The facilitator will want to become comfortable with this material before the workshop begins.

### 2. ABOUT THE COURSE ON FACILITY BASED CARE OF SEVERE ACUTE MALNUTRITION

#### For whom is this course intended?

This course is intended for both doctors and nurses who manage severely malnourished children in hospitals or NRCs. Doctors and nurses must work closely together as a team, so they should have consistent training in the

use of the same ‘case management practices’. Because of their different job responsibilities and backgrounds, however, nurses and doctors may find different parts of this course more interesting and applicable to their work. Nurses, in particular, may find that some parts of this course are more detailed than they need, or that they would like more explanation or time to understand the concepts.

#### What methods of instruction are used in this course?

This course uses a variety of methods of instruction, including reading, written exercises, discussions, role plays, demonstrations and practice in a Nutrition Rehabilitation Centre or a hospital ward. Practice, whether in written exercises or on the ward, is a critical element of instruction.

#### How is the course conducted?

- \* Small groups of participants (16-24 in 2 batches) are led and assisted by “facilitators” as they work through the participant’s module. The facilitators are not lecturers as in a traditional classroom. Their role is to answer questions, provide individual feedback on exercises, lead discussions, structure role plays, and clarify new concepts or individual queries.
- \* The modules provide the basic information to be learned. Information is also provided through demonstrations, charts, photographs and videos.
- \* The modules are designed to help each participant develop specific skills necessary for case management of severely malnourished children. Participants develop these skills as they read the

modules, observe cases and live demonstrations, and practise skills in written exercises, group discussions, oral drills, or role plays.

- \* After practicing skills in the modules, participants practice the skills in a real hospital setting, with supervision to ensure correct patient care. A clinical instructor supervises the clinical practice sessions in the severe malnutrition ward of the hospital.
- \* To a great extent, participants work at their own pace through the modules, although in some activities, such as role plays and discussions, the small group will work together.
- \* Each participant discusses any problems or questions with a facilitator, and receives prompt feedback from the facilitator on completed exercises.

(Feedback includes telling the participant how well he has done the exercise and what improvements could be made).

## What is the role of the FACILITATOR?

A facilitator is a person who helps the participants learn the skills presented in the course. The facilitator spends much of his/her time in discussions with participants, either individually or in small groups. For facilitators to give enough attention to each participant, a ratio of one facilitator to 6 participants is desired.

In your assignment to teach this course, YOU are a facilitator. As a facilitator, you need to be very familiar with the material being taught. It is your job to give explanations, do demonstrations, answer questions, talk with participants about their answers to exercises, conduct role plays, lead group discussions, assist the clinical instructor with clinical practice in the hospital, and generally give participants any help they need to successfully complete the course.

You are not expected to teach the content of the course through formal lectures.

(Nor is this a good idea, even if this is the teaching method to which you are most accustomed.)

## What, then, DOES a FACILITATOR do?

As a facilitator, you do 3 basic things:

### 1. You INSTRUCT:

- \* Make sure that each participant understands how to work through the materials and what s/he is expected to do in each module and each exercise.
- \* Answer the participant's questions as they occur.
- \* Explain any information that the participant finds confusing, and help him/her understand the main purpose of each exercise.
- \* Lead group activities, such as group discussions, exercises and role plays, to ensure that learning objectives are met.
- \* Promptly review each participant's work and give correct answers.
- \* Discuss with the participant how s/he obtained answers in order to identify any weaknesses in the participant's skills or understanding.
- \* Provide additional explanations or practice to improve skills and understanding.
- \* Help the participant to understand how to use skills taught in the course in his/her own setting/hospital.
- \* Assist the clinical instructor as needed during clinical practice sessions.

### 2. You MOTIVATE:

- \* Compliment the participant on his correct answers, improvements or progress.
- \* Make sure that there are no major obstacles to learning (such as too much noise or not enough light).

### 3. You MANAGE:

- \* Plan ahead and obtain all supplies needed each day, so that they are in the training venue or taken to the hospital ward when needed.
- \* Monitor the progress of each participant.

## How do you do these things?

- \* Show enthusiasm for the topics covered in the course and for the work that the participants are doing.
- \* Be attentive to each participant's questions and needs. Encourage the participants to come to

you at any time with questions or comments. Be available during scheduled times.

- \* Watch the participants as they work, and offer individual help if you see a participant looking troubled, staring into space, not writing answers, or not turning pages. These are clues that the participant may need help.
- \* Promote a friendly, cooperative relationship. Respond positively to questions (by saying, for example, “Yes, I see what you mean,” or “That is a good question.”). Listen to the questions and try to address the participant’s concerns, rather than rapidly giving the “correct” answer.
- \* Always take enough time with each participant to answer his questions completely (that is, so that both you and the participant are satisfied).

#### 4. What NOT to do

- \* During times scheduled for course activities, do not work on other projects or discuss matters not related to the course.
- \* In discussions with participants, avoid using facial expressions or making comments that could cause participants to feel embarrassed.
- \* Do not call on participants one by one as in a traditional classroom, with an awkward silence when a participant does not know the answer. Instead, ask questions during individual feedback.
- \* Do not lecture about the information that participants are about to read.
- \* Give only the introductory explanations that are suggested in the Facilitator Guide. If you give too much information too early, it may confuse participants. Let them read it for themselves in the modules.
- \* Do not review text paragraph by paragraph. (This is boring and suggests that participants cannot read for themselves). As necessary, review the highlights of the text during individual feedback or group discussions.
- \* Avoid being too much of a showman. Enthusiasm (and keeping the participants awake) is great, but learning is most important. Keep watching to ensure that participants are understanding the materials. Difficult points may require you to slow down and work carefully with individuals.

- \* Do not be condescending. In other words, do not treat participants as if they are children. They are adults.
- \* Do not talk too much. Encourage the participants to talk.
- \* Do not be shy, nervous, or worried about what to say. This Facilitator Guide will help you remember what to say. Just use it!

#### 5. How can this FACILITATOR GUIDE help you?

This Facilitator Guide will help you teach the course modules, including the video segments.

For each module, this Facilitator Guide includes the following:

- \* a list of the procedures to complete the module, highlighting the type of feedback to be given after each exercise;
  - a list of any special supplies or preparations needed for activities in the module;
- \* guidelines describing:
  - how to do demonstrations, role plays, and group discussions
  - points to make in group discussions or individual feedback.
- \* a place to write down points to be made in addition to those listed in the guidelines.

To prepare yourself for each section, you should:

- \* read the module and work the exercises;
- \* read in this Facilitator Guide all the information provided about the module;
- \* plan with your co-facilitator how work on the module will be done and what major points to make;
- \* collect any necessary supplies for exercises in the module, and prepare for any demonstrations or role plays;
- \* think about sections that participants might find difficult and questions they may ask;
- \* plan ways to help with difficult sections and answer possible questions;
- \* ask participants questions that will encourage them to think about using the skills in their own hospitals.

## The role of the clinical instructor

There is one clinical instructor who leads all the clinical sessions. The clinical instructor leads a session each day for one small group of participants.

Teaching a small number of participants in the ward at a time allows each person to have hands-on practice. The clinical instructor is able to watch carefully and give feedback to help each participant improve.

To prepare for the day, each morning the clinical instructor reviews the teaching objectives for the day and plans how to accomplish them. For example, on the day when participants are to practice identifying clinical signs of severe malnutrition, s/he may locate several children in the ward who clearly demonstrate the signs. S/He plans how to show the signs on one or two children and then asks participants to point out

signs on the other children. On a day when participants are learning about the stabilization phase, s/he may select several children in the ward who are in that phase and prepare for the participants to see their 24-hour food intake charts, assess progress, and plan feeding for the next day. S/He may prepare a list of questions to ask or prepare tasks for participants to do with these children.

The clinical instructor needs to be skilled at anticipating what will occur on the ward and planning how groups of participants can accomplish their objectives. If the clinical instructor finds that the schedule planned for clinical sessions will not work that day, s/he must plan an alternative and adjust the schedule.

General procedures and specific guidelines for teaching each clinical session are provided later in this guide.

## 3. AGENDA FOR TRAINING ON FACILITY-BASED CARE OF SEVERE ACUTE MALNUTRITION

Day	Time	Activity
Day 1	9.00-9.30 AM	Registration
	9.30-10.00 AM	Introduction of participants, Pretest
	10.30-11.30 AM	Module reading (individual) - Introduction and Principles of Care
	11.30-12.00 AM	Tea Break
	12.00 -1.30 PM	Module reading: Principles of care (continued) and Initial Management
	1.30 -2.15 PM	Lunch break
	2.15 - 3.00 PM	Video on Anthropometry
	3.00 - 5.00 PM	Clinical sessions in two groups (1 hour each). After 1 hour both the groups to interchange Group 1: Tour of emergency and hospital wards Setting of Nutrition Rehabilitation Centres (NRC) Group 2: Clinical signs of severe acute malnutrition (SAM), Anthropometry measurements, calculation of SD Score
Day 2	9.00-11.00 AM	Module reading: Initial Management continued
	11.00-11.30 AM	Tea Break
	11.30-1.30 PM	Module reading: Initial Feeding, Rehabilitative Phase
	1.30-2.15 PM	Lunch break
	2.15 -3.00 PM	Video on 'Initial Management'
	3.00 -5.00 PM	Clinical sessions in two groups Group 1: CRT, Assessment of dehydration, calculation of ORS, Antibiotic dose Group 2: Demonstration of different diets and calculation of amount of feeds for individual patient and NRCs



Day 3	9.00-11.00 AM	Module reading: Section 5.2 Daily Care, Involving mothers in care, Prepare for discharge & Follow up
	11.00-11.30 AM	Tea Break
	11.30-1.30 PM	Module reading: Management of SAM in infants less than 6 months, HIV-exposed children, Monitoring & Problem solving
	1.30-2.15 PM	Lunch break
	2.15-3.00 PM	Video on sensory stimulation and involving mothers in care
	3.00- 4.30 PM	Clinical sessions in two groups Group 1: Demonstration of Toys and structural play therapy Group 2: 24-hours diet record, weight charting, identify and solve problems

## 4. CHECKLIST OF INSTRUCTIONAL MATERIALS NEEDED IN EACH SMALL GROUP

Item needed	Number needed
Facilitator Guide	1 for each facilitator
Participant Module	1 set for each facilitator and 1 set for each participant
TV/DVD/Computer with projector	Lead Facilitator will inform you where you can show the group video
Set of wall charts	1 set for each small group
Case recording forms	5 for each participant plus some extra
Pretest questionnaire	2 for each participant
Evaluation form	1 for each participant



# SECTION B

## DAILY LIST OF ACTIVITIES

### 1. Day 1: Preparation

#### List of activities for Day 1

1. Participant Module
2. Wall charts
3. Video/DVD
4. Infantometer
5. Stadiometer
6. MUAC Tape
7. Copy of Weight-for-length Reference Chart
8. Clinical session recording forms

#### 1.1. Day-1: Classroom Session

- \* After the inaugural session, divide the group of participants into two smaller groups of 8-12. Each group should be facilitated by 2 facilitators.
- \* Clinical sessions will be organized by Clinical Instructor with assistance from other facilitators.
- \* Start with introduction of participants. Ask the participants to pair up with the person next to them. Explain that each pair of participants will introduce each other to the larger group. They have 5 minutes to talk their partner and learn more about them - their name, place and nature of work and future plans. To make it more interesting participants can be asked to find out one secret that their partner has not shared with others before or about their secret dream. Now each pair takes turn to introduce each other to the group.
- \* Pretest - Distribute the pretest questionnaire to all participants. Explain that the questions are multiple choices with one correct answer. The participants should write the correct answer in the space provided. Tell the participants that they do not have to write their names on the test paper. The participants can write a 3 digit number of their choice.
- \* Introduce the participant module and ask the participants to read **Section 1: Introduction**.
- \* Lead a discussion on how the participants identify children with SAM in their clinical practice and how they manage these children in their work place. Try to understand how commonly they see children with undernutrition and what kinds of facilities are available for management of these children? Explain that malnourished children are usually not brought to hospital because of their nutrition status. They mostly come because they have some medical complication e.g. diarrhoea, pneumonia. The usual response is to tackle the illness first, and plan to do something about the malnutrition later, when the illness has been treated. But this is not correct. We have to identify such children as 'severely malnourished with a complication' and begin treatment of SAM immediately.
- \* **Explain** that children who are classified as severe PEM based on weight for age can be either wasted or stunted. The management of wasted children (SAM) is different from those with stunting. The children who do not have SAM do not require hospitalization and can be managed at community level. If the child is undernourished or moderately malnourished they will need dietary counselling. Stunted children are not at same risk of death as children with SAM are. They can be managed by nutritional counselling.
- \* Tell the participants that this training workshop aims to impart skills to doctors and nurses so that

they are able to establish Nutrition Rehabilitation Centres (NRC), identify and manage children with SAM according to standard treatment protocol. During the training they will also learn how to identify and solve problems. This training module is based on the WHO international guidelines and Indian Academy of Pediatrics guidelines for SAM management. This course will teach participants how to implement the guidelines in practice. Ask one of the participants to read learning objectives of Section 2.0: Principles of Care.

- \* Module reading- Participants read module Section 2: Principles of Care (Learning Objectives, Recognize Signs of Severe Acute Malnutrition, Weigh and measure the child and identification of children with Severe Acute Malnutrition) till Exercise-A.
- \* Guide the Participants to the Chart showing Weight

for Height SD score in the Annexure. Show them how to use this chart for calculating SD score. Highlight the point that if length or height is 0.5 or more cm greater than the next lower length / height in the table then round up, otherwise round down. If weight is between an SD Score, write “less than” (<). For example, if the score is between -1SD and -2SD, write <-1SD.

- \* Take an example of boy with length 74.6 cm and weight of 9.4 kg. Tell participants that since the length is 74.6 cm you will round up to 75 cm. Now if you check for 75 cm boy 9.4 kg comes between -1 SD and Median.
- \* Tell participants to do Exercise A individually. The participants should refer to the Weight for Length and Weight for Height charts in Annexure to complete this exercise. Check the answers given by the participants and share your feedback.

## Answers to Exercise-A

1. Sudha, girl, length 63cm, weight 5.0 kg  
    <-3SD
2. Ram, boy, height 101 cm, weight 11.8 kg  
    <-3SD
3. Tanya, girl, length 69.8 cm, weight 6.3 kg  
    <-2SD (Explain that 6.3 is exactly -3 SD and not below -3SD. Hence the SD score is < -2SD)
4. Karan, boy, length 82 cm, weight 8.0 kg  
    <-3SD

## Module reading

- \* Participants read Section 2.5: Criteria for hospitalization / in-patient care up to Exercise-B.
- \* Lead a discussion on various anthropometric parameters used for identifying children with SAM. Take participants’ view on individual parameters and its use in their work setting. Highlight the relevance of using MUAC in community setting. Discuss criteria for Facility based & community management. However good community care & supervision is needed for community based management. If community support and supervision is not available they should be admitted in a health facility. Basic investigations should be done & care giver should be educated for nutritional support.
- \* Participants now complete Exercise-B. Check answers individually and give feedback.
- \* Participants read Section 2.6: Organization of care and Section 2.7: Physiology of severe malnutrition.
- \* Once all participants have completed reading the sections, reiterate that **all SAM children are pre-disposed for hypoglycemia and hypothermia. Misdiagnosis and inappropriate treatment of dehydration is common in SAM children and nearly all children with SAM have bacterial infection.**

## Answers to Exercise B

Name	Age (months)	Sex	Weight (kg)	Length/ Height (cm)	MUAC (cm)	Oedema	SD	Does this child have SAM
Prince	12	M	9.8	73	13	No	N	No
Rani	15	F	7.1	75	12	No	<-2SD	No
Ritika	26	F	10.4	89	14	No	<-1SD	No
Dinesh	32	M	11.2	95	15	No	<-2SD	No
Iqbal	20	M	6.4	83	10.8	Yes	<-4SD	Yes
Nitin	6	M	5.8	66	9	No	<-3SD	Yes
Sakina	8	F	4.2	72	9.8	No	<-4SD	Yes
Sonu	12	M	6.6	73	10	No	<-3SD	Yes
Shyam	24	M	8.6	82	11.2	No	<-2SD	Yes

- Participants read Initial management from **Section 3.1: Identifying and managing the severely malnourished child with emergency signs.**
- Take the participants to the Emergency Triage and Treatment Wall chart and show the algorithm of ETAT. Tell participants that focus of emergency care is to prevent death while stabilizing the child. Any child presenting to the hospital should be checked for emergency signs as part of standard procedure. Some of the procedures described in this session may be performed in the Emergency Room of the Out Patients Department (OPD) or in the paediatric ward equipped for emergency care.
- A severely malnourished child should be seen as quickly as possible in the OPD. It is very important that OPD staff knows how to treat the severely malnourished child appropriately. They must be taught to recognize severely malnourished children and to understand that these children may be seriously ill even without showing signs of infection.
- After that take participants to chart-2 and discuss broad time frame of management. Show them on chart three phases of treatment - 1) Stabilization 2) Transition 3) Rehabilitation.
- Emphasize that the health staff must understand and follow the procedures outlined in this session. Once emergency treatment has been provided, the child should be moved immediately to the ward designated for children with SAM. Staff working in emergency area should also be oriented on emergency care to children with SAM.
- Participants read up to Exercise-C. Briefly cover the main points: The hypoglycaemic child needs glucose quickly. If the child can drink, give a 50 ml bolus of 10% glucose orally. If alert but not drinking, give the 50 ml bolus by NG tube. If lethargic, unconscious or convulsing, give 5 ml/kg body weight sterile 10% glucose by IV, followed by 50 ml 10% glucose by NG tube. Start feeding with Starter diet half an hour after giving glucose. Give it every half hour for 2 hours. Give ¼ of the 2-hourly amount shown on the Starter diet Reference Card (Annexure 8). When the child's blood glucose is stabilized (54 mg/dl or higher) then change to 2-hourly feeds of Starter diet.
- Highlight co-existence of hypoglycemia & hypothermia. Hypoglycemia & hypothermia may also be a sign of underlying infection.
- Tell participants to do Exercise-C.

## Answers to Exercise-C

1. Hari is 36 months old and weighs 7.4 kg. He has blood sugar of 42 mg/dl. What immediate treatment Hari should be given?

Hari has hypoglycemia (blood sugar less than 54 mg/dl). Hari should receive 50 ml bolus of 10% glucose or 10% sucrose immediately orally if he is not able to drink then by nasogastric tube.

2. 14 months old Sunder has been brought to hospital with lethargy and unconsciousness. He weighs 5.6 kg and his length is 72cms. His mid arm circumference is 11.6 cm and there is no pedal oedema. His blood sugar is 46 mg/dl.
  - i) Do you think Sunder is having SAM? - Yes
  - ii) Is Sunder hypoglycemic? - Yes
  - iii) What immediate treatment you will give to Sunder? - Glucose 10% 28 ml followed by 50 ml of 10% glucose/ sucrose by NG tube

## Video demonstration on Anthropometry

Assemble all the participants for video demonstration and ensure all can see the projection screen. Explain that they will see a video on anthropometry for measurement of weight, length, height and mid upper arm circumference. Ask them to watch the video and bring up any queries towards the end.

Tell the participants that they have the opportunity to practice anthropometric measurements in the clinical sessions.

### 1.2: Day-1: Clinical Sessions

#### Group -1

#### Tour of the Ward

**To prepare:** Prepare to take each group for a tour of the ward and all areas where severely acute malnourished children are seen and treated. Identify areas that you will show and prepare your comments. If possible, obtain data on the number of severely acute malnourished children seen each month or each year, and how long these children typically stay in the hospital.

Plan to tour the ward, the emergency treatment area, admissions area, kitchen area, and any special areas used for play, health education, etc.

If possible, find one child in the ward/NRC who has made a good recovery (a “success story”) and prepare to describe the child’s condition on admission and how s/he has improved, emphasizing the protocols adopted and success achieved.

## Participant Objectives

- \* Observe the admission area
- \* Observe the emergency treatment area
- \* Observe how the Nutritional Rehabilitation Centre is organized
- \* Observe the kitchen area
- \* Observe any special area for play, health education, etc.

## Instructor procedures

1. Introduce yourself and review the objectives of the session.
2. Explain hygiene procedures to be followed. Participants should wash hands with soap before and after each session and between patients. Explain where hand washing facilities are located. (Even though participants will not be asked to handle patients on the first visit, they should wash anyway in case they touch the children.)
3. Take participants to the admission area and explain how children are admitted for severe malnutrition.
4. Visit the emergency treatment area and explain what treatment is given there. Emphasize the need for use of the ETAT in emergency area.
5. Take participants for a tour of the ward, pointing out different areas of the ward in which the services are organized: beds, area for weighing, play area, kitchen & food demonstration and education area, etc.

## Group 2

### Clinical signs & Anthropometric measurements

**To prepare:** Make arrangements for measuring weight, height and MUAC (weighing machine, infantometer, stadiometer, MUAC Tape). Ensure that scales are working and stadiometer or measuring boards are set up correctly.

Select one or two children with a variety of clinical signs to show to participants. Try to find cases with well-defined signs. For anthropometry you may include children who are not acutely malnourished.

Look for children in the admissions area and/or ward who could be assessed for clinical signs of severe malnutrition, weighed and measured.

Ask participants to take their Weight-for-Height Reference Cards, Clinical Session recording form and a pen or pencil to the clinical session.

### Participant Objectives

- \* Observe children with clinical signs of severe malnutrition
- \* Look for signs of severe malnutrition
- \* Weigh and measure length/height and MUAC
- \* Look up weight-for-height SD scores
- \* Identify children who are severely malnourished

### Instructor Procedures

1. Explain the objectives of the clinical session to the participants.
2. It is best that children selected for the clinical practice session are accompanied by their mother/ caregiver and are in relatively stable condition. As some of these children may be irritable or would not like to be touched by strangers, facilitators and participants not only have to be efficient during examination but also be ready to give some time to the children to familiarize with the new faces around them. Remember to seek the consent of the parent/mother for examination of the child by the group. Demonstrate how to take weight, length and calculation of SD score with the help of reference card.

3. Demonstrate how to take mid-arm circumference with the help of MUAC tape.
4. Also demonstrate clinical signs of severe acute malnutrition - severe wasting and bilateral pedal oedema and how to look for them.
5. Now instruct participants to practice these skills in small groups. Each group is allocated a child as a case study.
6. When a participant has finished assessing the child, ask each group to present their findings. The participant should point out the clinical signs; state the child's weight, height and SD score; and explain whether the child should be admitted. Ask the participant questions, as needed, to draw a complete explanation. Confirm if the clinical findings and measurements are correct and appreciate the good effort made by the group.
7. Select few cases that are most interesting and have a variety of clinical signs and show to all participants.

At the end of the session, reinforce the key messages on clinical examination and anthropometric measurements.

## 2: Day-2: List of activities

### Preparation for Day 2

1. Case recording forms
2. Video CD
3. Glucometer
4. Thermometer
5. Ingredients and measuring utensils for preparing Starter and Catch-up diets - milk, sugar, vegetable oil, puffed rice, measuring jar
6. Infant and child feeding tubes
7. Clinical cases: Children with severe malnutrition

### 2.1: Classroom Sessions

- \* Recap of Day 1.
- \* Participants read Section 3.6: Manage dehydration & Shock till exercise D.
- \* Lead a discussion on assessment of dehydration & reliability of signs of dehydration in children with SAM. Remind the participants that the signs of dehydration are not very reliable in presence

of severe acute malnutrition as the usual signs of dehydration (such as lethargy, sunken eyes) may be present in these children all of the time, whether or not they are dehydrated.

- \* Recapitulate difference in amount of ORS to be given in children without SAM and with SAM. Highlight that IV fluids are not given in all children

with SAM with severe dehydration, unless they have shock. Also highlight SAM children need closer & frequent monitoring for overhydration. Emphasize the importance of giving potassium supplements and starting early feeding in these children.

- \* Participants are asked to complete Exercise-D.

## Answers to Exercise D

1. Rajiv has watery diarrhoea and is severely malnourished. He weighs 6.0 kilograms. He should be given 30 ml ORS every 30 minutes for 2 hours. Then he should be given 30-60 ml ORS in alternate hours for up to 10 hours. In the other alternate hours during this same period, Starter diet should be given.
2. Yamuna arrived at the hospital in shock and received IV fluids for two hours. She has improved and can now be switched to ORS. Yamuna weighs 8.0 kilograms. For up to 10 hours, she should be given ORS and Starter diet in alternate hours. The amount of ORS to offer is 40-80 milliliters per hour.
  - After the first two hours of ORS, a child is offered 5- 10 ml/kg of ORS in alternate hours. What two factors affect how much to offer in this range?
    - **Willingness to drink ;and**
    - **Amount of ongoing loss**

## Group Discussion

- \* Ask one of the participants to enumerate signs which should be checked in order to monitor the child taking ORS.
  - **Respiratory rate, pulse rate, urine frequency, stool or vomit frequency and signs of dehydration.**
  - **Emphasize the importance of close and frequent monitoring.**
- \* Tell participants to read **Section 3.6.4: Manage a severely acute malnourished child with shock** till exercise E.
- \* Once the participants have finished, explain that IV fluids are given in severe malnutrition only if the child: **Is lethargic or unconscious AND has cold hands AND Slow capillary refill (>3 seconds) AND weak or fast pulse.**
- \* Lead a discussion on indication and choice of IV fluids in children with SAM with shock. Ask them to open wall Chart-3 showing protocols for management of shock. Highlight the following aspects: choice of IV fluids, importance of giving glucose bolus and when to consider the diagnosis of septic shock.
- \* Demonstrate how to calculate the dose of dopamine for a 5 kg child on white board or chart.
- \* Participants are now asked to complete **exercise-E**.
- \* Check individual feedback to participants.

## Answers for Exercise E

### Case 1 - Tina

Tina is an 18-month-old girl referred from a health centre. Her arms and shoulders appear very thin. She has moderate oedema (both feet and lower legs). She does not have diarrhoea or vomiting and her eyes are clear. Her temperature is 34.5 degree centigrade and blood sugar is 50 mg/dl. Her weight is 6.5 kg and height is 81 cms.

- 1(a) What is Tina's weight-for-height SD-score?  $< -4SD$
- 1(b) Should Tina be admitted to the severe malnutrition ward? Why or why not? Yes, should be admitted in malnutrition ward as there is presence of oedema



- 1(c) Is Tina hypothermic? Yes, (Temperature is less than 35°C).
- 1(d) Is Tina hypoglycaemic? Yes, (Blood sugar is less than 54 gm/dl).
- 1(e) Tina is alert and does not have cold hands. Her capillary refill is less than 3 seconds. According to the definition given in this section, is Tina in shock? - No
- 1(f) What two immediate steps should be taken based on the above findings?
  - Give 50 ml bolus of 10% glucose / sucrose orally or NG tube
  - Rewarm the child and maintain temperature

### Case 2 - Kalpana

Kalpana is a 3-year-old girl and weighs 6 kg. She is very pale when she is brought to the hospital, but she is alert and can drink. She is not having any breathing difficulty. She has no diarrhoea, no vomiting, and no eye problems. Her CFT is less than 3 seconds. Her blood sugar is 46 mg/dl. Her hemoglobin estimation revealed a level of 8 gm/dl.

- 2(a) What should Kalpana be given immediately? - 10% glucose / sucrose  
How should it be given? Orally
- 2(b) When should Kalpana be given Starter diet? After half an hour  
How often and how much should she be fed? 16 ml. every half an hour for 2 hours then 65 ml. 2 hourly

Participants read **Section 3.7: Correct Electrolyte Imbalance** and **Section 3.8: Treat Infection: Give Antibiotics**.

- \* Highlight those children with SAM who need potassium & magnesium supplements. All children need antibiotic because usual signs of infections are often absent. Discuss with participants regarding choice of antibiotics. Highlight that children with SAM require gram negative coverage.
- \* Ask participants to open Section 3.8, Table-2 (Antibiotics for severely malnourished children) and go through it. Explain that the presence or absence of complications determines the type of antibiotics to be prescribed. Recommendations may vary locally according to sensitivity pattern to antibiotics in that particular area.
- \* Invite participants to respond to your question:
  - What would they do if the child shows poor response to treatment with antibiotics? Note the responses on the flip chart till all these points have been brought up by the participants:
    - Ensure that the child has received appropriate and adequate antibiotics
    - Check whether vitamin and mineral supplements are given correctly
    - Reassess for other possible sites of infection
    - Suspect other underlying infections (malaria, tuberculosis) or HIV
  - \* Instruct the participants to complete Exercise-F. Check the answers and provide feedback individually.
  - \* Participants read **Section 3.9: Give emergency eye care for corneal ulceration** and **Section**

### Answers to Exercise F

Anu weighs 6 kg. and her length is 82 cm. She does not have any airway problem, or convulsion. Capillary refill time is less than 3 seconds. She is lethargic and has blood sugar of 40mg/dl, axillary temperature is 34.8 degree centigrade and has mild dermatosis.

- (a) What two antibiotics should Anu be given now? **Inj. Ampicillin & Inj. Gentamycin**
- (b) By what possible routes can these antibiotics be given? **IV/ IM**
- (c) Given Anu's body weight, determine the dose of each antibiotic:
  - Inj Ampicillin- 300 mg 6 hrly**
  - Inj Gentamycin- 45 mg once a day**

**3.10: Give Micronutrients.** Answer if they have any query. Remind participants that the children with Vitamin A deficiency may have photophobia and resist opening the eye.

- \* Highlight importance of micronutrients for proper recovery in children with SAM. Choice of supplements will vary according to availability of micronutrient formulations. Zinc preparations are freely available. Explain that locally prepared combined electrolyte - mineral solution can be used, if available, otherwise a commercial preparation with recommended amount of supplements can be used.
- \* Participants read **Section 4: Initial feeding (4.1 & 4.2).**
- \* Explain that this section describes a critical aspect of management of severe malnutrition, which is feeding. However, feeding must begin cautiously with Starter diet, in frequent and small amounts. These two sections will describe how to start feeding on Starter diet, transition to Catch-up diet, and continue with free-feeding on Catch -up diet.
- \* Lead a discussion on feeding of children with SAM. Highlight that children with persistent diarrhoea are also managed with Starter diet. A large number of children will improve on this formula because it has low lactose load. Only a small number of children will need lactose free diet as given in Table 4.
- \* *(Participants may ask about giving Starter diet to babies who are “exclusively” breastfed. It is very rare to find an exclusively breastfed baby who is severely malnourished. If the baby is severely malnourished, s/he requires the Starter diet but should be encouraged to breastfeed between*

*feeds. Starter diet is a low sodium, low solute milk and is safe for young babies. However, all the mothers should be counselled regarding breastfeeding.)*

Ask the participants to read from Section 4.4, 4.5 and 4.6

- \* Discuss indications to start NG feeding & continuing 2 hourly feeds.
  - \* Demonstrate 24 hours Food intake chart & show the participants how to record feeding. Explain that all feeds, whether given by cup or by NG tube, need to be meticulously recorded. Instruct them to open Section 4.5 showing an example of Completed 24 Hours Food Intake Chart. Answer any queries related to the feeding chart. Point out that participants have learned about planning feeding for **individual patients** and for the **ward**. It is important to set aside a planning time every day. Once each patient’s 24-Hour Feeding Chart is reviewed and plans made for the day, then a Daily Ward Feed Chart can be completed.
- Remind the participants of the importance of:
- starting with small frequent feeds of Starter diet
  - making a gradual transition to Catch up diet over a period of 3 days
  - adjusting the feeding plan on Catch up diet as the child’s weight and appetite increase.
  - carefully preparing the hospital staff to undertake new feeding tasks.
- \* Take participants to the wall charts showing Starter diet and Catch-up diet reference charts. Explain that the reference chart/s help in calculating the amount of feeds to be given. Highlight points given at the bottom of these charts (i.e volume in these columns are rounded to the nearest 5 ml etc).

Show the following table on the flip chart.

Age : 1 yr, Weight : 5 kg

Time	Amount offered	Amount left in cup	Amount taken orally
8:00	55	20	35
10:00	55	15	40
12:00	55	20	35

Ask the participants if they see the patient at 12:30 pm what will be their action?

- \* Discuss that the child will need a NG tube if s/he does not take 80% of the Starter diet orally (i.e.,

leaves more than 20%) for 2 or 3 consecutive feeds. Explain that the total amount of starter diet to be given is based on admission weight and will not change during the stabilization phase.

- \* Ask participants to read **Section 5: Rehabilitative Phase**.
- \* Explain that all children with SAM after stabilization will need rehabilitation. Rehabilitative phase has three components- feeding catch-up diet, daily care and involving mothers in care.
- \* Discuss signs that help to recognize readiness for transition from starter diet to catch-up diet. Remind the participants that initially the children are given same amount of catch-up diet 4 hourly for first 48 hours after transition. On 3rd day each feed is increased by 10 ml as long as the child is finishing feeds. If the child is receiving breastfeeds, encourage mother to breastfeed in between feeds of Catch-up diet.
- \* After transition the child can feed freely on Catch-up diet to an upper limit of 220ml/kg.
- \* Participants may ask if it is permissible to give a child more Catch up diet if he is crying with hunger. Respond by saying that during transition, it is very important to be cautious. If 4 hours is too long for a child to wait between feeds, it is fine to give 3-hourly feeds, while keeping the total daily amount the same. If a child continues to cry for more, it is acceptable to give more **only if the staff is able to monitor the child very closely for danger signs**. Later, after transition, more food can be given according to the child's appetite without the need for such close monitoring. *The amount of catch up diet is based on current weight and will increase during rehabilitation phase.*

## Video Demonstration

Tell the participants that they will now be viewing a video on

- \* Transformation of SAM children on treatment.
- \* Initial emergency management of a SAM child.

Assemble all the participants for video demonstration and ensure all of them can see the projection. Ask them to watch the video and to note down their queries. Facilitators can address the queries at the end of the video session. If required, the video can be put on 'rewind' for viewing any particular sections linked to the query/ies.

## DAY 2: CLINICAL SESSIONS

### Group 1

#### Initial Management

**To prepare:** Arrange a place for participants to practice the testing of blood samples using glucometer. Plan how the blood will be obtained. Gather a supply of gloves, glucometer and supplies for obtaining blood samples. In the morning and throughout the day, look for newly admitted patients who are severely malnourished.

Brief the staffs who do initial management of severely malnourished children about the objectives and plan for the clinical session. Get their ideas on board and solicit their cooperation for participants to observe and, if feasible, participate in giving care.

Remind participants to bring their module and a pen or pencil to the session.

#### Participant Objectives

- \* Observe initial management of severely acute malnourished children
- \* Identify clinical signs of severe malnutrition, hypoglycaemia, hypothermia, shock dehydration.
- \* Practice blood sugar estimation by glucometer

#### Instructor Procedures

1. Share the objectives of the session with the participants.
2. Position the participants in different areas of the ward /triage so that they may closely observe the initial management of the child without getting in the way. Explain to them what is being done. Brief them on any emergency care that has already been provided. If there are several patients, spread out the participants so that they can be more involved.
3. Keep the focus on initial management, but point out other important features whenever they are observed (e.g., a child with dermatosis, oedema of feet, corneal ulceration and so on).
4. Under supervision of the hospital staff /team and the facilitators, participants should practice the following:

- checking for signs of shock: lethargic/ unconscious, plus cold hand, plus slow capillary refill and weak/fast pulse
- Identifying signs of possible dehydration in a severely acute malnourished child
- taking temperature
- re-warming the child
- giving first feed
- measuring and giving ORS
- monitoring a child on ORS
- Determine appropriate antibiotics and dosages. They should refer to the Antibiotics Reference Card as needed.

Ask the participants to record information about the patients that they have been assigned. Unless the child is too ill, this will involve weighing and measuring the child. (If the child is too ill, use a weight/height from the hospital record).

5. After all participants have finished, conduct a round of the ward and ask each participant to present their findings. Point out the clinical signs of severe acute malnutrition, when they are present. Appreciate the participants if they have made a good clinical assessment of the child.

### Group 2

#### Demonstration of different diets

**To prepare:** Utensils, measuring jars and materials for preparation of Starter and Catch-up diet. (Milk, sugar, lukewarm water, puffed rice powder, vegetable oil), hand/electric blender, dietary measuring scale.

Confirm the feeding schedule so that you will know when to schedule the activities during the session.

Identify several children at different stages of feeding: child on NG tube feeding, children ready for decreasing the frequency of feeds, children ready for transition to Catch-up diet and so on. Get a copy of previous day's 24-hour food intake chart or fill in a 24-hour food intake chart for each child. Make copies to share with the participants.

#### Participant Objectives

- \* Learn how to prepare Starter and Catch-up diet.
- \* Review 24-hour food intake charts and plan feeds for the next day

#### Instructor Procedures

- \* Review the objectives for the clinical session. Explain that the focus today will be about making decisions on the feeding plan for a child. Participants will also continue to practice feeding tasks.
- \* Demonstrate preparation of Starter and Catch-up diets. Explain the ingredients of diets and their preparation. Highlight the need to use a dietary scale that is accurate. Choose a suitable container for weighing the ingredients. Weigh the empty container first, and account for this when weighing the ingredients. For measuring oil, choose a small container to reduce the surface to which the oil can stick. Let the oil drain out well when transferring it to the blender or jug. Then rinse the container with a little boiled water and add the rinsing to the blender or jug.
- \* Discuss feeding of one of the admitted child. Give a brief history of the child (how many days has the child been in the hospital, admission weight, clinical signs on admission, etc.). Distribute copies of the previous one or two days' 24-hour food intake charts for the child. Participants can share copies of the intake charts and then return them to you. Ask participants questions about the child's feeding, for e.g: What was s/he fed yesterday? How often was s/he fed? Did the amount increase during the day? Were there any problems?
- \* Tell the participants the child's weight today. (Weigh the child if necessary). Ask participants what the child should be fed today (Starter or Catch-up, how many feeds, how much, and by what means (NG or cup). Ask the participants to use their reference cards and then write down their answers at the top of a blank 24-hour feeding chart. Discuss what participants decided and why?
- \* Tell the participants to calculate total amount of feeds required for their Nutrition Rehabilitation Ward if they have six patients admitted. The details are as follows:

Name	Day of Admission	Weight (Kg)	Type of feed	Frequency
Rani	Day 1	4.2	Starter	2-hourly
Sonu	Day 10	5.3	Catch-up	4-hourly
Tinku	Day 11	5.2	Catch-up	4-hourly
Abdul	Day 2	3.7	Starter	3-hourly
Shyam	Day 6	4.3	Catch-up	4-hourly
Salman	Day 18	5.7	Catch-up	4-hourly

Give copy of the details of admitted patients to participants.

## Answer

Name	Starter	Catch-up
Rani	45 x 12 = 540	
Sonu		200 x 6 = 1200
Tinku		190 x 12 = 2280
Abdul	85 x 8 = 680	
Shyam		160 x 6 = 960
Salman		215 x 6 = 1290
TOTAL	1220	5730

### At the end of session:

Summarize the key learning from the day. Answer any queries from the participants.

## Day-3: List of activities

### Preparation for Day 3

1. Video CD
2. Toys for demonstration during clinical sessions
3. Post test questions copy
4. Participant Evaluation Forms

### 3.1: Classroom Session

- \* Ask participants to read Section 5.2: Daily Care from till exercise G.
- \* Highlight importance of sensory stimulation in recovery. As children become malnourished they gradually reduce their activity. In severe cases they don't play, cry, smile, complain or show normal emotions - they become lethargic and feeble. Because they don't play, they don't learn and this leads to delayed mental and behavioural

development. Remind the participants that sensory stimulation is started from the stabilization phase and is continued after discharge. Even when the child is sick, the mother should touch, hold and comfort the baby. As the child gets better s/he needs to have age appropriate structured play therapy. Explain that the term 'structured' means that the play therapy is carried in planned and pre-designed manner. Emotional and physical stimulation through play therapy that continue after discharge can substantially reduce the risk of permanent mental and emotional damage. The malnourished child also needs interaction with other children during rehabilitation.

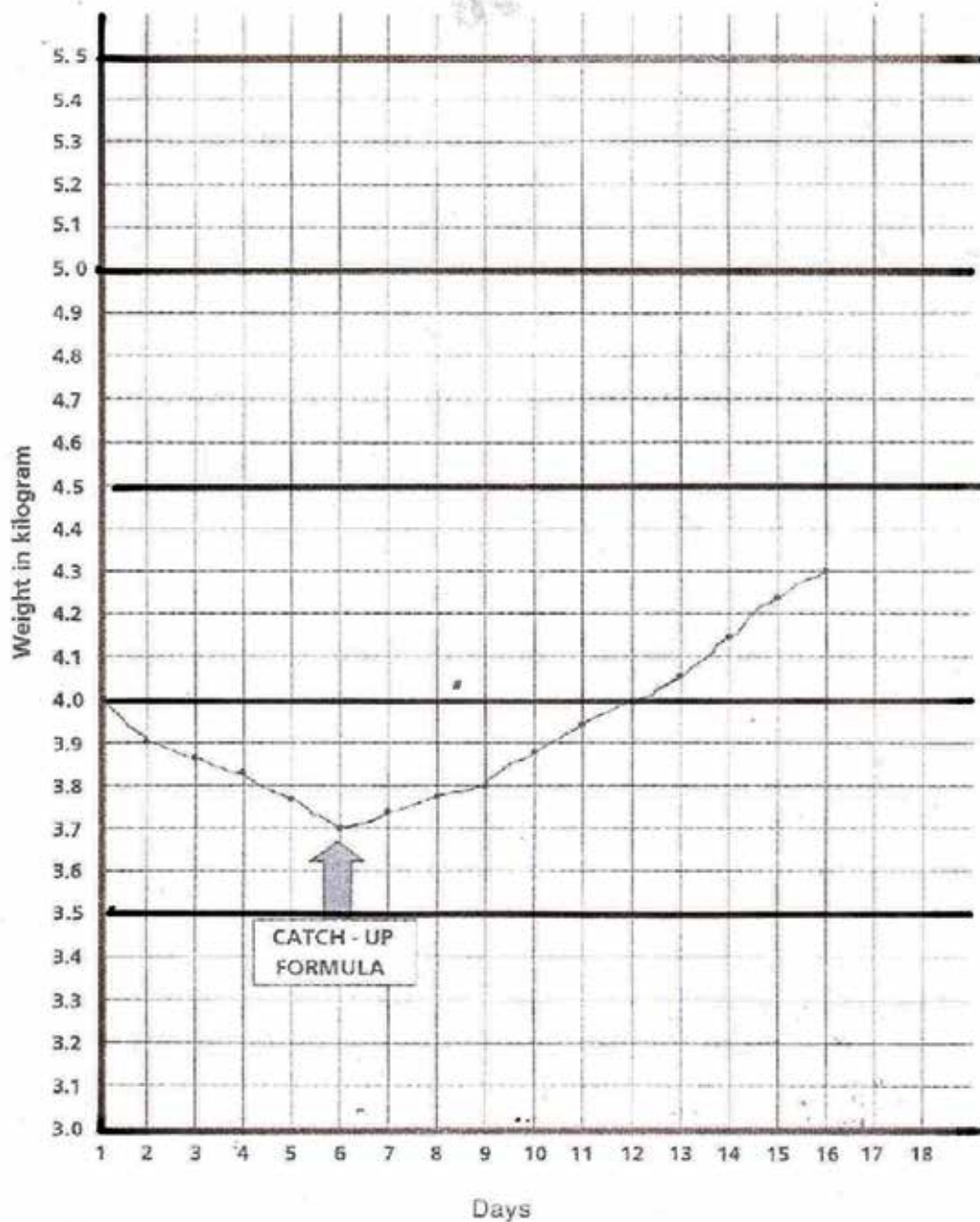
- \* Ask participants to attempt exercise G and give individual feedback.



## Answer to exercise G

- Rani has corneal clouding. She has not received a dose of vitamin A in the last months.  
 On what days should this child receive vitamin A? - **Days 1, 2, and 14**  
 What eye drops should be given, if any? - **Antibiotics and atropine eye drops**
- Arun has a Bitot's spot and inflammation. He has not received a dose of vitamin A in the last month. On what days should this child receive vitamin A? - **Vitamin A on Days 1, 2 and 14.**  
 What eye drops should be given, if any? - **Antibiotic eye drops**

Name: Saiful aged 14 months, male, 4 kg and 65 cm on admission, oedema ++



- \* Tell participants to read Section 5.2.6: Recognize danger signs and Section 5.2.7: Provide continuing care at night.
- \* Recapitulate that monitoring is critical so that problems can be identified and treatment can be adjusted accordingly. Summarize danger signs other than increase in pulse rate. Ask one of the participants to explain the importance of recognizing these danger signs. Emphasize that presence of these signs indicate complication or associated infections like nosocomial infection and require specific treatment.
- \* Demonstrate plotting of weight for an individual patient on a flip chart. Explain plotting of weight on a blank weight chart. Explain to the participants that on Y-axis the base line weight has to be marked and plotted depending on the individual patient's weight. Oedematous children may have weight loss in first few days. Example of weight record chart is shown on next page.
- \* Participants complete exercise H; check each participant's responses and provide feedback.
- \* Participants read **Section 6: Involving Mothers in care.**
- \* Highlight importance of involving mothers in care. Mothers needs to be involved in care as
  - Emotional and physical stimulation are crucial for the child's recovery and can reduce the risk of developmental and emotional problems. The child's mother can provide more continuous stimulation and loving attention than busy staff.
  - When mothers are involved in care at the hospital, they learn how to continue care for their children at home.
  - Mothers can make a valuable contribution and reduce the workload of staff by helping with activities such as bathing and feeding children.
- \* Participants read **Section 7: Prepare for discharge and follow up.**
- \* Emphasize that the criteria for discharge should be flexible depending upon the local and individual circumstances. The key problem with prolonged hospitalization is high risk of nosocomial infections and mother's unwillingness to stay for long period.
- \* Participants read **Section 8: Management of SAM children less than 6 months of age and Section 9: Management of SAM in HIV exposed/HIV infected children.**
- \* Emphasize that the management of severely malnourished children less than 6 months depends on whether breastfeeding option is available or not. For non-breastfed babies stabilization is with Starter diet but in rehabilitative phase they are given diluted Catch up diet.
- \* Emphasize that children with SAM who are HIV exposed or infected, the management is similar. Management of malnutrition gets preference over

## Answers to Exercise I

Calculate the daily weight gain for the children described below. Assume that the weights were taken at about the same time each day.

1. Manish weighed 7.25 kg on Day 10. He weighed 7.30 kg on Day 11. What was his weight gain in g/kg/day? 6.8 gm/kg/day
2. Kavita weighed 6.22 kg on Day 8. She weighed 6.25 kg on Day 9. What was her weight gain in g/kg/day? 4.8 gm/kg/day
3. Gaurav weighed 7.6 kg on Day 9. He weighed 7.5 kg on Day 10. What was his weight gain in g/kg/day? 13 gm/kg/day

starting antiretroviral therapy (ART). If there is a need for ART, it should be started once the child is stabilized.

- \* Participants read **Section 10: Monitoring and Problem solving.**
- \* Lead a discussion on common problems and possible solutions. Also try to learn from participant what type of problems they are experiencing? Try to reach practical solutions for the problems raised by the participants.
- \* Demonstrate calculation of weight gain on a flip chart.
  - Admission weight 5 kg
  - On day 10 - 5.5 kg
  - So total weight gain 5500 - 5000 gms = 500 gms

- 500 gms in 10 days
- 50 gmm in 1 day
- i.e 10 gm/kg/day
- \* Emphasize that a child is said to have good weight gain when weight increases by 10 gm/kg/day or more.
- \* Participants are asked to complete exercise I.

### Role play - Giving discharge instructions

- \* During the role play observers should refer to the Discharge Cards and make notes in order to answer the questions in the module. After the role play, use these questions to structure a brief discussion.
- \* Also ask whether this type of Discharge Card would be useful in participant’s own hospital. How would they need to modify it?

### Role Descriptions

#### Nurse

Explain to the mother the instructions given on the discharge card, following the same sequence and covering all of the information on the card. Ask the mother checking questions to ensure that she understands. Specific information that this mother needs includes:

- \* Give 3 meals of family foods each day, plus 2 nutritious snacks between meals. Include local cereal with oil or other energy-rich food added, a variety of (local) vegetables and fruits, and (local) sources of protein. Good snacks include (local examples).
- \* Continue multivitamin. (Give her supply to last 1 week until first follow-up. Tell her how to give it to the child).
- \* Continue folic acid. (Give her supply to last 1 week until follow-up. Tell her how to give it to the child).
- \* Continue iron twice daily. (Give her supply to last 1 week until follow-up. Tell her how to give it to the child).
- \* This child is up-to-date on immunizations.
- \* Register the child at local AWC.
- \* The child needs a follow-up visit in 2 week.

Also given information on danger signs, how to play with the child etc. You are consistently courteous

and helpful to the mother, correcting her nicely if she misunderstands.

#### Mother

- \* You are very eager to go home after 18 days in the hospital with your 2-year-old son, but you are concerned that you may not have all the necessary foods at home to keep him healthy. For example, you may not have (meat or local source of protein). You wonder if you can feed him something else.
- \* You understand most of what the nurse says, but you miss a few points when she asks you checking questions. (This will allow the nurse to correct you in a nice way).

Ask the participants to read following sections:

- 1 section 10.2.2: Identify the child who is failing to respond
- 2 Section 10.2.3: Determine cause(s) of failure to respond
- 3 Section 10.2.4: Indicate and implement solutions for the individual child and
- 4 Section 10.3: Monitoring patient outcomes

Recapitulate the criteria for failure to respond.

Failure to regain appetite	Day 4
Failure to start to lose oedema	Day 4
Oedema still present	Day 10

## Day 3: Clinical Sessions

#### Group 1

- \* Demonstration of toys and structural play therapy
- \* Show participants the video on structured play therapy and involving mothers in care. Explain that the toys for play therapy need not be expensive and can be made from simple available materials e.g. cola cans, match boxes covered with bright paper, rags etc.
- \* Emphasize the need for age appropriate toys which should be safe as well.

#### Group 2

- \* Participants do case studies 1-5 given below.
- \* Discuss answers in group



## SECTION C

# CASE STUDIES

### Case Study 1: Sunil

Sunil is a 15 month old boy who has been unwell for 5 weeks. For the last 3 days he has diarrhoea. Sunil is lethargic and limp on arrival at the hospital, and the doctor assumes his blood glucose is low without testing the blood sample. Sunil's temperature does not record on a standard thermometer. Hands are cold and pulse is 150/min, weak. His gums, lips, and inner eyelids appear normal in colour (not pale). His weight is 5.8 kg, visible wasting is present but there is no pedal oedema.

**1a. List problems you have identified in this child.**

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**1b. Write treatment that Sunil needs immediately.**

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Sunil is given IV fluids starting at 9.45 am. His respiratory rate at that time is 48 breaths per minute, and his pulse rate is 150. Sunil is monitored every 10 minutes over the next hour, and both his respiratory and pulse rates slow down during this time. At 10:45 am his respiratory rate is 40 and his pulse rate is 106. His length was measured, which is 69 cm.

**1c. What should be done for the next hour?**

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After two hours of IV fluids, Sunil is alert enough to drink, although he still appears unwell. His blood glucose has been tested and is now 80 mg/dl. His haemoglobin is 8.5 g/dl. He is weighed again, and his new weight is 6.0 kg.

**1d. What should Sunil be given in alternate hours over the next period of up to 10 hours?**

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## Case Study 2: Shyam

Ten months old Shyam has been brought with loose stools and vomiting for last 3 days. There is no history of blood in the stool. Shyam is severely wasted and has some mild dermatosis. He has no pedal oedema. His weight is 4.4 kg and length is 64 cm.

Shyam's temperature is 37.8 °C and his blood glucose is 88 mg/dl. His extremities are warm, CFT is less than 3 seconds and pulse rate is 124/min. His haemoglobin is 10 g/dl. His eyes appear clear and he has not had measles. When the doctor does a skin pinch, it goes back slowly. Eyes are sunken and Shyam drinks eagerly.

**2a. Using the above information about Shyam, what is your assessment of dehydration?**

---

**2b. What treatment you will give?**

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Shyam is first given ORS at 9:00 am. His respiratory rate is 28 and his pulse rate is 105. He eagerly takes the full amount. At 9:30 am his respiratory rate still 28 and his pulse rate is 105. Shyam has not passed urine. He has had one loose stool but no vomiting. There has been no change in hydration signs. Again Shyam takes the full amount ORS.

The columns below show Shyam's progress during the next hour. He continues to take the full amount of ORS.

Time	10:00	10:30
Resp. rate	28	25
Pulse rate	105	100
Passed urine Y/N	N	Y
Number stools	0	0
Number vomits	1	0
Hydration signs	Same	Same

**2c. At 11:00, Shyam is ready to begin the next period of treatment, during which ORS and Starter diet are given in alternate hours. How much ORS should Shyam be given in alternate hours?**

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**2d. What signs of overhydration should be watched for during this period?**

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At 12:00 Shyam's respiratory rate remains at 25 and his pulse rate at 100. He has passed no urine or stools in the past hour and he has not vomited. When a skin pinch is done, it returns normally. Shyam now has tears as well as a moist mouth. Shyam is weighed again. He now weighs 4.5 kg. Shyam continues to be willing to drink within the recommended range, although he does not drink eagerly.

2e. What signs of improving hydration does Shyam show?

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2f. Should ORS be continued. Why or why not?

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2g. What should be given to Shyam in the next hour (starting at 12:00)? Write amount.

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2h. If Shyam's diarrhoea continues, what should he be given after each loose stool? How much should be given?

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### Case Study 3 - Rani

Rani a 7 months old girl is admitted with diarrhoea of 20 days. Her weight, length and MUAC is 3.9 kg, 65 cms and 10.5 cms respectively. There is no pedal oedema. Her blood sugar is 60 mg/dl & temperature is 37 degree centigrade. On assessment her breathing is normal, extremities are warm, CFT is less than 3 seconds and pulse rate is 126 per minute. There is no dehydration.

a. Write the feeding plan for this child.

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b. You have given the planned feed for 4 days. If diarrhoea is persisting & there is no weight gain then what causes should be looked for?

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### Case Study 4 - Mithoo

Look at the 24 hour food intake chart on the next page.

4a. At what times did Mithoo's feeding day begin and end?

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4b. How many times was Mithoo fed during the 24 hour period?

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4c. What amount of Starter diet was Mithoo offered at each feed?

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4d. At 10:00 did Mithoo take enough (80%) of the Starter diet orally?

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4e. At 12:00 did Mithoo take enough of the Starter diet offered?

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4f. What apparently happened at the 14:00 feed?

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4g. How was the feeding method changed at 16:00? Why do you think the staff changed the feeding method?

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4h. How was Mithoo fed from 20:00 to 2:00?

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4i. At 4:00 and 6:00 did Mithoo take enough Starter diet orally?

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4j. What was the total volume of Starter diet taken by Mithoo over the 24 hour period? Include the amount taken orally and by NG tube, and subtract the amount vomited.

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**24 HOUR FOOD INTAKE CHART**  
Complete one chart for every 24 hour period

Name: Mithoo Hospital ID number: A406 Admission weight (kg): 3.2 kg Today's weight (kg): 3.2 kg

DATE: <u>4/06/07</u>		TYPE OF FEED: <u>Starter Diet</u>		GIVE: <u>12</u> feeds of <u>35</u> ml		
Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a - b)	d. Amount taken by NG, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)
8:00	35	0	35	—		
10:00	35	15	20	—		
12:00	35	15	20	—		
14:00	35	25	10	—	10	
16:00	35	35	0	35		
18:00	35	35	0	35		
20:00	35	30	5	30		
22:00	35	25	10	25		
24:00	35	20	15	20		
2:00	35	10	25	10		
4:00	35	5	30	—		
6:00	35	5	30	—		
Column totals			c. 200	d. 155	e. 10	Total yes: 0
Total volume taken over 24 hours = amount taken orally (c) + amount taken by NG (d) - total amount vomited (e) = <u>345</u> ml						

## Case Study 5 - Deepak

Deepak began transition on Day 4. On Days 4 and 5 he was given 95 ml Catch-up diet per feed. On day 6 he increased to 125 ml by the last feed of the day. On Day 7 Deepak began free feeding on Catch-up diet. Deepak is fed 4 hourly. Deepak's 24 hour intake chart for Day 7 is on the following page.

5a. What volume of Catch-up diet was Deepak offered at his last feed on Day 7?

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5b. On Day 8 Deepak's weight is 42 kg. What is the range of volumes of Catch-up diet that is appropriate for Deepak for each 4 hourly feed?

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5c. What should be the starting amount of Catch-up diet given on Day 8?

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## ANSWERS TO CASE STUDIES

### CASE STUDY 1: SUNIL

- 1a. Hypothermia, Shock, Severe Acute Malnutrition.
- 1b. Sunil needs following treatment immediately:
- Oxygen
  - 5 ml of 10% glucose by IV (29 ml)
  - IV fluids (Ringer's lactate in 5% Dextrose or half normal saline with 5% glucose or Ringer's lactate) - 87 ml over 1 hour
  - Active rewarming
- 1c. Repeat 87 ml of IV fluids (Ringer's lactate in 5% Dextrose or half normal saline with 5% glucose or Ringer's lactate) in next 1 hour.
- 1d. ORS and Starter diet in alternate hours.

### CASE STUDY 2: SHYAM

- 2a. Shyam has some dehydration.
- 2b. Oral rehydration therapy.
- 2c. 22-44 ml of ORS
- 2d. Increase in pulse and respiratory rate
- Puffiness of eyelids
  - Engorgement of jugular veins
- 2e. He has passed urine
- He is no longer thirsty
  - He has a moist mouth and tears
  - He is skin pinch
- 2f. Stop offering ORS routinely in alternate hours since he has more than 3 signs of improving hydration. (Give ORS after each loose stool instead).
- 2g. Give Starter diet. Give 50 ml (based on rehydrated weight).
- 2h. He should be given 50 ml of ORS after each loose stool to replace stool losses.

### CASE STUDY 3: RANI

- 3a. Starter diet 40 ml every 2 hr.
- 3b. 1) Underlying infections - HIV, UTI, Pneumonia, Fungal infections etc.  
2) Osmotic diarrhoea if Starter diet is being prepared with milk powder.

### CASE STUDY 4: MITHOO

- 4a. 08.00 AM and 06.00 PM
- 4b. 12
- 4c. 35 ml
- 4d. No (less than 80%)
- 4e. No (less than 80%)
- 4f. He refused most of the feed and vomited the small amount that he took.
- 4g. He was fed by Nasogastric tube. It was changed because Mithoo did not take 80% of the 3 successive feeds.
- 4h. First offered orally and then he was given the rest by NG tube.
- 4i. Yes, Mithoo took more than 80% of Starter diet
- 4j. 345 ml (200 ml taken orally + 155 ml taken by NG - 10 ml vomited).

### CASE STUDY 5: DEEPAK

- 5a. 135 ml
- 5b. 105 ml - 155 ml
- 5c. 135 ml
- 5d. Increase by 10 ml if finishing feeds. Do not exceed 155 ml
- 5e. 160 ml is the starting amount. It should not be increased by Day 9, as 160 ml is the maximum amount for a child weighing 4.4 kg





# SECTION D

## ANNEXURE

### PATIENT'S RECORD - Sample Form

Name: \_\_\_\_\_ Age (in months) \_\_\_\_\_ Sex \_\_\_\_\_

Weight (in Kg) \_\_\_\_\_ Temp \_\_\_\_\_ Date of registration (dd /mm/yy)

Hosp. Reg. No. \_\_\_\_\_ SAM No. \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Phone No. \_\_\_\_\_

Complaints : \_\_\_\_\_

#### Family information:

Mother: Name \_\_\_\_\_ Age (in years) \_\_\_\_\_ Education \_\_\_\_\_ Profession \_\_\_\_\_

Father : Name \_\_\_\_\_ Age (in years) \_\_\_\_\_ Education \_\_\_\_\_ Profession \_\_\_\_\_

No of family members \_\_\_\_\_ Average daily family income \_\_\_\_\_ Education \_\_\_\_\_

No of siblings \_\_\_\_\_ Water supply \_\_\_\_\_

**Sanitation facility:** open defecation / latrine Electricity- yes / no Refrigerator - yes/no

**History:** ( Informer-Mother/ Father/ Grandmother/ other care giver)

- \* Appetite- Good/ Poor (Do appetite test if facility available)
- \* Diarrhoea - Yes/No
- \* Vomiting - Yes / No
- \* Urinary complaints - Yes/No/ Not Known
- \* Fever- Yes / No
- \* Cough -Yes/No
- \* Lethargy -Yes/ No
- \* Swelling of limbs/ body- Yes/ No
- \* Skin Changes - Yes/ No

Immunization History: (Circle all which received)

BCG, , OPV (1,2,3), DPT (1,2,3), Measles, DPT & OPV booster , Hepatis-B (1,2,3)

#### Dietary History:

- \* Breastfeeds: yes/ no
- \* Any other milk: yes / no; if yes which milk? \_\_\_\_\_ How? \_\_\_\_\_ Over dilution -yes/no

- \* Complementary feeds - yes / no ; if yes age of introduction \_\_\_\_\_ No. of time
- \* Dietary Recall: list all the foods and drinks consumed int 24 hours in addition to breastfeeds. Note amount (approx.) of each by showing a suitable katori/glass.

Time	Food items consumed	Appropriate amount (g)
Morning (breakfast)		
Mid-morning (snacks, if any)		
Afternoon (lunch)		
Evening (snacks, if any)		
Dinner		
Pre-sleep (milk/snack, if any)		
Midnight (snack, if any)		

#### Examination:

##### **Anthropometry**

- \* Weight( in gms) \_\_\_\_\_ Height/ Length( in Cms)\_\_\_\_\_ W/ H SD Score\_\_\_\_\_
- \* MUAC( in Cms)\_\_\_\_\_
- \* Heart rate\_\_\_\_\_ Respiratory rate\_\_\_\_\_
- \* Temperature\_\_\_\_\_ CRT\_\_\_\_\_
- \* Chest indrawing \_\_\_\_\_ Cyanosis : yes/ no
- \* Visible Severe Wasting - yes/ no B/L pedal oedema-yes/ no; if yes grade- +/++/+++
- \* Alert/ irritable/lethargic
- \* Hair changes: yes/ no if yes describe\_\_\_\_\_
- \* Skin changes : yes/ no if yes describe\_\_\_\_\_
- \* Eye - signs of Vitamin A def : yes/no if yes describe\_\_\_\_\_
- \* Ear discharge- yes/ no f yes- pus/ watery duration\_\_\_\_\_
- \* Mouth- Glossitis/Oral thrush/Glossitis/ Angular Smotatis
- \* Pallor - yes/ no if yes some/ severe
- \* Lymphadenopathy - yes/ no if yes describe\_\_\_\_\_
- \* If diarrhoea - no dehydration / dehydration present

##### **Systemic examination**

##### **Respiratory system-**

Abdominal system

Cardio-vascular system

Central nervous system

**Investigations**

Hb \_\_\_\_\_ PCV \_\_\_\_\_ Total Leukocyte count \_\_\_\_\_ Blood glucose \_\_\_\_\_

Blood culture: sterile / growth; if growth - describe \_\_\_\_\_

Urine R/M \_\_\_\_\_

Urine C/S: sterile / growth; if growth - describe \_\_\_\_\_

Chest X-ray - normal / abnormal, if abnormal - describe \_\_\_\_\_

**Mantoux test-**

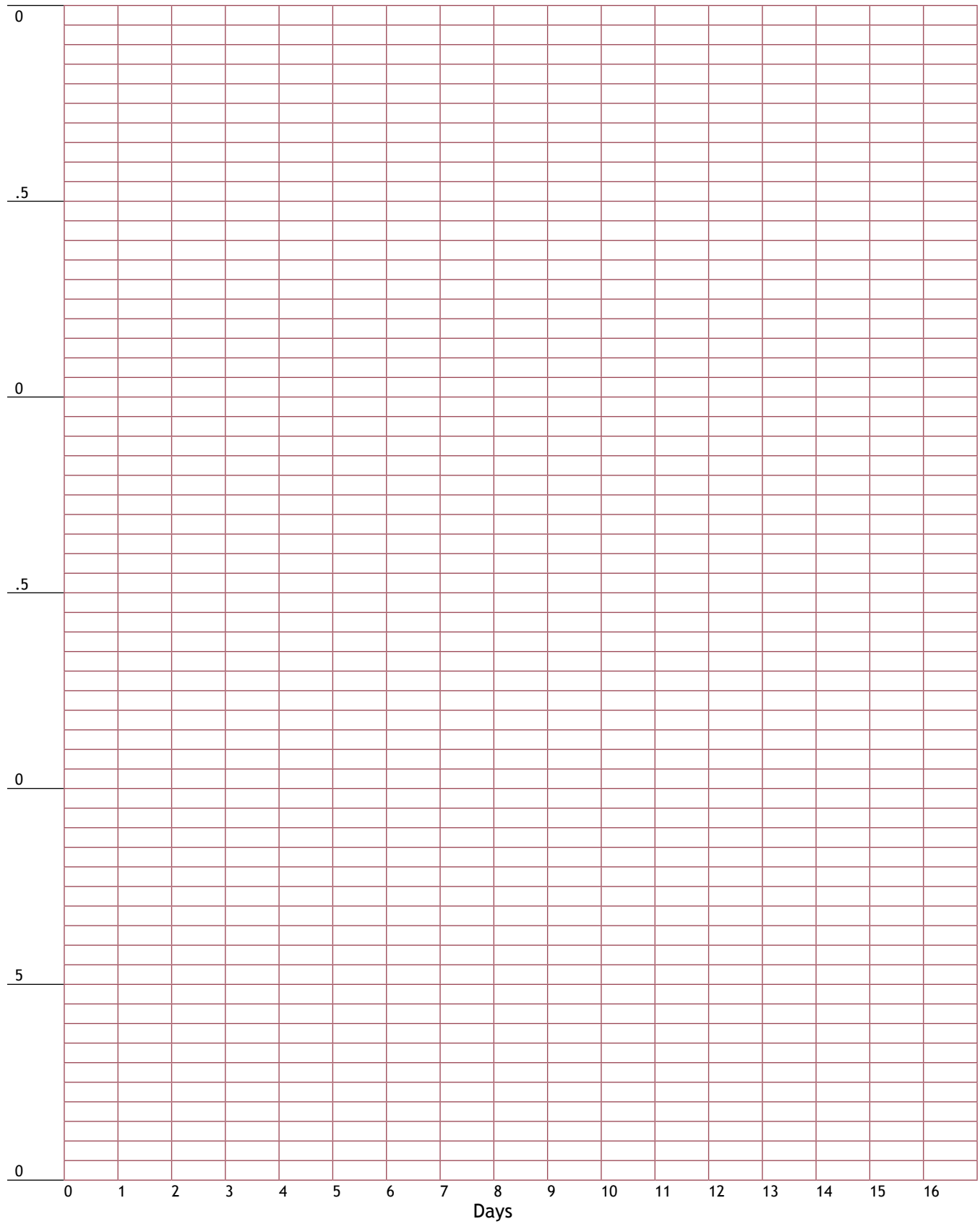
Any other Investigations

**Daily Care:**

Days in hospital	Day---	Day---	Day 3---	Day 4----	Day 5---
Date					
Weight (gms)					
Temperature					
Oedema					
Diarrhoea/Vomiting					
Type of feed					
NG/Oral					
Total volume intake (in 24 hours)					
Any IV fluids					
Antibiotics					
Vit A					
Vit K					
Potassium					
Magnesium					
Zinc					
Folic Acid					
Multivitamins					
Iron					

# Blank Weight Chart

Weight on admission \_\_\_\_\_ Weight on discharge \_\_\_\_\_



## Recording form for clinical session-1

Name: \_\_\_\_\_ Age (in months) \_\_\_\_\_ Sex \_\_\_\_\_ Weight (in Kg) \_\_\_\_\_ Temp \_\_\_\_\_

Date of registration (dd /mm/yy)

Complaints for which brought : \_\_\_\_\_

Assess for emergency signs (*Make sure child is warm during assessment & history*)

Assess ( Circle all signs present)	Emergency treatment ( if any sign present first give treatment before further assessment)
<b>AIRWAY AND BREATHING</b> * Not breathing or gasping or * Central cyanosis or * Severe respiratory distress	
<b>CIRCULATION</b> <i>Cold hands with</i> * CRT > 3 seconds * Weak and fast Pulse	
<b>Coma/ Convulsing</b> * Coma * Convulsing now	
<b>Severe Dehydration</b> <i>Diarrhoea plus any of the two of these:</i> * Lethargy * Sunken eyes * Very slow skin pinch	

### Assessment of nutritional status

Weight( in gms) \_\_\_\_\_ Height/ Length( in Cms) \_\_\_\_\_ W/ H SD Score \_\_\_\_\_

MUAC (in Cms) \_\_\_\_\_

Visible Severe Wasting - yes/ no    B/L pedal oedema-yes/ no; if yes grade- +/+/+++

Impression:

## Recording form for clinical session-1

Name: \_\_\_\_\_ Age (in months) \_\_\_\_\_ Sex \_\_\_\_\_ Weight (in Kg) \_\_\_\_\_ Temp \_\_\_\_\_

Date of registration (dd /mm/yy) □□□□□□□□

Complaints for which brought : \_\_\_\_\_

Assess for emergency signs (*Make sure child is warm during assessment & history*). Treat emergency signs if present.

### Assessment of nutritional status

Weight( in gms) \_\_\_\_\_ Height/ Length( in Cms) \_\_\_\_\_ W/ H SD Score \_\_\_\_\_

MUAC (in Cms) \_\_\_\_\_

Visible Severe Wasting - yes / no B / L pedal oedema-yes / no; if yes, grade- +/++/+++

### Examination:

- \* Heart rate \_\_\_\_\_ Respiratory rate \_\_\_\_\_
- \* Temperature \_\_\_\_\_ CRT \_\_\_\_\_
- \* Visible Severe Wasting - yes / no B/L pedal oedema - yes / no; if yes, grade- +/++/+++
- \* Alert/ irritable / lethargic
- \* Hair changes: yes / no; if yes, describe \_\_\_\_\_
- \* Skin changes : yes / no; if yes, describe \_\_\_\_\_
- \* Eye - signs of Vitamin A def : yes / no, if yes, describe \_\_\_\_\_
- \* Ear discharge- yes / no; if yes - pus / watery duration \_\_\_\_\_
- \* Mouth- Glossitis / Oral thrush/Glossitis / Angular Stomatitis
- \* Pallor - yes / no; if yes, some / severe
- \* Lymphadenopathy - yes / no; if yes, describe \_\_\_\_\_
- \* If diarrhoea - no dehydration / dehydration present

### Systemic examination

Respiratory system-

Abdominal system-

Cardio-vascular system-

Central nervous system-

### Problems identified:

### Treatment:

Notes

## PRE-TEST AND POST TEST QUESTIONS

**Q1. Which of the following cut offs is used to identify severe acute malnutrition in infants more than 6 months of age?**

- a. Weight-for-age less than -3 SD
- b. Weight-for-height less than -2 SD
- c. Mid arm circumference (MUAC) <11.5 cm
- d. Wasting

**Q2. Which one of the following practices does not contribute in high case fatality in Severe Acute Malnutrition?**

- a. Excessive use of IV fluids
- b. Use of diuretics and albumin
- c. High index of suspicion for infection
- d. Early use of diets high in proteins and energy
- e. Early treatment with oral iron

**Q3. Which one of the following statement is correct?**

- a. Baggy pants appearance is not a sign of severe wasting
- b. Standing height is 0.7 cm less than recumbent length
- c. SAM children have non-pitting type of pedal oedema
- d. If the child is 1 year or older then standing height should be measured

**Q4. Which one of the following is not an emergency sign in a SAM child?**

- a. Central cyanosis
- b. Respiratory rate more than 60
- c. Diarrhoea with severe dehydration
- d. Shock
- e. Convulsions

**Q5. Hypoglycaemia is defined as blood sugar less than**

- a. 40 gm/dl
- b. 45 gm/dl

- c. 54 gm/dl
- d. 60 mg/dl

**Q6. Hypothermia in SAM children is defined as axillary temperature less than**

- a. 35 degree C
- b. 35.5 degree C
- c. 36 degree C
- d. 36.5 degree C

**Q7. Which one of the following statement is not correct regarding a SAM child with hypoglycaemia?**

- a. The hypoglycemic child is usually hypothermic as well
- b. Sweating and pallor is common in SAM children with hypoglycaemia
- c. The child may present with lethargy or drowsiness
- d. Should be investigated for infections

**Q8. Which one of the following is not recommended as a treatment of severe hypothermia in children with SAM?**

- a. Warm humidified oxygen
- b. 5 ml/kg of 10% dextrose IV or 50 ml of 10% dextrose by nasogastric route
- c. Intravenous antibiotics
- d. Rapid re-warming

**Q9. Hari is 36 months old and weighs 7.4 kg. He has blood sugar of 42 mg/dl. What immediate treatment Hari should be given?**

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**Q10. Write down the amount of ORS to be given to a SAM child weighing 4 kg with some dehydration during first 2 hours?**

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**Q11. A SAM child was admitted with signs of shock and is lethargic. Which one of the following statement is incorrect regarding management?**

- a. Give IV 10% glucose 5 ml/kg as bolus
- b. Give oxygen
- c. Give 20 ml/kg of normal saline as bolus
- d. Give 15 ml/kg of ringer's lactate with 5% dextrose over 1 hour

**Q12. Nasogastric feeding is given if oral intake is less than \_\_\_\_\_ percentage of calculated feed in two or more consecutives feed.**

- a. 50%
- b. 70%
- c. 80%
- d. 100%

**Q13. Which one of the following is not correct?**

- a. Give all severe malnourished children antibiotics
- b. For septic shock given third generation cephalosporin along with gentamycin
- c. In meningitis, give only IV cefotaxime or ceftriaxone alone
- d. SAM with dysentery give Ciprofloxacin as first line drug

**Q14. Select oral dose of vitamin A to be given to a 13 months old SAM child weighing 6 kg.**

- a. 50000 IU
- b. 100000 IU
- c. 150000 IU
- d. 200000 IU

**Q15. Which one of the following is not a common complication seen in SAM children.**

- a. Infection
- b. Hyperkalemia
- c. Hypothermia
- d. Hypoglycaemia

**Q16. Which one of the following criteria is not used for identification of Severe ACUTE Malnutrition in children less than 6 months of age.**

- a. Weight for length less than -3 SD
- b. Visible severe wasting
- c. Oedema of both feet
- d. MUAC less than 11.5

**Q17. Select the incorrect statement about feeding.**

- a. Starter diet is calculated according to admission weight
- b. Catch-up diet is calculated according to admission weight
- c. Starter diet is given 130 ml/kg in SAM children with oedema
- d. Catch-up diet is given in the range 150-220 ml/kg

**Q18. Blood transfusion is required in SAM children if -**

- a. Hb is less than 10 g/dl
- b. Hb is less than 8 g/dl
- c. Hb is less than 6 g/dl
- d. Hb is less than 4 g/dl

**Q19. SAM children should receive mineral supplements for at least -**

- a. 7 days
- b. 10 days
- c. 14 days
- d. 90 days

**Q20. Select the criteria used to identify a child who is failing to respond.**

- a. Failure to regain appetite by day 10
- b. Failure to start to loose oedema by day 7
- c. Failure to gain atleast 5 gm/kg/day for 3 successive days after feeding freely on Catch-up diet
- d. All of the above







National Rural Health Mission

**Ministry of Health and Family Welfare  
Government of India**

Nirman Bhavan, Maulana Azad Road, New Delhi - 1100108