सत्यमेव जयते

National Rural Health Mission

Facility Based Care of **Severe Acute Malnutrition**

Participant Manual

Ministry of Health and Family Welfare
Government of India, 2013

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for

Facility Based Care of **Severe Acute Malnutrition**

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Purpose of this Training Manual

This training manual is designed for doctors and nurses involved in management of children with severe malnutrition in hospital settings. Severely malnourished children often die because health care providers unknowingly use practices that are suitable for most children, but highly dangerous for severely malnourished children. With appropriate case management in hospitals and follow-up care, the lives of many children can be saved, and case fatality rates can be reduced.

In 2006, Indian Academy of Paediatrics undertook the task of developing guidelines for the management of severely malnourished children based on adaptation from WHO guidelines. This training manual is based on the revised consensus recommendations made by the IAP Task Force and the Training Course on Management of Severe Malnutrition, WHO 2009 .

This Training Manual will be used as course material for training service providers in 'Facility Based Management of Children with Severe Acute Malnutrition'. A Facilitator Guide has been developed to assist the Master Trainers in conducting the training course. The training course includes classroom sessions and clinical practice sessions wherein the participants shall visit, observe and practice in real hospital setting.

After going through the course, participants will acquire the skills and knowledge specifically needed for management of severely malnourished children in hospital settings. It is expected that after returning to their hospitals (or Nutrition Rehabilitation Centres), participants will implement the case management practices described in this training manual. Basic supplies and equipment required to implement these practices are described in detail in the 'Operational Guide for Facility Based Management of SAM', 2011.

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भारत सरकार
स्वास्थय और परिवार कल्याण मंत्रलय
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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Nirman Bhawan, New Delhi - 110 108

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

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Abbreviations

AWW	Anganwadi worker
ARV	Anti retro viral
ART	Anti retroviral treatment
ASHA	Accredited Social Health Activist
IMNCI	Integrated Management of Newborn and Childhood Illnesses
Hb	Hemoglobin
HIV	Human Immunodeficiency Virus
HFA	Height-for-age
IV	Intravenous
IU	International Unit
mcg	micrograms
MCP card	Mother and Child Protection Card
MUAC	Mid-Upper Arm Circumference
NACO	National AIDS Control Organisation
NRC	Nutrition Rehabilitation Centre
NFHS	National Family Health Survey
ORS	Oral Rehydration Solution
PR	Pulse rate
RR	Respiratory rate
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SST	Supplementary Suckling Technique
TB	Tuberculosis
WFA	Weight-for-age
WFH	Weight-for-height
WFL	Weight -for- length
WHO	World Health Organization

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SECTION 1

INTRODUCTION

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SECTION

INTRODUCTION

1.1 Understanding Malnutrition

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

Malnutrition in children is widely prevalent in developing countries including India. More than 33% of deaths in 0-5 years are associated with malnutrition.

1.2 Measuring Undernutrition

In children, undernutrition is synonymous with growth failure - undernourished children are shorter and lighter than they should be for their age /height. To get a measure of malnutrition in a population, young children are weighed and/or their height is measured and the results compared to those of a 'reference population' known to have grown well. Measuring weight and height is the most common way of assessing malnutrition in a given population. Anthropometry is a widely used, inexpensive and non-invasive measure of the general nutritional status of an individual or a population group. The three commonly used anthropometric indices are:

- ™ Weight-for-age (WFA)
- ™ Height/Length-for-age (HFA)
- ™ Weight-for-Height/Length (WFH).

1.3 Types of Undernutrition

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

Underweight

Underweight, based on weight-for-age, is a composite measure of stunting and wasting and is recommended as the indicator to assess changes in the magnitude of malnutrition over time.

This condition can result from either chronic or acute malnutrition, or both. Underweight is often used as a basic indicator of the status of a population's health as weight is easy to measure. Evidence has shown that the mortality risk of children who are even mildly underweight is increased, and severely underweight children are at even greater risk.

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

Stunting

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

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

Wasting

Wasting represents a recent failure to receive adequate nutrition and may be affected by recent episodes of diarrhoea and other acute illnesses. Wasting indicates current or acute malnutrition resulting from failure to gain weight or actual weight loss. Causes include inadequate food intake, incorrect feeding practices, disease, and infection or, more frequently, a combination of these factors. Wasting in individual children and population groups can change rapidly and shows marked seasonal patterns associated with changes in food availability or disease prevalence to which it is very sensitive.

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

Severe Acute Malnutrition (SAM)

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

Severe Acute Malnutrition is both a medical and social disorder. Lack of exclusive breast feeding, late introduction of complementary feeds, feeding diluted feeds containing less amount of nutrients, repeated enteric and respiratory tract infections, ignorance, and poverty are some of the factors responsible for Severe Acute Malnutrition (SAM).

SAM significantly increases the risk of death in children under five years of age. It can be a direct or indirect cause of child death by increasing the case fatality rate in children suffering from such common illnesses as diarrhoea, acute respiratory infections, malaria and measles. According to National Family Health Survey 3 (2005-06), 6.4% of children below 60 months of age or nearly 8 .1 million were estimated as having severe acute malnutrition.

Moderate Acute Malnutrition

A child with 70-80% of median weight-for- height (Z score of <-3SD to <-2 SD), or a Mid Upper Arm Circumference of 115-125 cms and no oedema is classified as a case of Moderate Acute Malnutrition. In addition the child should have appetite, be alert and clinically well. Children with moderate acute malnutrition can be managed in the Outpatients setting where there is a provision for supplementary feeding.

1.4 Case Fatality in children with Severe Acute Malnutrition

Children with severe acute malnutrition can be categorized into 'complicated and uncomplicated' cases based on clinical criteria. Children with SAM should be treated in as 'inpatients', preferably in specialized units like the Nutrition Rehabilitation Centres with skilled manpower and adequate resources for nutrition rehabilitation. Median case fatality rate in children with SAM is approximately 23.5%, which may reach 50% in oedematous malnutrition. The high case fatality has been attributed to various factors related to the management and includes:

1. Inability to distinguish between acute and rehabilitation phases
2. Excessive use of intravenous (IV) fluids
3. Fluid overload due to lack of monitoring during rehydration
4. Use of diuretics (for oedema) and albumin
5. Not keeping the child warm and euglycaemic (normal blood glucose levels)
6. Low index of suspicion for infection
7. Early use of diets high in protein, sodium, energy
8. Failure to monitor food intake
9. Early treatment of anaemia with oral iron

The case fatality can be brought down to approximately 7-10% by standard case management protocol, which the participants will learn in this course.

SECTION 2

PRINCIPLES OF CARE

2
SECTION

PRINCIPLES OF CARE

Learning objectives

At the end of this section, the participant will be able to:

- Identify the signs of severe acute malnutrition
- Determine a standard deviation score (SD-score) based on the child's weight and length/ height.
- Describe how the physiology of severe acute malnutrition affects care of the child
- List the essential components of care for children with SAM

2.1. Recognize signs of severe malnutrition

You may be familiar with the following signs that are related to severe acute malnutrition.

2.1.1. Severe wasting

If the diet is deficient for a short duration, the body adapts its metabolism to compensate for the deficit to some extent. If the food deficit persists for a longer duration then the fat is utilized for energy & body metabolism and then muscle is depleted. A child with severe wasting has lost fat and muscle and appears like "skin and bones". Another term used for this condition is marasmus. To look for severe wasting, remove the child's clothes.

Figure 1: Child with Severe Wasting

Look at the front view of the child:

- Is the outline of the child's ribs easily seen?
- Does the skin of the upper arms look loose?
- Does the skin of the thighs look loose?

Look at the posterior view of the child:

- Are the ribs and shoulder bones easily seen?
- Is there any wasting seen on buttock?

When wasting is extreme, there are folds of skin on the buttocks and thighs. It looks as if the child is wearing "baggy pants" (Figure-2). Because a wasted child has lost fat and muscle, this child will weigh less than other children of the same height and will have a low weight-for-height.

2.1.2. Oedema

Oedema is swelling from excess fluid in the tissues. Oedema is usually seen in the feet and lower legs. In severe cases it may also be seen in the upper limbs and face. To check for oedema, grasp the foot so that it rests in your hand with your thumb on top of the foot. Press your thumb gently for a few seconds (approximately 10 seconds). The child has oedema if a pit (dent) remains in the foot when you lift your thumb **(Figure-3).**

Figure 2: Child with Severe Wasting (Baggy Pants Appearance)

To be considered a sign of severe acute malnutrition, oedema must appear in both feet. If the swelling is only in one foot, it may just be a sore or infected foot.

The extent of oedema is commonly rated in the following way:

+ mild: both feet
+ + moderate: both feet, plus lower legs, hands, or lower arms
+ + + severe: generalized oedema including feet, legs, hands, arms and face

Note: Oedema is a characteristic of kwashiorkor, which is a form of severe acute malnutrition.

You must formally test for oedema with finger pressure
you cannot tell by just looking

Figure 3: **Pedal Edema**

2.2. Weigh and Measure the child

In addition to looking for visible signs of severe malnutrition and pedal oedema, it is important to weigh and measure the child to identify SAM children. After weighing & measuring the child's weight-for-height should be compared to the reference standard.

2.2.1. Measure length/height

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

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

Allow the mother or care giver of the child to be nearby to help soothe and comfort the child while measuring length or height.

Measuring length and height

- If a child is less than 2 years old (or less than 87 cm if the age is not available), measure recumbent length.
- If the child is aged 2 years or older (or 87 cm or more if the age is not available) and able to stand, measure standing height.
- If a child less than 2 years old will not lie down for measurement of length, measure standing height and add 0.7 cm to convert it to length. If a child aged 2 years or older cannot stand, measure recumbent length and subtract 0.7 cm to convert it to height.

To measure length

Use a measuring board like infantometer with a headboard and sliding foot piece. Lay the measuring board flat, preferably on a stable, level table. Cover the board with a thin cloth or soft paper to avoid causing discomfort and the baby sticking to the board. Measurement will be most accurate if the child is naked; diapers make it difficult to hold the infant's legs together and straighten them. However, if the child is upset or hypothermic, keep the clothes on, but ensure that they do not get in the way of measurement. Always remove shoes and socks. Undo braids and remove hair ornaments if they interfere with positioning the head. After measuring, clothe or cover the child quickly so that he does not get cold.

Work with a partner. One person should stand or kneel behind the headboard and:

- Position the child lying on his back on the measuring board, supporting the head and placing it against the headboard. (Figure-4)
- Position the crown of the head against the headboard, compressing the hair.
- Hold the head with two hands and tilt upwards until the eyes look straight up, and the line of sight is perpendicular to the measuring board.
- Check that the child lies straight along the centre line of the measuring board and does not change position.

The other person should stand alongside the measuring board and:

- Support the child's trunk as the child is positioned on the board.
- Place one hand on the shins or knees and press gently but firmly.
- Straighten the knees as much as possible without hurting the child (Figure 4).
- With the other hand, place the foot piece firmly against the feet. The soles of the feet should be flat on the foot piece, toes pointing up. If the child bends the toes and prevents the foot piece touching the soles, scratch the soles slightly and slide in the foot piece when the child straightens the toes.
- Measure length to the last completed 0.1 cm and record immediately on the Case recording form.

2.2.2. To measure standing height

Use a stadiometer with a vertical back board, a fixed base board, and a movable head board. The stadiometer should be placed on a level floor. Remove the child's socks and shoes for accurate measurement. Also remove hair ornaments and undo braids if they interfere with measurement.

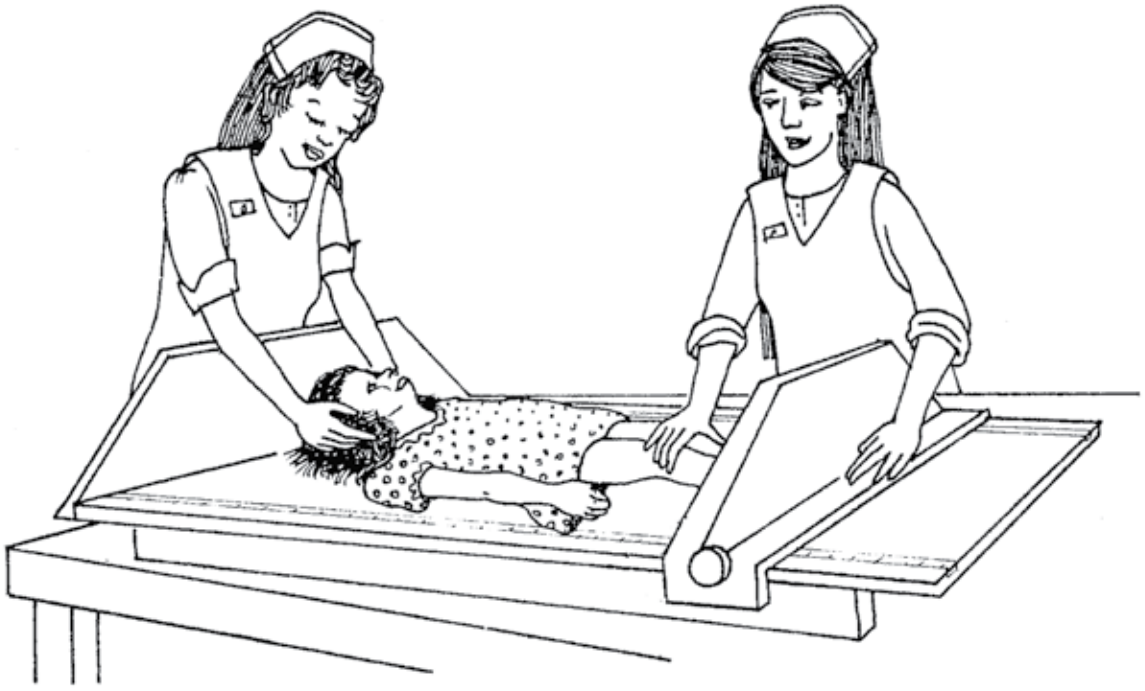


Figure 4: **Measuring Length**

Work with a partner. One person should kneel or crouch near the child's feet and:

- Help the child stand with back of the head, shoulder blades, buttocks, calves and heels
- touching the vertical board. (Figure-5)
- Hold the child's knees and ankles to keep the legs straight and feet flat.
- Prevent children from standing on their toes.
- Young children may have difficulty standing to full height. If necessary, gently push on the tummy to help the child stand to full height.

The other person should bend to level of the child's face and:

- Position the head so that the child is looking straight ahead (line of sight is parallel to the base of the board).
- Place thumb and forefinger over the child's chin to help keep the head in an upright position.
- With the other hand, pull down the head board to rest firmly on top of the head and compress hair.
- Measure the height to the last completed 0.1 cm and record it immediately on the Case recording sheet.

2.2.3. Weigh the child

Weigh the child as soon as possible after he arrives. If the child is admitted, weigh the child once daily, preferably at about the same time each day. The weighing time should be about one hour before or after a feed.

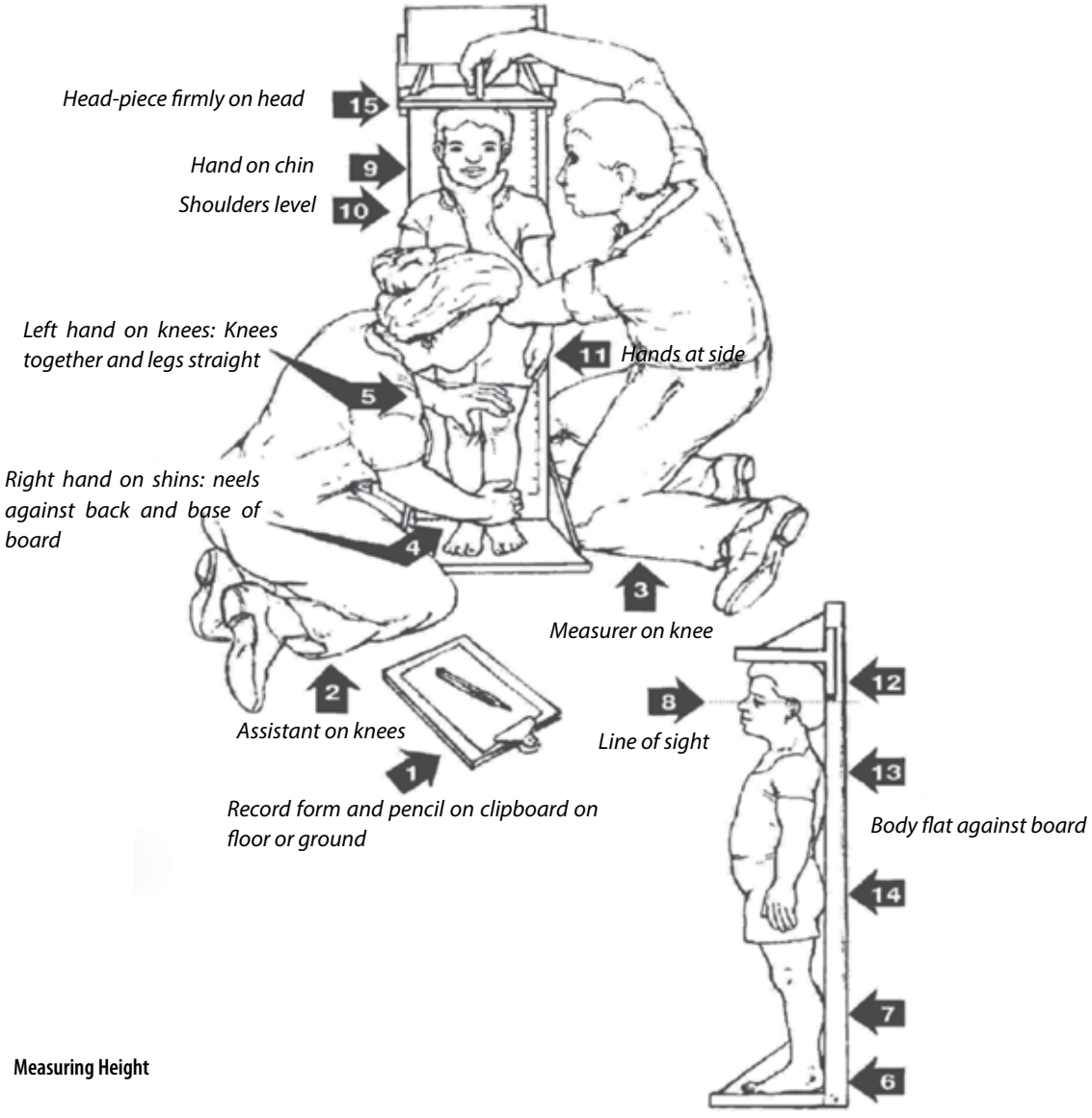


Figure 5: **Measuring Height**

It is recommended to weigh children using a scale with the following features:

- Solidly built and durable
- Electronic (digital reading)
- Measures to a precision of 0.01 kg (10g)
- Allows tared weighing

"Tared weighing" means that the scale can be re-set to zero ("tared") with the person just weighed still on it. Thus, a mother can stand on the scale, be weighed, and the scale tared. While remaining on the scale, if she is given her child to hold, the child's weight alone appears on the scale.

Tared weighing has two advantages:

- There is no need to subtract weights to determine the child's weight alone (reducing the risk of error).
- The child is likely to remain calm when held in the mother's arms for weighing. If the SCALE for tared weighing is not available, a beam scale or a hanging scale (Salter type) may be used to weigh the child :
- Remove the child's clothes, but keep the child warm with a blanket or cloth while carrying to the scale.
- Put a cloth in the scale pan to prevent chilling the child.
- Adjust the scale to zero with the cloth in the pan. (If using a scale with a sling or pants, adjust the scale to zero with that in place.)
- Place the naked child gently in the pan (or in the sling or pants).
- Wait for the child to settle and the weight to stabilize.
- Measure weight to the nearest 0.01 kg (10 g) or as precisely as possible & Record immediately.
- Wrap the child immediately to re-warm.

Standardize scales

In case of other type of weighing scale standardize scales daily or whenever they are moved:

- Set the scale to zero.
- Weigh three objects of known weight (e.g., 50 gms, 100 gms, 500 gms) and record the measured weights.
- Repeat the weighing of these objects and record the weights again.
- If there is a difference of 0.01 kg or more between duplicate weighing, or if a measured weight differs by 0.01 kg or more from the known standard, check the scales and adjust or replace them if necessary.

2.3. Mid-upper arm circumference (MUAC)

Community based screening programmes for severe malnutrition usually uses MUAC less than 11.5 cm to identify severe wasting. MUAC is a quick and simple way to determine whether or not a child is malnourished using a simple coloured plastic strip. MUAC is suitable to use on children from the age of 6 months up to the age of 59 months.

Arm circumference is measured on the upper left arm. To locate the correct point for measurement, the child's elbow is flexed to 90°. A measuring tape is used to find the midpoint between the end of the shoulder (acromion) and the tip of the elbow (olecranon); this midpoint should be marked (see Figure 6). The arm is then allowed to hang freely, palm towards the thigh, and the measuring tape is placed snugly around the arm at the midpoint mark. The tape should not be pulled too tight.

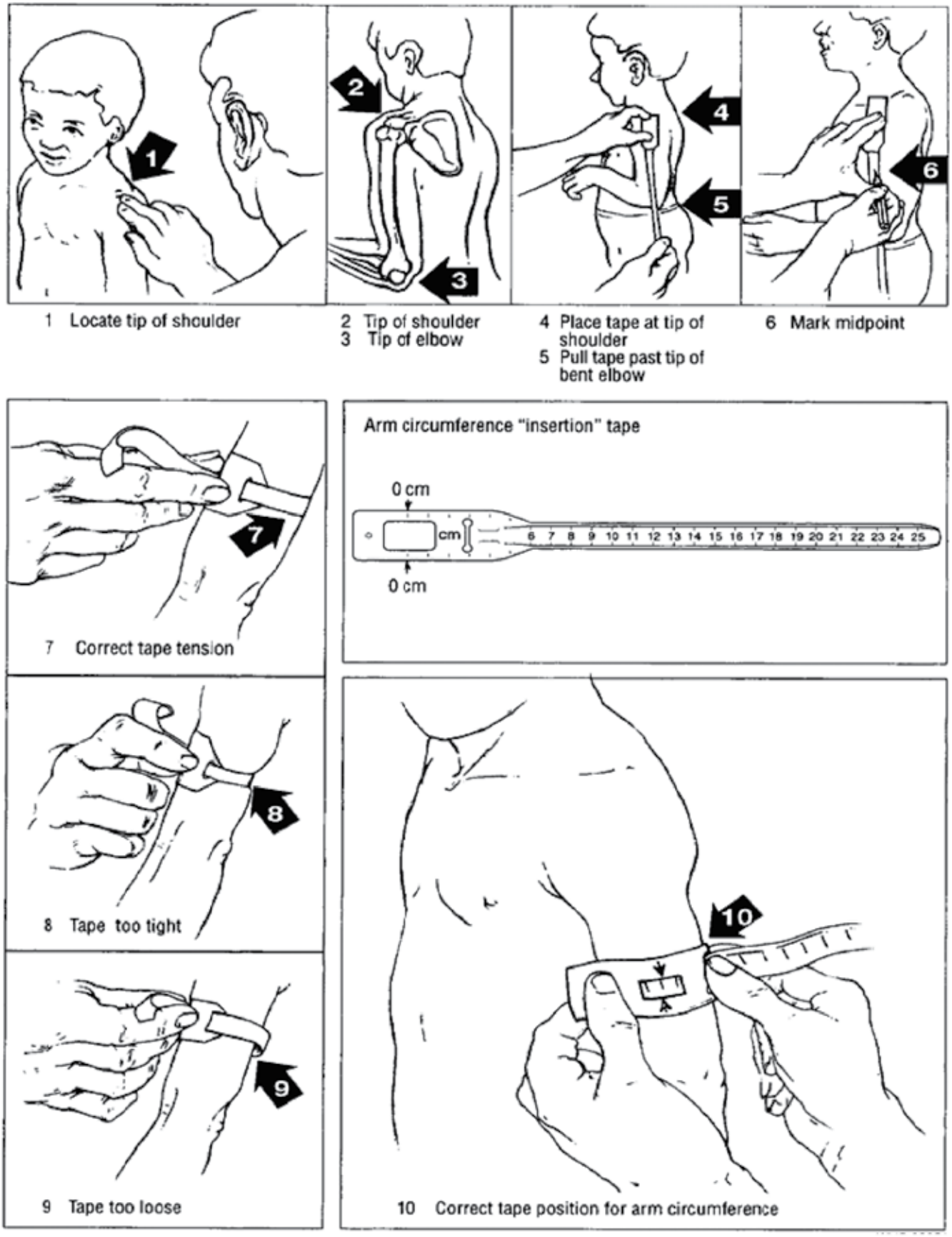


Figure 6: **Measuring Child's Mid-Upper-Arm Circumference**

If using a 3-colour tape: (Figure 7)

- A measurement in the green zone means the child is properly nourished;
- A measurement in the yellow zone means that the child has moderate acute malnutrition;
- A measurement in the red zone means that the child has severe acute malnutrition.

Repeat the measurement two times to ensure an accurate interpretation.

2.4. Identification of children with severe acute malnutrition

- Health professionals and healthcare providers should assess nutrition status of all children and detect children with SAM at every opportunity provided by health contacts, be it for a medical complaint or for health promotional measures (e.g. growth monitoring or immunization). This can be undertaken at every health facility (Primary Health Centre and Sub-centre, health posts, hospitals, day-care centres, etc.) and even in the community at Anganwadi centres.
- MUAC is a simple measure for the detection of SAM. Screening of children with SAM in the community can be done using MUAC tape.

Recommended criteria for identifying SAM in infants> 6 months of age

Any child who has following features are treated as severe acute malnutrition:

- Weight-for-height less than -3 SD and/or
- Visible severe wasting and/or
- Mid arm circumference (MUAC) < 11.5 cm and/or
- Oedema of both feet*

Recommended criteria for identifying SAM in infants <6 months of age

Any infant more than 49 cm in length who has following features are treated as severe acute malnutrition:**

- Weight-for-height less than -3 SD and/or
- Visible severe wasting and/or
- Oedema of both feet*

** Other causes of oedema e.g. nephrotic syndrome should be excluded.*

*** For children with length less than 49 cm in length, visible severe wasting can be used as criteria to identify SAM .*

Standard Deviation

For identifying a child with severe acute malnutrition standard deviation score (SD-score) based on child's weight and length/height is determined.

An SD-score is a way of comparing a measurement, in this case a child's weight-for-length, to an "average". The "averages" referred to in the manual are WHO Growth Reference values for weight-for-height and weight-for-length. A table is given in the end as Annexure 1 that shows the SD-scores for children of different weights and heights. SD-scores may be loosely interpreted as follows:

- -1 SD approximately corresponds to 90% of the median weight-for-height.
- -2 SD approximately corresponds to 80% of the median weight-for-height.
- -3 SD approximately corresponds to 70% of the median weight-for-height.

The reason for considering a child's weight-for-height rather than simply weight-for-age is that the latter is affected by stunting. Stunting may cause low weight-for-age when a child is adequate weight-for-height. Feeding can correct wasting but cannot easily correct stunting.

To use the reference table

- First find the child's length or height in the middle of the table. If the length or height is between those listed, rounds up or down: If the length/ height is 0.5 or more cm then take the next higher value.
- Look at the top of the column to see what the child's SD-score is. The child's weight may be between two SD-scores. If so, indicate that the weight is between these scores by writing less than (<). For example, if the score is between - 1 SD and -2 SD, write < -1 SD.

Examples of SD scores of weight for height

A boy is 80 cm in length and weighs 8.5 kg. His score is < -2 SD.

A girl is 76.5 cm in length and weighs 7.0 kg. Round her length to 77 cm. Her score is < -3 SD.

EXERCISE-A

Refer to the table of SD-scores in Annexure I. Indicate the SD-score for each child listed below.

1. Sudha, girl, length 63 cm, weight 5.0 kg SD: _____
2. Ram, boy, height 101 cm, weight 11.8 kg SD: _____
3. Tanya, girl, length 69.8 cm, weight 6.4 kg SD: _____
4. Karan, boy, length 82 cm, weight 8.0 kg SD: _____

2.5. Criteria for hospitalization/ in-patient care

Decision for home or outpatient and inpatient care depends on the facility available for management of these children and the associated complications. There is growing evidence that child with SAM without complications does not require inpatient treatment and can be effectively managed at the community level. Children with complications may be shifted to community based care programme after stabilisation and if good support is available at the community level.

Children with SAM and medical complications should be admitted and managed in a health facility.

Appetite test can be conducted as described in Annexure 2. Poor appetite is a reliable indicator for severity of illness and thus need for hospitalization.

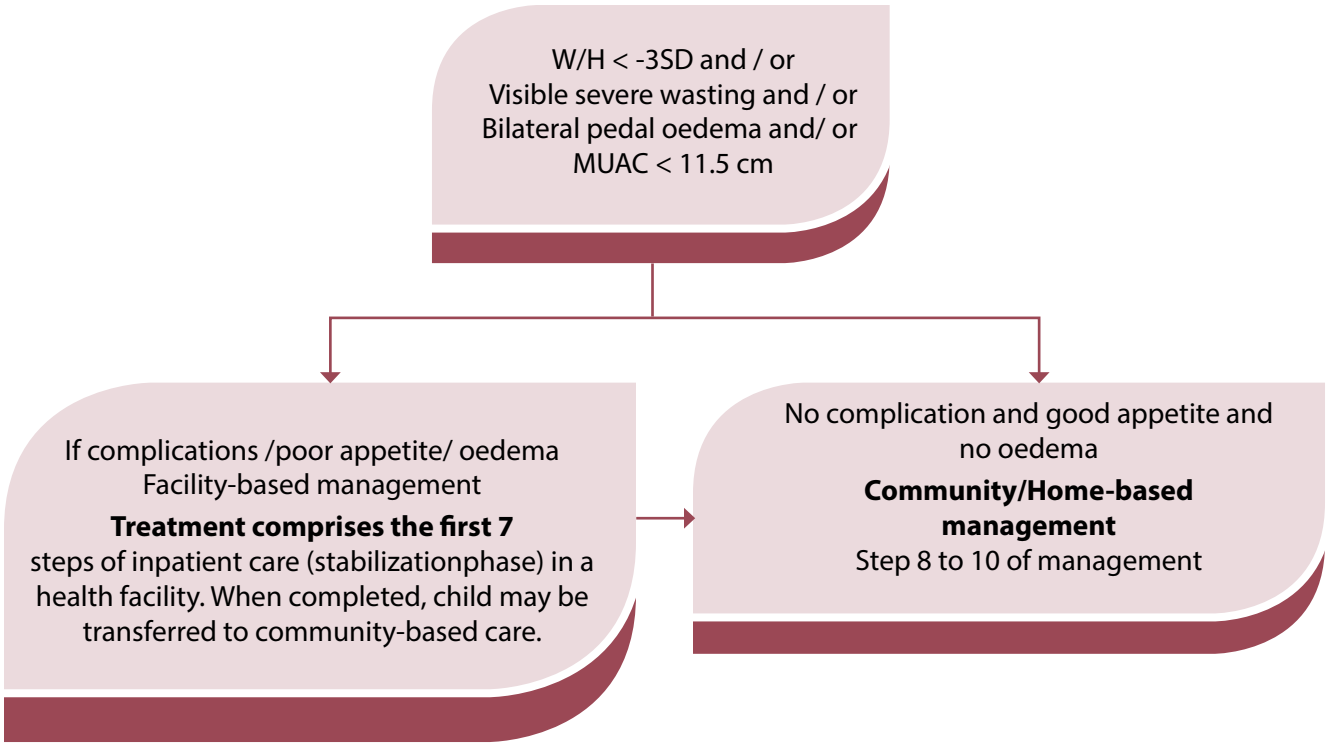


Figure 8: Criteria for Facility-Based Care

Children with following medical complications should be admitted in a Nutrition Rehabilitation centre or a health facility

- Presence of any of emergency signs
- Oedema
- Persistent vomiting
- Very weak, apathetic
- Fever (Axillary temperature > 38.5 degree Celsius)
- Children with fast breathing / chest in drawing/ cyanosis

(Fast breathing is said to be present if number of breaths per minute is 60 or more in children up-to 2 months , 50 or more in children 2 months up-to 1 year and 40 or more in children 1 year up-to 5 years)

- Extensive skin lesions, eye lesions, post-measles states
- Diarrhoea with dehydration based on history and clinical signs
- Severe anaemia
- Hypothermia (Axillary temperature <35 degree centigrade)
- Any other general sign which the clinician thinks warrants transfer to in-patient facility for 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.

Children with SAM should be admitted to special wards (eg; Nutrition Rehabilitation Centres) or specific area designated in the ward. These children have an increased risk of mortality from hypoglycaemia, hypothermia, fluid overload, and undetected infections. For this reason they need to be treated differently than children without SAM. The steps in management of children with SAM will be dealt with in the next session.

Note about low-birth-weight babies.

Low-birth-weight babies are not usually severely wasted or oedematous and so are unlikely to meet the criteria for severe malnutrition. Management of low birth-weight babies is not taught in this course.

EXERCISE-B

For the children whose details are given below write if he/she has SAM

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

2.6. Organization of care

On admission, the child with severe malnutrition should be kept in a warm area (25-30°C). Washing should be kept to a minimum, after which the child should be dried immediately.

Facilities and sufficient staff should be available to ensure correct preparation of appropriate feeds, and to carry out regular feeding during the day and night. Accurate weighing machines are needed, and a record should be kept of the feeds given and the child's weight so that progress can be monitored.

Several states have also started Nutritional Rehabilitation Centres/Malnutrition Treatment Centres for malnourished children to provide (i) Medical Care to malnourished children (ii) Timely, adequate and appropriate feeding to these children (iii) Training on preparation of low cost nutritious diet from locally available stuffs (iv) Enhancement of mothers' skills on child care and feeding (v) Special diets to severely malnourished children according to their age and condition (vi) Monitoring health and nutritional status of these children during the stay at the nutrition rehabilitation centre and (vii) Follow-up of these children after discharge. Wherever these centres are available, their services should be utilized.

2.7. Physiology of severe malnutrition

The child with severe malnutrition must be treated differently as the body physiology becomes abnormal due to reductive adaptation.

What is reductive adaptation?

The systems of the body begin to "shut down' with severe malnutrition. The systems slow down and do less in order to allow survival on limited calories. This slowing down is known as reductive adaptation.
Reductive adaptation affects treatment of the child in many ways. Some of the important implications are as follows:

1. As the child's intake is insufficient, fat stores are mobilized to provide energy. Later protein is mobilized from muscle, skin and the intestine. Energy is conserved mainly by reducing physical activity and growth and reducing basal metabolism.
2. The usual signs of infection may not be apparent as the body does not use its limited energy to respond in usual ways (such as inflammation or fever), even though most children with severe malnutrition have bacterial infections.
3. Due to reductive adaptation, children make less haemoglobin than usual. Iron that is not used for making haemoglobin is put into storage, and therefore children have 'extra' iron in the body even though they may appear anaemic.
4. Normally body uses energy for maintaining balance of potassium outside and sodium inside the cells, which is critical for maintaining correct distribution of water inside and around the cells and in the blood. As the 'pumps' maintaining this balance become slower, potassium is lost from the body while fluid may accumulate outside the cells.

Children with Severe Acute Malnutrition are at risk of death from:

- **Hypoglycaemia,** as there is less supply of glucose from the liver and muscle while at the same time, the demand for glucose is high to fight infections;
- **Hypothermia,** as Basal Metabolic Rate is reduced. At the same time they are likely to lose more heat than usual due to loss of insulating fat and a higher surface area/kg body weight;
- **Fluid overload** and cardiac failure due to changes in the functioning of the kidneys and heart; and
- **Infections,** as the body's inflammatory and immune responses slow down.

SECTION 3

INITIAL MANAGEMENT

3
SECTION

INITIAL MANAGEMENT

Learning objectives

This section will describe:

- Identifying and managing the severely malnourished child with emergency signs
- Identifying and managing the severely malnourished child with complications:
  - Hypoglycaemia Hypothermia
  - Diarrhoea/Dehydratio Infections
  - Corneal ulceration/eye problems
  - Selecting appropriate antibiotics and calculating dosages
  - Keeping a written record of initial findings and treatments

3.1. Identifying and managing the severely malnourished child with emergency signs

The focus of initial management is to prevent death while stabilizing the child. The first step is to check the child for emergency signs and provide emergency treatment as necessary.

Keep in mind the ABCD steps: Airway, Breathing, Circulation, Coma, Convulsion, and Dehydration. Make sure that the child is warm at all times.

To assess whether or not the child is breathing, there are three things you must do:

- Look: If active, talking, or crying, the child is obviously breathing. If none of these, look again to see whether the chest is moving.
- Listen: Listen for any breath sounds. Are they normal?
- Feel: Can you feel the breath at the nose or mouth of the child?

If the child is not breathing, you will need to manage the airway and support the breathing artificially by ventilating the child with a bag and mask.

3.1.1. Does the Child Show Central Cyanosis?

Cyanosis occurs when there is an abnormally low level of oxygen in the blood. This sign may be absent in a child who has severe anaemia. To assess for central cyanosis, look at the mouth and tongue. A bluish or purplish discoloration of the tongue and the inside of the mouth indicates central cyanosis.

3.1.2. Does the Child have Severe Respiratory Distress?

Observe whether the child has significant discomfort from not getting enough air into the lungs. Is there difficulty in breathing while talking, feeding or breastfeeding? Is the child breathing very fast, have severe lower chest wall in-drawing, or using the accessory muscles for breathing? Is there any abnormal noises heard when breathing?

Signs of severe respiratory distress

- Respiratory rate ≥ 70/min
- Severe lower chest in-drawing
- Use of accessory muscles of breathing
- Unable to feed due to respiratory distress
- Stridor* in a calm child

*Stridor is a harsh noise while breathing

3.1.3. Assess the circulation for signs of shock

After the airway has been assessed, assess circulation:

- Does the child have warm extremities?
- If not, is the capillary refill time longer than 3 seconds?
- Is the pulse weak and fast?

Details of assessment and management of children with circulatory problem are given in step-3.

3.1.4. Assess the child for coma and convulsion

C also represents "Coma and Convulsion".

The following signs indicate impaired neurological status: coma, lethargy, and convulsions. To assess the child's neurological status you need to know:

- Is the child in coma?
- Is the child convulsing?

Is the Child in Coma?

A child who is awake is obviously conscious and you can move to the next component of the assessment. If the child is asleep, and there is any doubt, assess the level of consciousness. Try to wake the child by talking to him/her, e.g. call his/her name loudly. A child who does not respond to this should be gently shaken. A little shake to the arm or leg should be enough to wake a sleeping child. Do not move the child's neck. If this is unsuccessful, apply a firm squeeze to the nail bed, enough to cause some pain. A child who does not wake to voice or being shaken or to pain is unconscious.

3.1.5. Assess the child for dehydration

After assessing ABC, assess for D i.e. dehydration if there is history of diarrhoea.

Emergency Signs

- Not breathing at all or gasping
- Obstructed breathing
- Central cyanosis
- Severe respiratory distress
- Shock : Cold hands and
  - Capillary refill >3 seconds and
  - Weak and fast pulse
- Coma
- Convulsions
- Diarrhoea with severe dehydration: Any two signs:
  - Lethargy
  - Sunken eyes
  - Very slow skin pinch

Chart 1: 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 service 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 for Convulsing →

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

SEVERE DEHYDRATION (ONLY WITH DIARRHOEA)

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

Diarrhoea Plus Two Signs Positve
Check for service 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.

The above flowchart shows the process of triage of sick children when they arrive at a facility.

The process of triage for children with SAM is similar; however the management of shock and severe dehydration is different for children with SAM.

3.2. Assessment of severely malnourished child

A good history and physical examination should be recorded once the child is stabilized.

Take a history concerning	On examination, look for
❖ 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) ❖ Chronic cough ❖ Loss of appetite ❖ Family circumstances (to understand the child's social background) ❖ Contact with tuberculosis ❖ Recent contact with measles ❖ Known or suspected HIV infection. ❖ Immunizations	❖ Anthropometry- weight, height/ length, mid arm circumference ❖ Oedema ❖ 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 ❖ Fever (temperature ≥ 37.5° C or ≥ 99.5° F) or hypothermia (axillary temperature <35.0° C or <95.0° F) ❖ 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).

Note: Children with vitamin A deficiency are likely to be photophobic and will keep their eyes closed. It is important to examine the eyes very gently to prevent corneal rupture.

3.2.1. Dermatosis

It is more common in children who have oedema than in wasted children. A child with dermatosis may have patches of skin that are abnormally light or dark in colour, shedding of skin in scales or sheets, and ulceration of the skin of the perineum, groin, limbs, behind the ears and in the armpits. There may be weeping lesions.

There may be a severe rash in the nappy area. Any break in the skin can let dangerous bacteria get into the body. When the skin is raw and weeping, this risk is very high.

The extent of dermatosis can be described in the following way:
+ mild: discoloration or a few rough patches of skin
+ + moderate: multiple patches on arms and/or legs

+++ severe: flaking skin, raw skin, fissures (openings in the skin) Figure 9 shows a child with severe dermatosis (raw skin & fissures). Treatment of dermatosis will be discussed in section on Daily Care.

Figure 9: **Child with Odema and Dermatosis**

3.2.2. Eye signs

Children with severe acute malnutrition may have signs of eye infection and/or vitamin A deficiency. WHO has classified Vitamin A deficiency in different stages (Table-1).

While examining the eye look for:

- Bitot's spots are superficial foamy white spots on the conjunctiva (white part of the eye).
- Conjunctival & Corneal xerosis: (dryness of conjunctiva and cornea).

Table 1. WHO Classification of Vitamin a Deficiency

XN	Night blindness
X1A	Conjunctival xerosis
X1B	Bitot's Spot
X2	Corneal xerosis
X3A	Corneal ulceration, keratomalacia(<1/3 corneal surface)
X3B	Corneal ulceration, keratomalacia(>1/3 corneal surface)
XS	Corneal Scar
XF	Xeropthalmic fundus

- Pus and inflammation (redness) - signs of eye infection.
- Corneal clouding - an opaque appearance of the cornea.
- Corneal ulceration is a break in the surface of the cornea. It is a sign of severe vitamin A deficiency. If not treated, the lens of the eye may push out and cause blindness. Corneal ulceration is an emergency and requires immediate treatment with vitamin A and atropine (to relax the eye). In the presence of corneal ulceration the child has photophobia and resists opening of eyes. One should be very gentle and careful during examination of the eye to prevent the risk of rupture and blindness. (Figure 10)

Treatment of all eye signs will be discussed in Initial Management and in Daily Care.

3.2.3 Laboratory Tests

All children with SAM admitted as inpatients should undergo the following basic investigations:

- Haemoglobin or packed cell volume in children with severe palmar pallor
- Blood glucose
- Serum electrolytes (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 counselling
- Any other specific test required based on geographical location or clinical presentation e.g. Celiac Disease , malaria etc.

3.3. Management of the severely malnourished child

The following process is essential for successful management of the severely malnourished child.

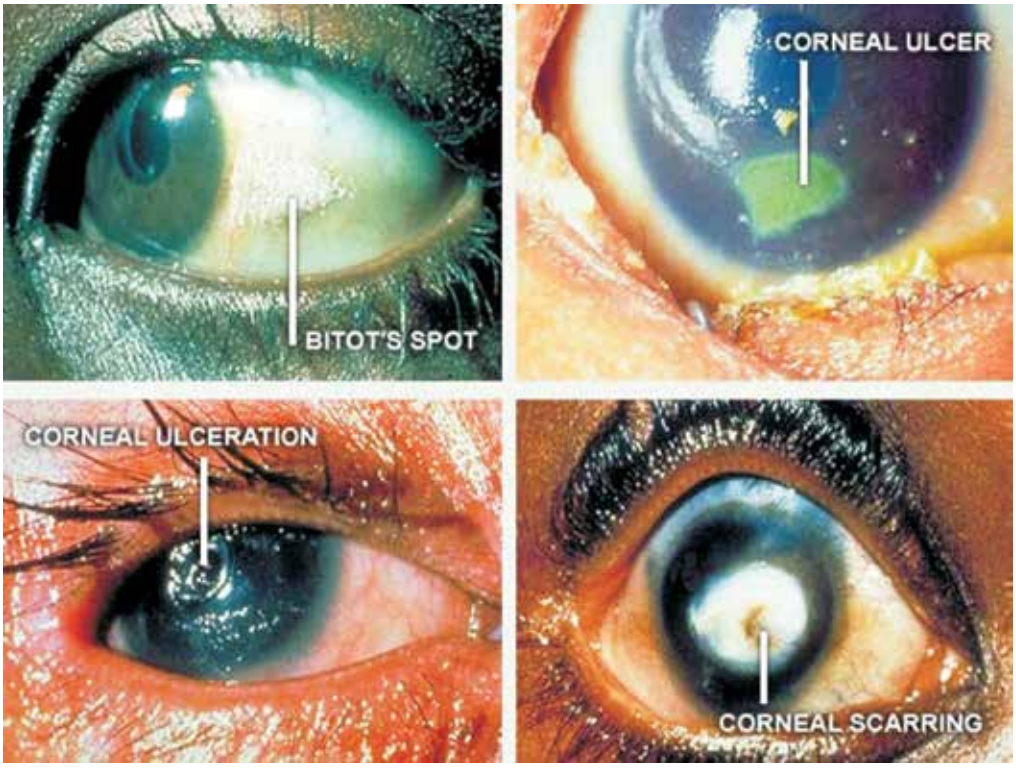


Figure 10: Vitamin a Deficiency Signs

Chart 2: 10 Stepsof Routine Care

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	non 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			

3.4. Step-1: Manage hypoglycemia

What is hypoglycaemia?

Hypoglycaemia is a low level of glucose in the blood. In severely malnourished children, blood sugar level less than <54 mg/dl is considered as hypoglycaemia. The hypoglycaemic child is usually hypothermic (low temperature) as well. Other signs of hypoglycaemia include lethargy, limpness, and loss of consciousness. Sweating and pallor may not occur in malnourished children with hypoglycaemia.

Malnourished children may arrive at the hospital hypoglycaemic if they have been vomiting, if they have been too sick to eat, or if they have had a long journey without food. Children may develop hypoglycaemia in the hospital if they are kept waiting for admission, or if they are not fed regularly. Hypoglycaemia and hypothermia are also signs that the child has a serious infection.

If hypoglycaemia is suspected, check blood glucose level immediately. Use a glucometer if it is available. If glucometer is not available and clinical symptoms are suggestive, assume that the child has hypoglycaemia.

Treat hypoglycaemia

If blood glucose is low 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 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 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. The recipe for preparation of Starter diet is given in following section.

As hypoglycemia and hypothermia coexist, make sure to keep child warm (as described in step-2). Administer antibiotics as hypoglycaemia may be a feature of underlying infection (as described in step-5).

Prevention

If the child's blood glucose is not low, begin feeding the child with Starter diet right away. Feed the child every 2 hours, throughout the day and night.

_____

_____

_____

_____

_____

3.5 Step-2: Manage hypothermia

What is hypothermia?

Hypothermia is low body temperature. A severely malnourished child is hypothermic if the axillary temperature is below 35°C or rectal temperature is below 35.5°C (95.9° F) .

Take temperature

If possible, use a low-reading thermometer (range 29°C - 42°C). If no low-reading thermometer is available, use a normal thermometer. With a normal thermometer, assume that the child has hypothermia if the mercury does not move.

Steps for using an axillary thermometer

- Wipe thermometer and dry it.
- Shake thermometer down to below 35°C.
- Place thermometer under armpit. (The bulb of the thermometer should be in the apex of the axilla parallel to the body, holding the arm close to the body).
- Keep in place for 3 minutes.
- Record the temperature.

Actively re-warm the hypothermic child

If the temperature is below 35 degree centigrade, use one of the following re-warming techniques:

- Have the mother hold the child with skin to skin contact when possible (kangaroo technique), and cover both of them. Keep the child's head covered.
- Provide heat with an overhead warmer, an incandescent lamp or radiant heater. Do not point the heater directly at the child and avoid contact with hot water bottles, so as to prevent burns. Indirect warming with warm pads could be attempted.
- Monitor temperature every 30 minutes during rewarming if a radiant warmer is used. Stop re-warming when the child's temperature becomes normal.

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

If the rectal temperature <32°C, child has severe hypothermia and should be treated as follows:

- 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).
- Start intravenous antibiotics.
- Rewarm: Provide heat using radiation (overhead warmer), or conduction (skin contact) or convection (heat convector). Avoid rapid rewarming as this may lead to dysequilibrium.
- Give warm feeds immediately, if clinical condition allows the child to take orally, else administer the feeds through a naso/orogastric tube.

Start maintenance IV fluids (prewarmed), if there is feed intolerance or contraindication for nasogastric feeding.

- Rehydrate using warm fluids immediately, when there is a history of diarrhoea or there is evidence of dehydration.

General measures to prevent hypothermia

The following measures are important for all severely malnourished children:

- Feed immediately
- Cover the child, including his head.
- Move the child away from windows, secure windows tightly to prevent draughts.
- Maintain room temperature of 25 - 30 degree Centugrade (77 - 86 degree F).
- Keep the child covered especially at night.
- Warm your hands before touching the child.
- Avoid leaving the child uncovered while being examined, weighed, etc.
- Promptly change wet clothes or bedding.
- Dry the child thoroughly after sponging or bathing.
- Do not give cold intravenous fluids.

If it is not possible to warm the room, let the child sleep snuggled up to the mother, and cover them with a blanket.

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?

_____

_____

2. 14 months Sunder has been brought to hospital with lethargy and unconsciousness.

   He weighs 5.6 kg and his length is 72 cms. His mid arm circumference is 11.6 cm and there is no pedal oedema. His blood sugar is 46 mg/dl.

2.1 Do you think Sunder has SAM?

_____

2.2 Is Sunder hypoglycemic?

_____

2.3 What immediate treatment will you give to Sunder?

_____

3.6 Step-3: Manage dehydration

It is difficult to determine dehydration status in a severely malnourished child, as the usual signs of dehydration (such as lethargy, sunken eyes) may be present in these children all of the time, whether or not they are dehydrated.

3.6.1. Assessment of Dehydration in children without SAM is based on following signs which are quite reliable and easily elicited.

Signs of Dehydration

- **Lethargy:** A lethargic child is not awake and alert when s/he should be. S/he is drowsy and does not show interest in what is happening around him.
- Restless, irritable: The child is restless and irritable all the time, or whenever s/he is touched or handled.
- Sunken eyes: Look for sunken eyes. Ask the mother if the child's eyes appear depressed as compared to eyes before onset of diarrhoea.
- Thirsty: See if the child reaches out for the cup when you offer fluids and when it is taken away, the child wants more.

Skin pinch goes back slowly: Using your thumb and first finger, pinch the skin on the child's abdomen halfway between the umbilicus and the side of the abdomen. Place your hand so that the fold of skin will be in a line (up and down) the child's body. Firmly pick up all the layers of skin and tissue under them. Pinch the skin for one second and then release. If the skin stays folded for a brief time after you release it, the skin pinch goes back slowly. If the skin pinch takes more than 2 seconds to return back then it is classified as very slow.

Figure 11: **Checking Skin Pinch**

Assessment and classification of dehydration:

In any two of the following signs are present ❖ Lethargic or unconscious ❖ Sunken eyes ❖ Not able to drink or drinking poorly ❖ Skin pinch goes back very slowly.	The child has **SEVERE DEHYDRATION**
In any two of the following signs are present: ❖ Restless, irritable ❖ Sunken eyes ❖ Drinks eagerly, thirsty Skin ❖ pinch goes back slowly.	The child has **SOME DEHYDRATION**

3.6.2 Diagnosis of dehydration in severely malnourished children

In children with SAM all the classical signs of dehydration are unreliable. Thus:

- n children who are severely wasted skin normally lies in folds and is inelastic so that the "skin pinch" test is usually positive without there being any dehydration.
- In children who are severely wasted, eyes are normally sunken without there being any dehydration.

Therefore, the main diagnosis comes from the HISTORY rather than from the examination.

There needs to be:

- A definite history of significant recent fluid loss - usually diarrhoea which is clearly like water (not just soft or mucus) and frequent with a sudden onset within the past few hours or days.
- There should also be a HISTORY of a recent CHANGE in the child's appearance.
- If the eyes are sunken then the mother must say that the eyes have changed to become sunken since the diarrhoea started.

3.6.3 Treatment of dehydration in the children with SAM without shock

If the child has had watery diarrhoea or vomiting, assume dehydration and give ORS. WHO recommends use of Rehydration Solution for Malnourished Children, which is not available commercially. Use either WHO-low Osmolarity ORS with potassium supplements (15 ml. of potassium chloride syrup added to one litre ORS) as mentioned in step-4 or Rehydration Solution for Malnourished Children prepared from WHO-low Osmolarity ORS (Annexure-13).

Calculate amount of ORS to give

Give ORS as follows, in amounts based on the child's weight:

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

** The amount offered in this range should be based on the child's willingness to drink and the amount of ongoing losses in the stool. Starter (diet is given in alternate hours during this period until the child is rehydrated.*

BEFORE starting any rehydration treatment:

- WEIGH the child (The weight should be taken on admission).
- MARK the edge of the liver and the costal margin on the skin.
- RECORD the respiration rate.

In addition the following should be recorded:

- Pulse rate.
- The capillary refill time .

The malnourished child is managed preferably by:

- Clinical signs of improvement and,
- Clinical signs of over-hydration.

If the mother is able to give the ORS, she should be taught to give it slowly. A naso/orogastric (NG) tube should be used for giving ORS at the same rate in weak or exhausted children, and in those who vomit, have fast breathing, or painful mouth sores.

IV fluids should not be used to treat dehydration (except in case of shock). When fluids are given orally, the child's thirst helps to regulate the amount given and avoids water overload.

Monitor the child who is taking ORS

Monitor the child's progress every half hour for the first two hours; then monitor hourly, i.e., every time the child takes Starter diet or ORS.

Signs to check

- Respiratory rate- Count for a full minute.
- Pulse rate- Count for 30 seconds and multiply by 2.
- Urine frequency - Ask: Has the child urinated since last checked?
- Stool or vomit frequency - Ask: Has the child had a stool or vomited since last checked?
- Signs of hydration - Is the child less lethargic or irritable? Are the eyes less sunken? Does skin pinch go back faster?

Note these signs on the case record form; also record the amount of ORS given.

Signs of improving hydration status
Fewer or less pronounced signs of dehydration, for example

- Less thirsty
- Skin pinch not as slow
- Less lethargic

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

Signs of over hydration
Stop ORS if any of the following signs appear:

- 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 as soon as possible as **the child has 3 or more of the following signs** of improved hydration status:

- Child no longer thirsty
- Less lethargic
- Slowing of respiratory and pulse rates from previous high rate
- Skin pinch less slow
- Tears

After rehydration, offer ORS after each loose stool

When the child has 3 or more signs of improving hydration (see above), stop giving ORS routinely in alternate hours. However, watery diarrhoea may continue after the child is rehydrated. If diarrhoea continues, give ORS after each loose stool to replace stool losses and prevent dehydration:

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

Breast feeding is continued with increased frequency if the child is breastfed.
If there is weight gain and deterioration of the child's condition with the re-hydration therapy, or no improvement in the mood and look of the child or reversal of the clinical signs:

- Then the diagnosis of dehydration was probably wrong.
- Change to Starter diet or alternate Starter diet and ORS.

Resolution of the signs of dehydration:

- Stop all re-hydration treatment and start the child on Starter diet.

During re-hydration breastfeeding should not be interrupted. Begin to give Starter diet as soon as possible, orally or by naso-gastric tube. ORS and Starter diet can be given in alternate hours if there is still some dehydration and continuing diarrhoea. Introduction of Starter diet is usually achieved within 2-3 hours of starting re-hydration. The management of persistent and continuing diarrhoea is given in Annexure 14.

EXERCISE-D

Fill in the blanks in the following case studies:

1. Rajiv has watery diarrhoea and is severely malnourished. He weighs 6.0 kilograms. He should be given _____ ml ORS every _____ minutes for _____ hours. Then he should be given _____ ml ORS in _____ hours for up to _____ hours. In the alternate hours during this same period, _____ 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 _____ hours, she should be given ORS and Starter diet in alternate hours. The amount of ORS to offer is _____ ml per hour.

3. After the first two hours of ORS, a child is offered 5-10 ml/kg of ORS in alternate hours. What are the two factors that affect how much to offer in this range?

_____

_____

_____

3.6.3 Manage a severely acute malnourished child with shock

Shock is a dangerous condition with severe weakness, lethargy, or unconsciousness, cold extremities, and fast, weak pulse. The severely acute malnourished child is considered to have shock if he/she:

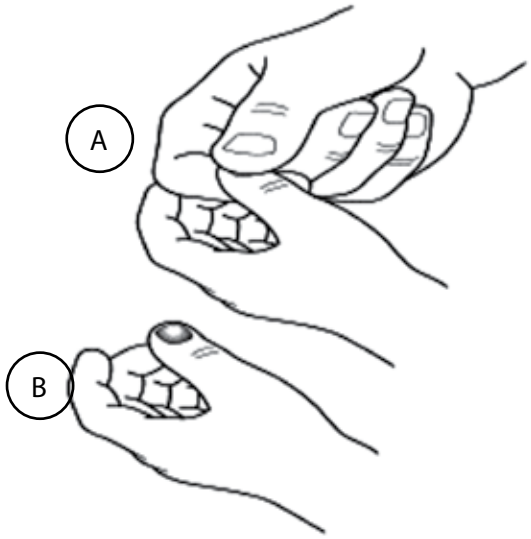
- Has cold hands with
- Slow capillary refill (longer than 3 seconds), AND
- Weak and fast pulse

For a child 2 months up to 12 months of age, a fast pulse is 160 beats or more per minute.

For a child 12 months to 5 years of age, a fast pulse is 140 beats or more per minute.

To check capillary refill:

- Press the nail of the thumb or big toe for 3 seconds to produce blanching of the nail bed.
- Count the seconds from release until return of the pink color. If it takes longer than 3 seconds, capillary refill is slow.



A. Applying pressure to the nall bed for 3 seconds

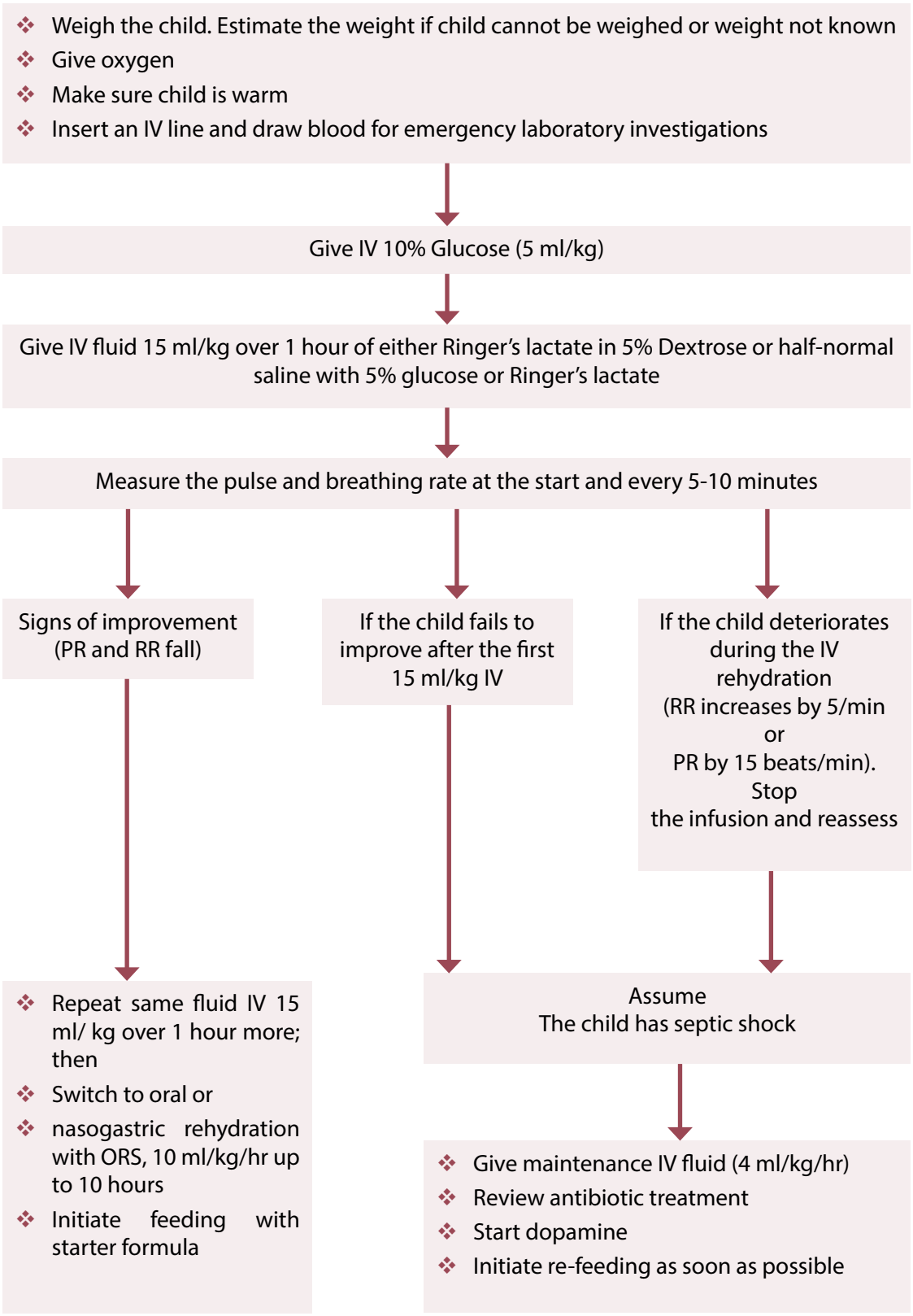
B. Check the time to the return of the pink colour after releasing the pressure

Figure 12: **Checking Capillary Refill**

The common causes of shock in children with SAM are diarrhoea with severe dehydration and septic shock.

Chart 3 : Management of Shock in Children with SAM

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



Treatment of Shock

The management of shock in child with severe acute malnutrition is given in Chart 3. Broad spectrum antibiotic should be administered immediately to all SAM with septic shock (Table-2). Packed RBCs 10ml/kg should be given over 4-6 hours if Hb is less than 4 gm/dl or active bleeding. If there is no improvement with fluid bolus start dopamine at 10µg/kg/min. If there is no improvement in next 24-48 hours upgrade antibiotics.

How to give Dopamine (By infusion pump)

- Amount of dopamine (mcg) to be added = weight in kg x 6
- To convert this dose into amount to ml of dopamine divide by 40 (1 ml of dopamine = 40 mg of dopamine)
- Add this amount of dopamine (ml) to make 10 ml of total fluid.
- 0.1 ml/hour of this fluid gives 1 mcg/kg/minute.
- To give 10 mcg/kg/minute, give infusion at the rate of 1 ml/hr

Example : Giving 10 mcg/kg/min for a 5 kg child

- Amount of dopamine to be added = 5 x 6 = 30 mcg
- Convert this dose into amount to ml of dopamine = 30/40 = 0.75 ml
- Add 0.75 ml to 9.25 ml of fluid to make 10 ml of total fluid
- Administering 1 ml/hr of this fluid by infusion pump gives 10 mcg/kg/min of dopamine.

EXERCISE-E

In this exercise you are provided clinical information for two children. You are required to answer questions about the appropriate treatment in each case. Use your training manual for reference.

Case 1 - Tina: *Tina is an 18-month-old girl who was 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 estimation showed 50 mg/dl. Her weight is 6.5 kg and length is 81 cms.*

1(a) What is Tina's weight-for-height SD-score?

_____

1(b) Should Tina be admitted to the severe malnutrition ward? Why or why not?

_____

1(c) Is Tina hypothermic?

_____

1(d) Is Tina hypoglycaemic?

_____

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?

_____

1(f) What two immediate steps should be taken based on the above findings?

_____

_____

Case 2 - 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 Capillary refill time is less than 3 seconds. Her blood sugar is 46 mg/dl.

2(a) What should Kalpana be given immediately?

_____

How should it be given?

_____

2 (b) When should Kalpana begin taking Starter diet?

_____

2(c) How often and how much should she be fed?

_____

_____

3.7. Step-4: 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% which has 2 mmol/ml) 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.

3.8. Step-5: Treat Infection: Give antibiotics

The body defence system (immune function) does not work properly in children with severe acute malnutrition. As a result, the usual signs of infection, such as fever, are often absent, and infections remain hidden.

The important principle is that all severely malnourished children should be given appropriate antibiotics as part of the initial treatment

Select antibiotics and prescribe regimen (Table-2)

Selection of antibiotics depends on the presence or absence of complications.

- If the child appears to have no complications give Oral amoxicillin 15mg/kg 8-hourly for 5 days
- If child has complications (septic shock, hypoglycaemia, hypothermia, skin infections or dermatosis (+++ with raw skin/fissures, respiratory or urinary tract infections, or lethargic/sick appearance) select antibiotic as shown in the table below:

Table 2: Antibiotics for Severely Malnourished Children

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. 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 8 hrly 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. The following guideline can be followed in general:

- 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.

If the child is HIV infected or exposed, cotrimoxazole prophylaxis (5 mg/kg/day of trimethoprim) should continue. If Pneumocystis Carinii pneumonia (PCP) is suspected, it should be treated with appropriate dosages of cotrimoxazole.

Treat associated conditions like malaria, tuberculosis, amoebiasis or HIV as per the national guidelines.

EXERCISE-F

Case - Anu

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

a. What antibiotics should Anu be given now?

_____

b. By what possible routes may antibiotics be given?

_____

c. Given Anu's body weight, determine the dose of each antibiotic.

_____

3.9. Give emergency eye care for corneal ulceration

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

Vitamin A Oral Dose 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 Days 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 children with severe anorexia, oedematous malnutrition, or septic shock. For oral administration, an oil-based formulation is preferred. For IM treatment, only water-based formulations and half of oral dose should be used.
- In case there is corneal ulceration, instill one drop atropine (1%) into the affected eye(s) to relax the eye and prevent the lens from pushing out. Give antibiotic eye ointment. Bandaging may be needed but can wait. If the child falls asleep with his eyes open; close them gently to protect them. Continuing treatment of corneal ulceration is described in Daily Care.

  All severely malnourished children need vitamin A on Day 1, and many need additional eye care, but treatment can wait until later in the day. Treatment of various eye signs is described in Daily Care.

3.10. STEP 6: Give micronutrients

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

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

Annexure 12 provides a recipe for a combined electrolyte/mineral solution. Adding 20 ml of this solution to 1 litre of feed or ORS will supply the zinc and copper needed, as well as electrolytes (potassium and magnesium). If a combined electrolyte/mineral solution is available, vitamin A, multivitamin supplement, folic acid and iron need to be given separately. The management of severe anaemia in children with SAM is as given in Annexure 15.

If a Combined Mineral Vitamin (CMV) mix for severe acute malnutrition is available commercially then CMV mix can replace the electrolyte mineral solution, multivitamin and folic acid supplements mentioned in steps 4 and 6. However vitamin A and folic acid supplements on day 1, and iron daily after weight gain has started will be needed.

4

SECTION

INITIAL FEEDING

4
SECTION

INITIAL FEEDING

Learning Objectives

This section of the module will describe the following:

- Preparing Starter diet
- Planning feeding for a 24-hour period
- Measuring and giving feeds to children
- Recording intake and output
- Planning feeding for a ward

The guideline in this section applies to children aged 6-59 months. For infants aged <6 months follow specific guideline given in Section 8.

Feeding is a critical part of managing severe malnutrition; however feeding must be started cautiously, in frequent, small amounts. Feeding should begin as soon as possible with Starter diet, the "starter" formula is used until the child is stabilized. Starter diet is specially made to meet the child's needs without overwhelming the body's systems at this early stage of treatment. Starter diet contains 75 kcal and 0.9 g protein per 100 ml. It is low in protein and sodium and high in carbohydrate, which is more easily handled by the child and provides much-needed glucose.

When the child is stabilized (usually after 2 -7 days), Catch-up diet is used to rebuild wasted tissues. Catch-up diet contains more calories and protein: 100 kcal and 2.9 g protein per 100 ml.

This section of the module will focus on preparing the feeds, planning feeding, and giving the feeds according to plan.

4.1. Prepare Starter diet

Prepare Starter diet as described below. The choice of recipe depends on the availability of ingredients, particularly the type of milk available, and the availability of cooking facilities.

The principle behind the recipes is to provide the energy and protein needed for stabilization and catch-up.

Tips for correct preparation (all recipes)

- Use a digital dietary scale so that you are able to measure accurately. 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.

Table 3: Recipe for Starter Diets*

Contents (per 1000 ml)	Starter diet	Starter diet (Cereal based)
Fresh Cow's milk or equivalent milk		
(e.g. toned dairy milk) (ml)	300	300
Sugar (g)	100	70
Cereal flour:		
Powdered puffed rice (g)	--	35
Vegetable oil (ml)	20	20

Water: make up to (ml)***	1000	1000
Energy (kcal/100 mL)	75	75
Protein (g/100 mL)	0.9	1.1
Lactose (g/100 mL)	1.2	1.2

** Adapted from IAP Guidelines 2006.*
**** Important note about adding water: Add just the amount of water needed to make 1000 ml of Starter diet. Do not simply add 1000 ml of water, as this will make the preparation too dilute. A mark for 1000 ml should be made on the mixing container, so that water can be added to the other ingredients up to this mark.*

- Be sure that the scale is set at zero before weighing.
- Wash hands before measuring ingredients.
- If using scoops for measurement, level ingredients with a knife to ensure consistent measurement. Be aware that equal weights of puffed rice powder and sugar do not occupy the same volume; puffed rice powder is a bigger volume. Therefore, one must either weigh these ingredients or know the corresponding volume for each.

The cereal based low lactose (low osmolarity) diets are recommended as starter diets for children with persistent diarrhoea. Children with persistent diarrhoea, who continue to have diarrhoea on the low lactose diets, should be given lactose free diets.

Table 4: Recipe for Starter Lactose free Diets

Contents per 1000 ml	Amount
Eggs White* (g)	50
Glucose (g)	35
Cereal Flour: Powdered puffed rice** (g)	70
Vegetable oil (g)	40
Water to make(ml)	1000
Energy (kcal /100ml)	75
Protein (g/100ml)	1
Lactose (g/100ml)	-

** Egg white may be replaced by 30 gm of chicken. Whole egg could be used and the vegetable oil may be adjusted accordingly.*
*** Other proteins that can be used are ground nut, soy or locally used pulses: however, they can increase the viscosity of the diet and require cooking.*

How to prepare the feed?

- Wash hands before preparing feeds. Use clean utensils and measures.
- Diets without cereal do not need cooking. If powdered puffed rice is used as a cereal, it also does not need cooking, as it is pre-cooked. Take an appropriate sized container. Add the desired amount of sugar and oil to powdered puffed rice and mix. Add the milk and water to prepare the feed.
- Mix oil well so that it does not separate out. Oil is a vital source of energy; if oil floats to the top of the mixture, there is a risk that some children will get too much and others too little. If possible, use an electric blender to thoroughly mix the oil. Otherwise, use a strong rotary whisk or balloon whisk. Use a long handled whisk so that your hands do not dip into the formula while whisking.
- Egg cereal diets: Whip the egg white well. Add puffed rice powder to the whipped egg, glucose, and oil and mix well. Add boiling water to the mixture and mix rapidly to avoid clumping.
- Chicken cereal diets: Cook the chicken and puree it after removing the bones. Add puffed rice powder and add boiling water to the required amount of chicken puree. Add oil and sugar and mix rapidly to avoid clumping.

4.2. Feed the child with Starter diet

(i) Determine frequency of feeds

On the first day, feed the child a small amount of Starter diet every 2 hours (12 feeds in 24 hours, including through the night). If the child is hypoglycaemic, give ¼ of the 2-hourly amount every half-hour for the first 2 hours or until the child's blood glucose is at least 54 mg/dl.

Night feeds are extremely important. Many children die from hypoglycemia due to missed feeds at night. Children must be awakened for these feeds. After the first day, increase the volume per feed gradually so that the child's system is not overwhelmed. The child will gradually be able to take larger, less frequent feeds (every 3 hours or every 4 hours).

(ii) Determine amount of Starter diet needed per feed

Given the child's starting weight and the frequency of feeding, use the reference table to look up the amount needed per feed.

On the Starter diet Reference Card, the required daily amount has been divided by the number of feeds to show the amount needed per feed.

If the child has severe (+++) oedema, his weight will not be a true weight; the child's weight may be 30% higher due to excess fluid. To compensate, the child with severe oedema should be given only 100 ml/kg/day of Starter diet.

Tips for using the Starter diet Reference Card

- Note that children's weights listed on the Starter (diet Reference Card are all in even digits (2.0 kg, 2.2 kg, 2.4 kg, etc.). If a child's weight is between these (for example, if the
- weight is 2.1 kg or 2.3 kg), use the amount of Starter diet given for the next lower weight.
- While the child is on Starter diet, keep using the admission weight to determine feeding amounts even if the child's weight changes. (The weight is not expected to increase on Starter diet).
- If the child starts with severe oedema, continue using the Starter diet table for severe oedema for the entire time that the child is on Starter diet. Also continue using the child's starting weight to determine the amount of Starter diet, even when the oedema (and weight) decreases. The volume per feed on the chart is already based on the child's estimated true weight.

Example of monitoring sheet- Daily care

Days in Hospital	1	2	3	4	5	6	7	8	9
Date	4/6	5/6	6/6						
Daily weight(kg)	4.4	4.2	4.0						
Weight gain(gm/kg) Calculate daily after starting Catch-up diet									
Grade of oedema (0/+/++/+++)	+	+	0						
Diarrhoea/ Vomiting	D	D	0						
0/D/V									
Feed Plan [Starter	Starter	Starter	Starter						
diet/Catch-up									
diet]	diet	diet	diet						
# feeds/daily	12	8	6						
Total volume taken	570	560	560						
Antibiotics	A/G	A/G	A/G						

(iii) Record the child's 24 hour feeding plan

Each child's feeding plan should be recorded on a 24-Hour Food Intake Chart. A blank copy of a 24-Hour Food Intake Chart is provided in Annexure- 5 of this module. At the top of the 24-Hour Food Intake Chart, record the date, the type of feed to be given, the number of feeds per day, amount to give per feed, and the total to give for the day. The details of each feed will be recorded on this form throughout the day

(iv) Feed the child Starter diet orally, or by NG tube if necessary

Oral feeding

It is best to feed the child with a cup (and spoon, if needed). Encourage the child to finish the feed. It may be necessary to feed a very weak child with a nasogatric tube. Do not use a feeding bottle. Children with SAM have weak muscles and swallow slowly. This makes them prone to develop aspiration pneumonia.

It takes skill to feed a very weak child, so nursing staff should do this task at first if possible. Mothers may help with feeding after the child becomes stronger and more willing to eat. **Never leave the child alone to feed.** Feeding the child in mother's lap when child is sitting straight is better. Catch dribbles by holding a saucer under the cup. The saucer will allow feeding more quickly without worrying about spilling. At the end of the feed, give the child the amount caught in the saucer. The child should never be force fed, have his/her nose pinched or lie back and have the milk poured into the mouth. The meals for the caregivers should not be taken beside the patient. It is almost impossible to stop the child demanding some of the caregiver's meal.

Encourage breastfeeding on demand between formula feeds. Ensure that the child still gets the required feeds of Starter (diet even if breastfeeding.

4.3. Feeding children who have diarrhoea and vomiting

If the child has continuing watery diarrhoea after he has been rehydrated, offer ORS between feeds to replace losses from stools. As a guide, children under 2 years should be given 50 ml of ORS after each loose stool, while older children should be given 100 ml. The amount given in this range should be based on the child's willingness to drink and the amount of ongoing losses in the stool. If the child vomits during or after a feed, estimate the amount vomited and offer that amount of feed again. If the child keeps vomiting, offer half the amount of feed twice as often. For example, if the child is supposed to take 40 ml of Starter diet every 2 hours, offer half that amount (20 ml) every hour until vomiting stops.

4.4. Nasogastric (NG) Orogastric feeding

It may be necessary to use a nasogastric (NG) tube if the child is very weak, has mouth ulcers that prevent drinking, or if the child cannot take enough Starter diet by mouth. The minimum acceptable amount for the child to take is 80% of the amount offered. At each feed, offer the Starter diet orally first. Use an NG tube if the child does not take 80% of the feed (i.e., leaves more than 20%) for 2 or 3 consecutive feeds.

NG feeding should be done by experienced staff. The NG tube should be checked every time before administrative feed. Change the tube if blocked. Do not plunge Starter diet through the NG tube; let it drip in, or use gentle pressure.

Abdominal distension can occur with oral or NG feeding, but it is more likely with NG feeding.

Remove the NG tube when the child takes:

- 80% of the day's amount orally; or
- Two consecutive feeds fully by mouth.

Exception: If a child takes two consecutive feeds fully by mouth during the night, wait until morning to remove the NG tube, just in case it is needed again in the night.

4.5. Record intake and output on a 24-Hour Food Intake Chart

Amount of offered feeds and feed taken should be recorded on 24 hour food intake chart. See instructions for filling the chart in Annexure 5.

EXAMPLE OF COMPLETED 24 HOURS FOOD INTAKE CHART

Name: ABCD Hospital, ID Number: A 406, Admission wt (kg): 3.2 kg, Today's wt (kg): 3.2 kg
Date: 4/06/07 Type of Feed: Starter diet Give: 12 Feeds of 35 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	-		
Total			200	155	10	0

Total volume taken over 24 hours = amount taken orally (c) + amount taken by NG (d) - total amount vomited (e) = 345 ml

4.6. Adjust the child's feeding plan for the next day

The total amount of Starter diet given per day is based on the admission weight and does not change (if the child is rehydrated on the first day, use the rehydrated weight) for further calculation. As the child stabilizes, the child can take more at each feed, and feeds can be less frequent.

Criteria for increasing volume/decreasing frequency of feeds:

- If vomiting, lots of diarrhoea, or poor appetite, continue 2-hourly feeds.
- If little or no vomiting, modest diarrhoea (for example, less than 5 watery stools per day), and finishing most feeds, change to 3-hourly feeds.
- After a day on 3-hourly feeds: If no vomiting, less diarrhoea, and finishing most feeds, changes to 4-hourly feeds.

Compare the total amount of Starter diet taken for the day to the 80% column on the Starter diet Reference Card (Annexure 8) to confirm that the child has taken enough. If not, NG feeding may be needed. Continue to offer each feed orally first; then use an NG tube to complete the feed if the child does not take at least 80% orally.

SECTION 5

REHABILITATIVE PHASE

5
SECTION

REHABILITATIVE PHASE

All children with SAM and medical complications or poor appetite after stabilization and children without complications and good appetite will need rehabilitative care. Rehabilitative phase consists of feeding with Catch-up, daily care and involving mothers in care.

This section of the module will describe the following:

- Preparing and shifting to Catch - up diets:
- Adjusting to Catch-up diet during transition.
- Feeding freely on Catch-up diet.
- Daily care of children with SAM during rehabilitation.
- Structured play therapy.
- Involving mothers in care.

When the child is stabilized (usually after 2-7 days), "catch-up" formula or Catch-up diet is used to rebuild wasted tissues. Catch-up diet contains more calories and protein: 100 kcal and 2.9 g protein per 100 ml.

5.1. Catch-up Growth (Step-8)

5.1.1. Feed the child in transition

It may take up to 7 days, or even longer, for the child to stabilize on Starter diet. When the child has stabilized, one can begin to offer Catch-up diet, the higher calorie, higher protein "catch-up" feed intended to rebuild wasted tissues. Eventually the child will be offered Catch-up diet freely. However, it is extremely important to make the transition to free feeding on Catch-up diet gradually and monitor carefully. If transition is too rapid, heart failure may occur.

Few recipes for Catch-up diets are given in table 5 & 6.

Table 5: Recipe for Catch-Up Diet

Contents (Per 1000 ml)	Catch-up diet	Catch-up diet
Cow's milk/toned dairy milk (ml)	900	750
Sugar (g)	75	25
Vegetable oil (g)	20	20
Puffed rice (g)	--	70
Water to make (ml)	1000	1000
Energy (kcal/100 mL)	100	100
Protein (g/100 mL)	2.9	2.9
Lactose (g/100 mL)	4.2	3

Table 6: Recipe for Low Lactose Catch-Up Diet

Contents (Per 1000 ml)	Egg based
Milk (cow's milk or toned dairy milk (ml)	250
Egg white* (g)	120
Vegetable oil (g)	40
Cereal Flour: Powdered Puffed rice (g)	120
Energy (kcal/100 mL)	100
Protein (g/100 mL)	2.9
Lactose (g/100 mL)	1

** Egg white may be replaced by 72g of chicken.*

(i) Recognize readiness for transition

Look for the following signs of readiness, usually after 2 – 7 days:

- Return of appetite (easily finishes 4-hourly feeds of Starter diet).
- Reduced oedema or minimal oedema.
- The child may also smile at this stage.

(ii) Begin giving Catch-up diet slowly and gradually

Transition takes 3 days, during which Catch-up diet should be given according to the following schedule:

First 48 hours (2 days): Give Catch-up diet every 4 hours in the same amount as you last gave Starter diet. Do not increase this amount for 2 days.

Then, on the 3rd day: Increase each feed by 10 ml as long as the child is finishing feeds. If the child does not finish a feed, offer the same amount at the next feed; then if feed finished, increase by 10 ml. Continue increasing the amount until some food is left after most feeds (usually when amount reaches about 30 ml/kg per feed).

If the child is breastfeeding, encourage the mother to breastfeed between feeds of Catch-up diet.

5.1.2. Feed freely with Catch-up diet

Transition usually takes 3 days. After transition, the child is in the "rehabilitation" phase and can feed freely on Catch-up diet to an upper limit of 220 kcal/kg/day. (This is equal to 220 ml/ kg/day.) Most children will consume at least 150 kcal/kg/day; any amount less than this indicates that the child is not being fed freely or is unwell.

The Catch-up diet Reference Card (Annexure 10) shows that the 150 - 220 kcal/kg/day range of intake is suitable for children of different weights up to 10 kg.

For children with persistent diarrhoea, who do not tolerate low lactose diets (Table-6), lactose free diet can be started.

To calculate the acceptable range yourself (for example, if the child weighs more than 10 kg), multiply the child's weight by 150 ml (minimum) and 220 ml (maximum); then divide each result by 6 (for 6 feeds per day).

An easier method may be to add together the feed volumes for an appropriate combination of children's weights from the card. For example, if a child weighs 13.2 kg, add the volumes shown for a 10.0 kg child plus a 3.2 kg child.

Examples

Meena weighs 6.2 kg. According to the Catch-up diet Reference Card, her feeds of Catchup diet may be in the range of 155 -230 ml.

Leena weighs 4.5 kg. Using the range for the next lower weight, 4.4 kg, Leena's feeds may be in the range of 110 - 160 ml.

The child should remain in hospital or the Nutrition Rehabilitation Centre for the first part of the rehabilitation phase. When all the criteria in the box below are fulfilled (usually 10-14 days after admission)

the child may be transferred for rehabilitative care eg; to the community care programme where these have been initiated.

Criteria for transfer to a rehabilitation care

- Eating well
- Responds to stimuli, interest in surroundings
- Minimal or No oedema No nasogastric tube, IV infusions stopped
- Gaining Weight >5 gm/kg per day for 3 successive days.

5.1.3. Feeding children 7-24 months

During rehabilitation, Catch up diet should be given every 4 hours, night and day. Transition to the rehabilitation phase involves increasing the amount of diet given at each feed by 10 ml (e.g. if the first is 60 ml, the second should be 70 ml, the third 80 ml, and so on) until the child refuses to finish the feed.

When a feed is not finished, the same amount should be offered at the next feed. If that feed is finished, the amount offered for the following feed should be increased by 10 ml. Continue this process until some food is left after most feeds. The amount being offered should then be dispensed for the child at each feed on subsequent days. The amounts of each feed offered and taken should be recorded on the feeding chart and any food not taken should be discarded; never reuse it for the next feed. During rehabilitation most children take between 150 and 220 kcal/kg per day. If intake is below 130 kcal/kg per day, the child fails to respond.

5.1.4. Feeding children over 24 months

Children over 24 months can also be successfully treated with increasing quantities of Catch up diet; it is not essential to use a different diet. However, it is appropriate to introduce solid food in older children, especially for those who want a mixed diet.

For children with persistent diarrhoea, who do not tolerate low lactose diets (Table 6), lactose free diet can be started. Semi-solid and solid foods should be added as soon as possible to prepare the child for home based foods at discharge. They should have comparable energy and protein concentrations once the catch-up diets are well tolerated. Khichri, dalia, banana, curd-rice and other culturally acceptable and locally available diets can also be offered liberally.

To avoid the effects of food substances which reduce the absorption of minerals Catch up diet should be given between feeds of the mixed diet. For example, if the mixed diet is given three times daily. Catch up diet should also be given three times daily, making six feeds a day. Water intake is not usually a problem in children over 2 years because they can ask for it when they are thirsty.

At the beginning of rehabilitation, the children should be fed every 4 hours, day and night (six feeds per 24 hours). When they are growing well and are no longer at risk of developing hypothermia or hypoglycaemia, one of the night-time feeds can be omitted making five feeds per 24 hours. This allows the child longer undisturbed sleep and makes it much easier to manage the child as a day-patient. It is also less taxing for those caring for the child.

5.1.5: Record intake / output; determine if intake is acceptable

Record each feed on the 24-Hour Food Intake Chart. To determine if daily intake is acceptable, compare the volume taken to the range given on the table on the Catch-up diet Reference Card. If the child is not taking the minimum amount, there may be a problem such as an infection, or the child may need more encouragement to eat. In general, if the child is gaining weight rapidly, he is doing well. If the child has diarrhoea but is still gaining weight, there is no need for concern, and no change is needed in the diet. By week 3 or 4, if the child is doing well, there is no need to continue using the 24-Hour Food Intake Chart. If the child is gaining weight rapidly, you may assume that he is doing well. Monitoring for danger signs is no longer needed.

5.1.6. Adjust feeding plan as necessary

During rehabilitation, the child is expected to gain weight rapidly, and the amount of Catch-up diet given should be increased as the child gains. To plan feeds for the next day:

- Use the child's current weight to determine the appropriate range of Catch-up diet each day.
- Choose a starting amount within the range. Base the starting amount on the amount taken in feeds

during the previous day. If the child finished most feeds, offer a bit more. If he did not finish most feeds, offer the same amount as the day before.

- Do not exceed the maximum in the range for the child's current weight. If the amount of Catch-up diet offered may be increased during the day, write a note to this effect on the 24-Hour Food Intake Chart. For example, "Increase by 10 ml until some left - not to exceed 175 ml". If the child is starting the day with the maximum amount allowed, write on the chart, "Do not increase".

5.1.7. Plan feeding for the ward

Until this point, this section has focused on planning feeding for the individual child. It is also important to plan feeding for the ward as a whole, so that the staff knows how much food to prepare, how much food to put in cups at each feed, etc. (Annexure 4).

(i) Determine a schedule for feeding and related activities in the ward

The ward schedule should include times for the following activities:

- Preparing feeds (as often as necessary to ensure freshness).
- Reviewing patient charts and planning feeding for the day.
- Feeding according to 2-hourly, 3-hourly, and 4-hourly plans.
- Weighing
- Bathing
- Shift changes.

Once these activities are scheduled, you will see where time for organized play and educational activities will most conveniently fit in. In general, monitoring activities (such as measuring temperature and pulse and respirations) will take place every four hours on an individual basis, before a child feeds. There is no need to include these activities on the written schedule for the ward. Individual treatments and drugs will also be given on an individual basis.

Time for preparing feeds

Based on storage capabilities, the lengths of time feed will stay fresh, and availability of kitchen staff, decide whether feeds should be prepared every 12 hours or every 24 hours. 12 hours is most common. If refrigeration is poor or if there are very many children, it may be necessary to make feeds more frequently, even for every feed. If well-refrigerated, feeds will stay fresh for 24 hours. Food must be discarded after 24 hours.

Time for review and planning

Select a time of day to review each child's past 24-Hour Food Intake Chart; plan feeding for each child (if this has not already been done during physician rounds); and compile feeding plans for each child onto a feeding chart for the entire ward.

Feeding times

Select a time of day that each "feeding day (24 hours)" will start. This is usually in the morning after totals have been done from the previous day, and a Daily Ward Feed Chart has been prepared for the new day. The time selected should be after staff have arrived and had time to prepare the food.

Plan times for 2-hourly, 3-hourly and 4-hourly feeds. At almost every hour, some children will have feeds. Ensure that no feeds occur at times of shift changes. For example, if shift changes are on the hour, plan for feeds to occur on the half-hour. Keep in mind that a few children, for example, those with hypoglycemia or continued vomiting, may be on a special half-hourly or hourly feeding schedule. Those children will need special attention to ensure the more frequent feeds are provided outside the normal schedule.

Weighing and bathing

Daily weighing will need to occur at about the same time each day, preferably one hour before or after a feed. Since the children are undressed for weighing, this is also a good time for bathing. Generally children on 2-hourly feeding schedules are new to the ward and are likely to be too ill to be bathed. Children on 3-hourly and 4-hourly schedules may be bathed when they are weighed if this is convenient.

Shift changes

Shift changes may already be fixed for your hospital, and you may need to work around them in planning your schedule. Often there are three shifts per day, with the night shift being the longest. Keep in mind that no feeding should be scheduled during a shift change. It

is best for shifts to overlap slightly so that instructions may be communicated from one shift to the next.

5.2. Daily Care

Attentive and consistent daily care will make the difference in a severely acute malnourished child's recovery. The routine of daily care in a severe malnutrition ward includes such tasks as feeding, weighing, giving antibiotics, and monitoring and recording each child's progress. Throughout a very busy day, and also through the night, the staff must be patient and caring with both the children and their parents.

Feeding tasks were described in the Feeding section. Weighing and measuring tasks were described in Principles of Care. This section will describe other aspects of daily care. You will practice tasks related to daily care during ward visits (Annexure 7).

This section and related clinical sessions will describe:

- Sensory stimulation and play therapy.
- Handling a severely acute malnourished child appropriately.
- Caring for the skin of a severely acute malnourished child.
- Giving prescribed antibiotics and other medications and supplements.
- Caring for the eyes.
- Monitoring pulse, respirations, and temperature and watching for danger signs.
- Completing and interpreting the Daily Care page.
- Preparing and maintaining a weight chart.

5.2.1. Step-9: Sensory stimulation

Severe acute malnutrition affects mental and behavioural development, which can be reversed by appropriate treatment including sensory stimulation and emotional support.

During rehabilitation provide:

- Tender loving care (smiling, laughing, patting, touching, talking, etc.).
- A cheerful stimulating environment.
- Structured play therapy for 15-30 minutes a day. The play sessions should make use of toys made of locally available discarded materials (see annexure 16).
- Physical activity as soon as child is well.
- Maternal involvement as much as possible (e.g., comforting, feeding, play) so that the special care is continued at home.

Structured play activities

Children with SAM reduce their activities, don't play or cry, doesn't complain or show normal emotions. Due to lack of interaction and play children with SAM have delayed mental and behavioural development. Play therapy is intended to develop language and motor skills aided by simple, inexpensive toys. It should take place in loving, relaxed, and stimulating environment.

In addition to informal group play, the aim should be to play with each child individually, for 15-30 minutes each day. Each play session should include language and motor activities, and activities with toys.

Various activities have been described in detail in Annexure 17.

5.2.2. Handle the child gently

Severely malnourished children must be handled very gently, especially at the beginning of their care. The severely malnourished child's body is fragile and bruises easily. The child needs all his energy to recover, so he must stay calm and not become upset. It is important to speak quietly and handle children as little as possible at first. Hold and touch children with loving care when feeding, bathing, weighing, and caring for them.

Nurses can set a good example by:

- Removing the child's clothes gently.
- Bathing the child gently.
- Talking softly to the child while giving treatments.
- Holding the child close while feeding.
- Encouraging a mother who is helping to provide care.
- Comforting a child after a painful procedure.

As the child recovers, stimulation of the child should increase. Play, physical activities, and mental and emotional stimulation become very important to the child's complete recovery. There will be more information on these activities in Involving Mothers.

5.2.3. Care for skin and bathe the child

Bathe children daily unless they are very sick. If a child is very sick, wait until the child is recovering to bathe him.

If the child does not have skin problems, or has only mild or moderate dermatosis, use regular soap for bathing.

If the child has severe (+++) dermatosis, bathe for 10 -15 min/day in 1% potassium permanganate solution. To make a 1% solution, dissolve a crystal in enough water so that the colour is slightly

purple and still transparent. Sponge the solution onto affected areas while the child is sitting in a basin. This dries the lesions, helps to prevent loss of serum and inhibits infection. Initial on the Daily Care page of the Case record when the bath is done circle "1% permanganate" if it is used. If the child has severe dermatosis but is too sick to be bathed, dab 1% potassium permanganate solution on the bad spots, and dress oozing areas with gauze to keep them clean. If potassium permanganate solution is not available, affected areas may be dabbed with gentian violet. Apply barrier cream to raw areas. Useful ointments are zinc and castor oil ointment, petroleum jelly, or paraffin gauze dressing. These help to relieve pain and prevent infection. Use a different tube of ointment for each child to avoid spreading infection.

If the diaper area becomes colonised with candida, use nystatin ointment or cream after bathing. (Candidiasis is also treated with oral fluconazole)

Leave off diapers (nappies) so the affected area can dry. Be sure to dry the child well after a bath and wrap the child warmly.

5.2.4. Give vitamin A

As mentioned in earlier section, give Vitamin A on Day 14 (besides Day 1 and 2).

5.2.5. Care for the eyes

Chloramphenicol or tetracycline eye drops are given for eye infection or possible eye infection. Atropine eye drops are used to relax the eye when there is corneal involvement (i.e., corneal clouding or ulceration). In some cases both types of eye drops may be needed.

If the child has:

1. Bitot's spots only (no other eye signs). No eye drops needed.
2. Pus or inflammation- Give chloramphenicol or tetracycline (1%) eye drops.
3. Corneal clouding or Corneal ulceration, Give both:
   - Chloramphenicol or tetracycline (1%) eye drops and
   - Atropine (1%) eye drops.

Instill drops into the affected eye(s):

- Chloramphenicol or tetracycline (1%): 1 drop, 4 times daily.
- Atropine (1%): 1 drop, 3 times daily.

If both types of drops are needed, they may be given at the same time for convenience. For example, give tetracycline 4 times daily, and at 3 of those times also give atropine. Continue drops for at least 7 days and until all eye signs are gone. Use special care and be gentle in examining the eyes and instilling eye drops. To avoid spreading infection, use a separate dropper and bottle for each child. Also be sure to wash hands before and after treating each child.

The affected eye(s) should also be bandaged for 3-5 days until inflammation and irritation subside. Use eye pads soaked in 0.9% saline solution, held in place with gauze bandages. The damp pads and bandages will cool the soreness, prevent the child's scratching his eyes, and promote healing. Change pads and bandages whenever drops are given.

To bandage the eyes:

- Wash hands.
- Soak eye pads with 0.9% saline solution.
- Place a pad over each affected eye.
- Wrap a gauze bandage over the pads and around the head (not too tight, just tightly enough to hold in place).

Some severely malnourished children sleep with their eyes open. Nurses should gently close the child's eyes while sleeping to prevent abrasion.

EXERCISE-G

In this exercise you will decide the treatment for children with various eye signs. For each child, determine how many doses of vitamin A are needed and what kind of eye drops are needed.

1. Rani has corneal clouding. She has not had a dose of vitamin A in the last month.

On what days should this child receive vitamin A? What eye drops should be given, if any?

_____

2. Arun has a Bitot's spot and inflammation. He has not had a dose of vitamin A in the last month.

On what days should this child receive vitamin A? What eye drops should be given, if any?

_____

5.2.6. Recognize danger signs

Check vital signs

The following increases in pulse and respiratory rate should be confirmed in order to determine if there is problem:

- If pulse increases by 15 or more beats per minute, recheck and confirm in 30 minutes.*
- If respiratory rate increases by 5 or more breaths per minute, recheck and confirm in 30 minutes.*

* If on IV fluids, confirm in 10 minutes and watch closely.

If the above increases in pulse AND respiratory rates are BOTH confirmed, they are a danger sign. Together, these increases suggest an infection, or heart failure from over hydration due to feeding or rehydrating too fast. Stop feeds and ORS, and do complete evaluation.

Summary of Danger Signs Related to Pulse, Respiration, and Temperature		
	Danger Signs:	Suggests:
Pulse and Respirations	Confirmed increase in pulse rate of 15 or more beats per minute , along with confirmed increase in respiratory rate of 5 or more breaths per minute	Infection or Heart failure (possibly from over hydration due to feeding or rehydrating too fast)
Respirations only	Fast breathing: ❖ 50 breaths / minute or more in child ❖ 2 months up to 12 months old ❖ 40 breaths / minute or more in child ❖ 12 months up to 5 years	Pneumonia
Temperature	Axillary temperature	Infection
	> 38 degree centigrade or <36 degree centigrade	Hypothermia (possibly due to infection, or child being uncovered)

Other danger signs

In addition to watching for increasing pulse or respirations and changes in temperature, watch for danger signs such as:

- Anorexia (loss of appetite)
- Change in mental state (e.g. becomes lethargic)
- Jaundice (yellowish skin or eyes)
- Cyanosis (tongue/lips turning blue from lack of oxygen)
- Difficult breathing
- Difficulty feeding or waking (drowsy)
- Abdominal distension

- Recent onset oedema
- Large weight changes
- Increased vomiting
- Petechiae (bruising)

Watch carefully any child with an infection such as pneumonia or sepsis, ear infection, or UTI. Keep children with infections near the nurses' station so that they can be easily watched. If a child has diarrhoea or a rash, keep the child separate from the other children, if possible. Take special care with hand washing after handling these children.

5.2.7. Provide continuing care at night

Many deaths in severely malnourished children occur at night because a feed is omitted or the child becomes uncovered and cold. It is extremely important that enough staff are assigned to work at night, and that they are properly trained.

Night nursing staff must:

- Keep each child covered to prevent hypothermia.
- Feed each child according to schedule during the night (at first this will be every 2 hours). This will involve gently waking the child to feed.
- Take 4-hourly measurements of pulse, respirations, and temperature.
- Watch carefully for danger signs and call a physician if necessary.

The following questions relate to the example of the Monitoring Record on the opposite page. The child monitored is 2 years old.

Weigh the child daily and maintain weight chart

How to weigh the child was described in Principles of Care. Remember to weigh the child at about the same time each day, about one hour before or after a feed.

After weighing the child each day, record the child's weight on the Daily Care chart. Then plot the child's weight on the Weight Chart (Annexure 6). The Weight Chart will visually show the child's progress towards discharge weight, any loss of weight due to oedema, or failure to improve.

EXERCISE-H

In this exercise you will prepare a weight chart for Dinesh, a boy admitted with oedema of both feet (+). Dinesh's weight on admission is 10.1 kg. His height is 87 cm. Enter this information in the blanks beside the Weight Chart on the opposite page.

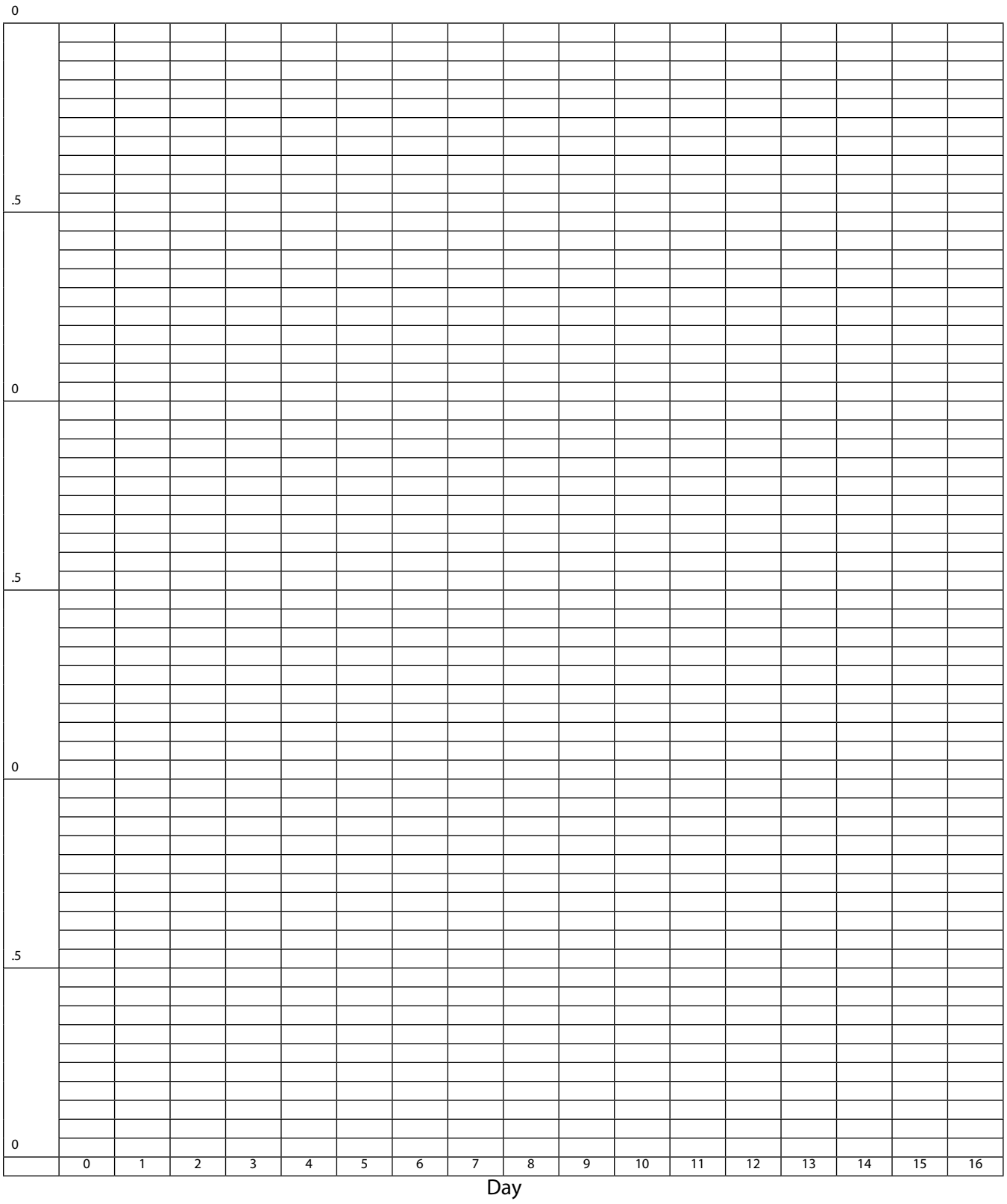
1. Plot Dinesh's admission weight (10.1 kg) on the chart above Day 1. Then plot the weights given below for Days 2-14. Connect the points.

Day	Weight	Day	Weight
Day 2	10.05 kg	Day 9	Free-feeding on Catch-up diet - 9.4 kg
Day 3	9.8 kg	Day 10	9.6 kg
Day 4	9.6 kg	Day 11	9.7 kg
Day 5	9.4 kg	Day 12	9.65 kg
Day 6	Transition to Catch-up diet - 9.2 kg	Day 13	9.8 kg
Day 7	Transition - 9.2 kg	Day 14	9.9 kg
Day 8	Transition - 9.3 kg		

Weight Chart

Name of the Child _____

Weight on admission_____ Weight on discharge_____



2. Summarize Dinesh's weight changes on the blank weight chart (on the next page).

_____ _____

_____ _____

3. Is Dinesh's slight weight loss on Day 12 a reason for concern? Why or why not? What are some possible causes of the weight loss?

_____ _____

_____ _____

When you have finished this exercise, please discuss your answers with a facilitator.

SECTION 6

INVOLVING MOTHERS IN CARE

6
SECTION

INVOLVING MOTHERS IN CARE

It is essential for the mother (or caregiver) to be with her severely malnourished child in the hospital. For the following reasons, she must be encouraged to feed, hold, comfort, and play with her child as much as possible:

- 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.

Learning Objectives

This section will describe and allow you to discuss and observe:

- Ways to encourage involvement of mothers in hospital care; and
- Ways to prepare mothers to continue good care at home, including proper feeding of the child and stimulation using play.

On the ward or in role plays, this section will allow you to practice:

- Teaching a mother to bathe or feed a child; and
- Giving complete discharge instructions.

6.1. Organize facility routine to encourage mothers' involvement

There are many ways to encourage mothers' involvement in hospital care. Mothers can be taught to:

- Prepare food;
- Feed children;
- Bathe and change children; and
- Play with children, supervise play sessions, and make toys.

The staff must be friendly and treat mothers as partners in the care of the children. A mother should never be scolded or blamed for her child's problems or made to feel unwelcome. Teaching, counselling and befriending the mother are essential to long-term treatment of the child.

Mothers should have a place to sit and sleep on the ward. They also need washing facilities and a toilet, and a way to obtain food for themselves. Some mothers may need medical attention themselves if they are sick or anaemic. The staff should also make other family members feel welcome. All family members are important to the health and well-being of the child. When possible, fathers should be involved in discussions of the child's treatment and how it should be continued at home. Fathers must be kept informed and encouraged to support mothers' efforts in care of the children.

Involve mothers in comforting, feeding, and bathing children

Staff should informally teach each individual mother certain skills. First, they may need to show the mother how to hold her child gently and quietly, with loving care. Immediately after any unpleasant procedure, staff should encourage the mother to hold and comfort her child.

Teach groups of mothers about feeding and care

There are many topics that can efficiently be presented to groups of mothers and other interested family members. Group teaching sessions may be held on topics such as nutrition and feeding, hygiene, making ORS to treat diarrhoea, family planning, etc. Staff members with good communication skills should be assigned to teach these group sessions. There may be several staff members who can take turns presenting different topics. The selected staff must know the important information to cover on a topic and be able to:

- Communicate clearly in a way that mothers understand.
- Prepare and use suitable visual aids such as posters, real foods, etc. demonstrate skills when necessary (e.g., cooking procedures, hand washing, making ORS).
- Lead a discussion in which mothers can ask questions and contribute ideas.

The sessions should not be limited to lecture, but should include demonstrations and practice whenever possible. Encourage questions from the mothers so that the session is interactive.

6.2 Prepare for feeding the child at home

After the child recovers and is discharged from facility, the child should be fed at home according to advice. Once child reaches -1SD of WFH, they should be fed according to IMNCI feeding guideline. For a child age 2 years or older, this means giving the child 3 meals each day, plus giving nutritious food between meals twice daily.

Before returning home, the child must become accustomed to eating family meals. While the child is on 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 he or she will eat at home.

Appropriate mixed diets are the same as those recommended for a healthy child. They should provide enough calories, vitamins, and minerals to support continued growth. Home foods should be consistent with the guidelines below:

- The mother should continue breastfeeding as often as the child wants.
- If the child is no longer breastfeeding, animal milk is an important source of energy, protein, minerals and vitamins.
- Solid foods should include a well-cooked staple cereal. To enrich the energy content, add vegetable oil (5-10 ml for each 100 g serving/half katori of approximately 200 ml size) or ghee, or groundnut paste. The cereal should be soft and mashed; for infants use a thick pap.
- Give a variety of well-cooked vegetables, including orange and dark-green leafy ones. If possible, include seasonal fruit e.g., banana, mango, cheeku in the diet as well.
- Pulses and beans are also good sources of protein. If possible, include meat, fish, or eggs in the diet.
- Give extra food between meals (healthy snacks).
- Give an adequate serving size (large enough that the child leaves some) of healthy snacks that are high in energy and nutrients include:
  - Bread or chapatti with butter or groundnut paste (peanut butter).
  - Yoghurt, milk, puddings made with milk.
  - Ripe banana, papaya, mango, other fruits.
  - Cooked potatoes.

To prepare the mother to continue appropriate feeding at home:

- Discuss with the mother (and other family members, if possible) the child's previous diet and the foods that are available at home.
- Discuss practical ways to address specific problems in the child's past diet. Be sure to involve the mother as a partner in deciding what to feed

the child, so that the decisions will be practical. Explain how to use or adapt available foods for preparing a healthy diet.

- Summarize what to feed the child, how much to give at each meal, and how many meals and snacks to give. Write it down or give the mother a prepared card with feeding instructions. Use pictures for mothers who cannot read.
- Remind the mother to sit with the child and encourage the child to eat.
- Before discharge, when the child is adjusting to home foods under hospital supervision, have the mother practise preparing recommended foods and feeding them to her child.
- Review instructions before discharge and ask the mother checking questions to be sure she understands what to do, for example:
  - What will you feed your child? Where will you get the ingredients to prepare foods at home as you have done it here?
  - How many meals and snacks will you feed your child each day?
  - How much will you feed your child at each meal or snack?

6.3 Step 9-Teach mothers the importance of stimulation and how to make and use toys

Severely malnourished children have delayed mental and behavioural development. As the child recovers, he or she needs increasing emotional and physical stimulation through play. Play programmes that begin during rehabilitation and continue after discharge can greatly reduce the risk of permanent mental retardation and emotional problems.

The hospital can provide stimulation through the environment, by decorating in bright colours, hanging colourful moving toys over cots, and having toys available. Mothers should be taught to play with their children using simple, homemade toys. It is important to play with each child individually at least 15-30 minutes per day, in addition to informal group play.

SECTION 7

PREPARE FOR DISCHARGE & FOLLOW-UP

7
SECTION

PREPARE FOR DISCHARGE & FOLLOW-UP

7.1. Criteria for Discharge

The criteria for discharge are outlined below. However, flexible approach is necessary 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.

In places where there is a functional program on community-based management of SAM, discharge may be given early after the child has recovered from the stabilization phase and has started to gain weight.

Criteria for discharge from inpatient care	
Child	❖ Achieved weight gain of ≥ 15% (See Annex 20 for target weight at 15% weight gain) and has satisfactory weight gain for 3 consecutive days (>5 gm/kg/day) ❖ Oedema has resolved ❖ Child 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 make appropriate toys and play with the child ❖ Knows how to give home treatment for diarrhoea, fever and acute respiratoryinfections, and how to recognise the signs that/he must seek medical assistance ❖ Follow-up plan is completed

In places where there is a functional program on community-based management of SAM, discharge may be given early after the child has recovered from the stabilization phase and has started to gain weight. All children with SAM should be followed by the health workers at home or at community centres till s/he reaches weight for-height of -1 SD.

7.2. Teaching parents to care for the child and prevent recurring malnutrition

Parents should be educated about:

- ❖ Correct breastfeeding and feeding practices (frequent feeding with energy and nutrient dense foods)
- ❖ Taking the child to the health facility for vitamin A supplementation (children aged 9-59 months) for the next dose as advised on discharge and for subsequent 6 monthly doses
- ❖ Taking the child to the health facility for vaccination as per the schedule in Mother and Child Protection card/Immunisation card
- ❖ Giving structured play therapy to the child.

7.3. Treatment for Helminthiasis

Treatment for helminthic infections should be given to all children with SAM before discharge. Give a single dose of any of the following antihelminthics orally:

- 200 mg albendazole for children aged 12-23 months, 400 mg albendazole for childrenaged 24 months or more or
- 100 mg mebendazole twice daily for 3 days for children aged 24 months or more.

7.4. Follow-up

- Before discharge, make a plan with the parent for a follow-up visit at 1 week after discharge. Regular check-ups should also be made at 2 weeks in first month and then monthly thereafter until WHZ reaches -1 SD or above. If a problem is found, visits should be more frequent until it is resolved.
- At each follow-up visit, the child should be examined, weighed, measured and the results recorded. The mother should be asked about the child's recent health, feeding practices and play activities. Training of the mother should focus on areas that need to be strengthened, especially feeding practices, and mental and physical stimulation of the child.

7.5. Give general discharge instructions

In addition to feeding instructions, mothers will need to be taught:

- How to continue any needed medications, vitamins, folic acid (for 2-weeks), and iron (for 2-3 months) at home.
- when to bring the child back for immediate care:
  - Not able to drink or breastfeed. Stops feeding.
  - Develops fever.
  - Has fast or difficult breathing. Has a convulsion.
  - Has diarrhoea for more than a day, or blood in stool.

7.6. If early discharge is unavoidable, make special arrangements for follow-up

If a child must be discharged before the discharge criteria are met it is critical to make arrangements for follow-up of the child (for example, special visits by a health worker to the child's home, or outpatient care at a health facility or nutritional rehabilitation centre). Mothers will need special training to prepare feeds and give iron, folic acid, and multivitamins at home.

SECTION 8

MANAGEMENT OF SAM IN INFANTS LESS THAN 6 MONTHS OF AGE

8
SECTION

MANAGEMENT OF SAM IN INFANTS LESS THAN 6 MONTHS OF AGE

8.1. Initial assessment and treatment

Any infant more than 49 cm* in length who has following features is treated as severe acute malnutrition:

- Weight-for-height less than - 3 SD; and /or
- Visible severe wasting; and/or
- Oedema of both feet.

** For children with length less than 49 cm, visible severe wasting can be used as criteria for identification and admission.*

Initial steps of management i.e., hypoglycemia, hypothermia, dehydration, infection, septic shock are same as described for older children.

8.2. Feeding

Feeding severely acute malnourished young infants is labor intensive and requires a different approach from those needed for older children. There is lack of data about the ideal feeding choice for non breastfed children. Most of the experts recommend following feeding options:

- 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 therapeutic diet initially. For non breastfed babies, give Starter diet feed prepared without cereals.
- Provide support to re-establish breastfeeding as soon as possible. A mother may need support and help to express breast milk if the infant is too weak to suckle. Keep mother and infant together, to help the mother care for and respond to the baby, to provide skin-to-skin contact (Kangaroo care) to warm the baby.
- 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 the mother to give frequent feeds and try to establish exclusive breast feeding. In artificially fed without any prospects of breastfeeds, the infant should be given diluted Catch-up diet. [Catch-up diet diluted by one third extra water to make volume 135 ml in place of 100 ml]. On discharge the non-breastfed infants should be given locally available animal milk with cup and spoon. The infant formulas are very expensive and should only be advised if the parents can afford this.
- Discharge the infant from the facility when gaining weight for 5 days on breastfeeding alone and has no medical complications.

8.3. Relactation through Supplementary Suckling Technique (SST)

Supplementary Suckling Technique (SST) is a technique which can be used as a strategy to initiate relactation in mothers who have developed lactation failure.

How SST works

The infant suckles and stimulates the breast at the same time drawing the supplement (expressed mother's milk or therapeutic formula) through the tube, and is thereby nourished and satisfied. SST

stimulates prolactin reflex to secrete more milk.

The Suckling Technique (Figure-13)

- The supplementation is given via an No-8 nasogastric tube.
- The tip is cut back beyond the side ports approximately 1cm and the cap at the end of the tube is removed.
- Catch up diet diluted is put in a cup. The mother holds the cup with one hand initially 5-10 cms above the breast.
- The end of the tube is put in a cup.
- The tip of the tube is put on the breast at the nipple and the infant is offered the breast.
- Health staff can hold the cup/katori and support the mother.
- It may take one or two days for the infant to get used of the tube but it is important to continue.
- When the infant sucks on the breast with the tube in is mouth, the milk from the cup is sucked up through the tube and taken by the infant.
- The cup/katori is placed at least 10 cm below the level of the breast so the milk does not flow too quickly and distress the infant.

Figure 13: **Supplementary Sucking Technique.**

Table 7: Amounts of Catch-Up Diet Diluted for Infants put on SST

Class of Weight (kg)	Total ml of F -100 diluted	Quantity of Catch up diet diluted per feed in ml (8 feeds/day)	Quantity of Catch up diet per feed in ml (6 feeds/day)
>=1.2	200	25	33
1.3-1.5	240	30	40
1.6-1.7	280	35	47
1.8- 2.1	320	40	53
2.2- 2.4	360	45	60
2.5- 2.7	400	50	67
2.8- 2.9	440	55	73
3.0- 3.4	480	60	80
3.5- 3.9	520	65	87
4.0- 4.4	560	70	93

9
SECTION

MANAGEMENT OF SAM

IN HIV EXPOSED/HIV INFECTED CHILDREN

9
SECTION

MANAGEMENT OF SAM IN HIV EXPOSED/HIV INFECTED CHILDREN

SAM may occur in children who are HIV exposed/HIV infected children. The basic principles and steps of management of SAM in these children are similar. The drugs that are used for TB and HIV are quite toxic to the liver and pancreas. These organs are particularly affected by SAM. If treatment with anti-TB drugs or ARVs is started in the severely malnourished patient they are likely to develop very severe side effects from the drugs. Such side effects lead to withdrawal of many of the patients from the ARV treatment programs. Neither TB nor HIV is an emergency. All antiviral drugs have significant side effects, and their toxicity and pharmacokinetics have not been assessed in the severely malnourished child. They particularly affect mitochondrial function, which is already compromised in the severely malnourished child; the degree of dysfunction is related to mortality and any further mitochondrial insult is likely to have serious effects. Furthermore, there is excessive mortality of patients shortly after commencing ART, that appears to be related to nutritional status; initiation of ART and other long-term treatment of illnesses that are not immediately lethal should be delayed until the metabolism of the major organs has improved through nutritional therapy.

There are also major interactions between ARV drugs and some of the drugs that may be used in severe malnutrition. For example rifampicin should be avoided at the same time as some of the ARVs. These interactions are likely to be even more serious in the malnourished patient who already has a compromised hepatic function. This is another reason why the treatment of HIV with ARVs should be delayed until the drugs used in malnutrition have been administered. The treatment of malnutrition should be started at a minimum two weeks before the introduction of anti-retroviral drugs to diminish the risk of serious side effects from the anti-retroviral drugs. Preferably anti-retroviral treatment should be delayed until the recovery phase is well established.

Children with HIV should be given cotrimoxazole prophylaxis against pneumocystis pneumonia. This is inadequate antibiotic cover for the severely malnourished patient; amoxicillin should be given in addition to prophylactic doses of cotrimoxazole.

Once the patient's SAM is being treated satisfactorily and s/he have had adequate amounts of the essential nutrients to resist the toxic effects of the drug treatment HIV and TB treatment should be started and should follow the national guidelines.

Continue cotrimoxazole prophylaxis 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.

10

SECTION

MONITORING AND PROBLEM SOLVING

10
SECTION

MONITORING AND PROBLEM SOLVING

Many types of problems may occur in a hospital or Nutrition rehabilitation Centre. There may be problems with an individual patient's progress or care, such as failure to gain weight or treat an infection. There may also be problems that affect the entire ward, such as problems with staff performance, food preparation, or ward procedures or equipment. All these problems require attention to prevent patient deaths.

This section teaches a process for identifying and solving problems that may occur on the ward. The process includes:

- Identifying problems through monitoring.
- Investigating causes of problems.
- Determining solutions.
- Implementing solutions.

This process can be used in solving problems with individual patients or problems that may affect the entire ward.

Learning Objectives

This section will describe the following skills:

- Identifying problems by monitoring:
- Investigating causes of problems.
- Determining solutions appropriate for causes.
- Conducting a problem-solving session with a group.

10.1. Use a process to identify and solve problems

10.1.1 Identify problems

By monitoring individual patient progress, weight gain and care, you may identify problems such as the following:

- Child's appetite has not returned.
- Child has failed to gain weight for several days while taking Catch-up diet.
- Mother wants to take her child home before the child has reached the discharge weight.
- Child seems to have an unrecognized infection.

By monitoring overall weight gain on the ward, patient outcomes, and the case-fatality rate, you may identify problems such as the following:

- 20% of children the ward have poor weight gain.
- 75% of mothers leave with their children before they reach the desired discharge weight.
- The case-fatality rate in the ward was 15% during the months of June through August.

By monitoring case management practices, food preparation, ward procedures, and hygiene, you may identify additional problems, which may in fact be causes of poor weight gain or adverse outcomes. For example, you may identify problems such as the following:

- Feeds are not being prepared as per the instructions.
- Children are not fed every 2 hours through the night.
- Staff do not consistently wash their hands with soap.

To describe the problem, state when, where, and with whom the problem is occurring. Also try to determine when the problem began. Knowing the details will help you find the cause, or causes, of the problem.

10.1.2 Investigate causes of problems

It is critical to find the cause(s) of a problem before trying to solve it. Different causes require different solutions. Investigation of causes may involve doing

laboratory tests for a patient, observing and asking questions of staff, reviewing patient records, and/or monitoring food preparation and ward procedures.

10.1.3 Determine solutions

Solutions will depend on the causes of the problems. For example, if staff do not know how to do a new procedure, a solution may be training. On the other hand, if the cause is a lack of equipment or supplies, a different solution is needed. Solutions should:

a. Remove the cause of the problem (or reduce its effects);

b. Be feasible (affordable, practical, realistic); and

c. Not create another problem.

Example of problem solving process

Problem: Weight gain in a severe malnutrition ward is not as good as it was several months ago. Instead of good weight gain for most children on Catch-up (diet (that is, 10 g/kg/ day or more), the typical weight gain is now less than 10 g/kg/day.

The senior nurse decides to investigate by monitoring ward procedures and food preparation. Following are some possible causes that she might find, along with an appropriate solution for each.

Possible Cause: Possible Solution:

Possible Cause	Possible Solution
The type of milk available for making feeds has changed, and the recipes have not been adjusted appropriately.	Adjust the feed recipes appropriately to use the milk that is available. Post the new recipes and teach them to staff.
Staff adds too much water when making Catch-up diet. They add 1000 ml. instead of just enough water to make 1000 ml of formula.	Explain the recipe to staff. Be sure that 1000 ml is clearly marked on mixing containers. Demonstrate how to add water up to the mark.
Measuring scoops have been lost, and staffs are estimating amounts of ingredients for feeds.	Obtain new scoops
Children are not being fed 2 hourly through the night. There are more children on the ward, and staff numbers have not increased. Nurses cannot spend as much time feeding each child.	Invest time in teaching mothers to feed and care for the children and involve them

It is important to recognise that buying new scoops will not solve the problem if the cause is really lack of an appropriate recipe. By investigating the cause of a problem, one can avoid wasting money and time on the wrong solutions.

Implement solutions

Implementing a solution may be relatively simple (such as speaking with an individual staff member, or changing a child's feeding plan) or quite complex (such as changing staff assignments throughout the ward). Good communication with staff is important whenever any change is made.

To promote good communication when solving problems:

- Hold regular staff meetings, during which positive feedback is given and any problems, causes, and solutions are discussed.
- Provide staff with job descriptions which list their assigned tasks.
- Provide clear instructions whenever any change is made.
- Provide "job-aids" such as checklists or posted instructions for any complex tasks.

Follow up to determine if a solution is implemented as intended. Then continue monitoring to determine whether the problem is solved. Give feedback to staff that includes praise for work done well, along with any instructions for improvement.

10.2. Monitor and Solve Problems with an Individual Patient

10.2.1: Monitor individual patient progress and care

Nursing staff should monitor certain signs (such as pulse rate, respiratory rate, and temperature) repeatedly during the day, especially during initial treatment. If there are danger signs (such as increasing pulse and respiratory rate, or a sudden drop in temperature), the staff should immediately respond.

Doctor/s should do a ward round at least once every day. During rounds, a doctor should:

- Observe the child and question the mother and nurse:
  - Is the child more alert? smiling? sitting up? able to play?
  - Has the child lost oedema?
  - Is there less diarrhoea?
  - Has dermatosis improved?
  - How is the child's appetite?
  - Review the child's weight chart.
  - Is the child gaining weight according to the weight chart?
  - If there is a loss, is it due to decreasing oedema?
- Review the Case record and food intake chart:
  - Is the child getting the recommended feeds?
  - Is prescribed care (such as antibiotics, folic acid, iron) being given?
  - Are there any danger signs recorded on the Case record: increased pulse rate, respiratory rate, or temperature?

Daily, after a child is taking Catch-up diet, a clinician should calculate the child's weight gain in grams per kilogram body weight (g/kg/day) and judge whether weight gain is sufficient:
Good weight gain: 10 g/kg/day or more.
Moderate weight gain: 5 up to10 g/kg/day. Poor **weight gain:** Less than 5 g/kg/day.

To calculate daily weight gain:

- Subtract the child's weight yesterday (W1) from the child's weight today (W2).

Note: Do this even if the child has lost weight. If the child has lost weight, the result will be negative. Express the difference as grams (kg × 1000). This is the total amount of weight gained during the day.

W2 - W1 = _____ kg- _____ kg × 1000 = _____ grams gained

- Divide the grams gained (from step "a") by the child's weight yesterday. The result is the weight gain in g/kg/day.

  Weight gain in grams ÷ W1 = _____ g/kg/day

  If the child has lost weight during the past day, the "weight gain" for that day will be negative.

Note: This calculation is not useful until the child is on Catch-up diet, as the child is not expected to gain weight on Starter diet. In fact, weight may be lost on Starter diet due to decreasing oedema. Remember that this calculation will be most useful if the child is weighed at about the same time each day.

EXERCISE - I

Example

Kalim began taking Catch-up diet on Day 4 in the severe malnutrition ward. By Day 6 he began to gain weight. On Day 6, Kalim weighed 7.32 kg. On Day 7, he weighed 7.4 kg. His weight gain in g/kg/day can be calculated as follows:

a. 7.4 kg - 7.32 kg = 0.08 kg × 1000 = 80 grams gained

b. 80 grams ÷ 7.32 = 10.9 g/kg/day

A gain of 10.9 g/kg/day is considered a good weight gain.

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?

_____

_____

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?

_____

_____

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?

_____

_____

10.2.2 Identify the child who is failing to respond

A child is failing to respond if he or she does not improve initially; or gains weight but then levels off or deteriorates. Some criteria for failure to respond are listed below as a guide:

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.

10.2.3 Determine cause (s) of failure to respond

The causes of a child's failure to respond may be related to procedures, staff, equipment, or the environment throughout the ward, or they may be related only to the individual child. If many children are failing to respond, look for causes that affect the entire ward, such as incorrect feeding practices or poor hygiene. If your investigation is focused on one child, consider such possible causes as the following:

- ❖ Insufficient food given:
  - ▣ Has the feeding plan been adjusted as the child gains weight? Is the correct feed being given?
  - ▣ Is the correct amount offered at the required times? Is the child being fed adequately at night?

- Is the child being held and encouraged to eat?
- Are leftovers recorded so the child's recorded intake is accurate?

- Vitamin or mineral deficiency
  - Is mineral mix added to the child's food each day?
  - Is an appropriate multivitamin given?
- Unrecognized infection - Infections most commonly overlooked include pneumonia, urinary tract infection, ear infection, and tuberculosis.
- Others include malaria, fungal infection and HIV infection.
- Serious underlying disease (such as congenital abnormalities, immunological diseases).
- Is insufficient attention given to the child?
- Is the mother present to assist in feeding and care of the child?
- Rumination - The child regurgitates food from the stomach to the mouth, then vomits part of it and swallows the rest. This usually happens when the child is not observed.
  - Is the child eating well but failing to gain weight?
  - Does the child smell of vomit or have vomit-stained clothes or bedding? Does the child seem unusually alert and suspicious?
  - Does the child make stereotyped chewing movements?

Remember that there may be multiple causes of failure to respond. For example, a child may have an infection plus a vitamin deficiency. Try to find all of the causes.

10.2.4. Identify and implement solutions for the individual child

In some cases, the cause of a problem may require a specific medical solution. If the child has an infection, a clinician will need to prescribe appropriate treatment.

If the child is ruminating, it is best to have experienced staff members give special attention to the child. They need to show disapproval whenever the child begins to ruminate, without frightening the child, and encourage less harmful behaviours.

Example of a problem with root causes:- may draw a diagram

Problem: A child becomes hypoglycaemic during her first night on the ward. One cause: She was not fed at 2:00 and 4:00 a.m.

Root cause: The child's mother was too tired to wake up and feed her.

Root cause: There is not enough night staff, so mothers are expected to feed the children at night.

Root cause: There is no quiet time or place for mothers to rest during the day.

Solutions: To solve this problem, it will be necessary to address all of the causes. Possible solutions include getting more night staff or finding a time and place for mothers to rest during the day. Night staff could also be asked to wake up the mothers and supervise night feeds, or help those mothers whose children require 2-hourly feeds.

10.3 Monitoring patient outcomes

Record each patient's outcome on the Case record sheets

The last page of the Case record sheets has a space for recording patient outcomes. Record the outcome for the patient whether it is successful or not. Also record any relevant comments, such as circumstances and causes of adverse outcomes.

Successful outcome:

Clinically well

Achieved Target Weight

MUAC>11.5 cms

Adverse outcomes:

- Death
- Early exit or early discharge (and circumstances in which child left early)
- Referral (and circumstances in which referral had to be made)

Review patient records for common factors in adverse outcomes

Periodically and whenever there is a death. Note common factors that would suggest areas where case management practices or ward procedures may need to be carefully examined and improved. For example, note whether recent deaths have occurred within the first 2 days after admission or later. Deaths that occur within the first 2 days are often due to hypoglycaemia, over hydration, unrecognized or mismanaged septic shock, or other serious infection. Deaths that occur after 2 days are often due to heart failure; check to see if deaths are occurring during transition to Catch-up diet. An increase in deaths occurring during the night or early morning, or on weekends, suggests that care of children at these times should be monitored and improved. For example, if there are many early morning deaths, it is possible that children are not being adequately covered and fed during the night.

If many mothers are choosing to take their children home after only a few days, look for common reasons. Are the mothers unable to leave other children at home? Is the ward uncomfortable for them? Are the staff unfriendly? Early departures also suggest a need to monitor and improve ward conditions and procedures.

Review of patient records for adverse outcomes can provide a basis for staff to discuss and solve problems.

10.4. Monitoring patient care in the ward

10.4.1 Monitor practices and procedures

Periodically, or to investigate causes of problems, you may need to monitor case management practices:

- Food preparation;
- Ward procedures; and/or
- Hygiene.

Suggestions for monitoring are provided in this section. Monitoring Checklists for use during ward visits are provided in Annexure 19, 20 and 21. Any "NO" answer to a question on the checklist indicates a problem that needs to be corrected.

10.4.2 Monitor case management practices

Deaths during initial case management are often the result of well-intentioned but incorrect practice. Monitor to ensure that all clinicians are following the case management practices

described in the manual, particularly during initial treatment. Ensure that emergency room personnel are also following appropriate practices for severely malnourished children.

10.4.3 Monitor food preparation

Problems such as poor weight gain on the ward may be due to problems with food preparation. Periodically, or whenever you suspect that there is a problem, carefully observe preparation of feeds.

10. 4. 4 Solve problems

There are some problems that require individual solutions and should be handled privately. For example, if you find that a particular staff member is doing a procedure incorrectly or dangerously, correct that person privately.

On the other hand, some problems may be solved by working with staff members as a group to discuss the causes and possible solutions. Some examples of problems that could be reviewed as a group might include:

- A diarrhoea outbreak in the ward;
- An increasing case fatality rate; or
- Procedural problems involving all or many of the staff.

Staff may have useful information to contribute on the causes of problems and creative ideas for solutions. They are also more likely to work together towards implementing a solution if they are involved in the decision making process.

10.5. Monitoring facility level outcomes

It is suggested that the following gender and age disaggregated indicators be used for monitoring the quality of service being provided by the health facility/Nutrition Rehabilitation Centre.

	Indicators to be monitored at NRC
Admissions Gender disaggregated Referred by AWW/ASHA/ Self/	√
Paediatric ward or emergency	√
Average length of stay	√
Bed Occupancy rate	√
Average weight gain	√
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	√
(till target weight is achieved)	

The table below defines the key terms for indicators:

Table 8: Definition of Key Terms for Indicators

Definition of key terms

Admission Indicators:

New admission: an admitted patient who has never been in the facility before Re-admission: a defaulter who has come back to the facility within 2 months.

Relapse: a patient who has been discharged as cured from the facility within the last 2 months but is again eligible for admission. 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 s/he is transferred to another health facility, 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) that need to be addressed

Acceptable levels of care

Performance of facilities/Nutrition Rehabilitation Centres may be assessed based on the criteria described below.

	Acceptable	Alarming
Recovery rate	>75%	50%
Death rate	<10%	>15%
Defaulter rate	<15%	>25%
Weight gain	>8 g/kg/day	<8 g/kg/day
Length of stay	<4 wks	>6 wks

All excess mortality should be investigated. Lessons learned could save a number of lives; analysis of reports can 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. The calculation of Case fatality rate for the ward is explained in Annexure 23.

For further information regarding monitoring formats, reporting mechanisms and programme management at district and state level, refer to the 'Operational Guidelines on Facility Based Management of Children with Severe Acute Malnutrition' published by the Ministry of Health and Family Welfare (2011).

ANNEXURES

ANNEXURE - 1: WHO Growth Reference Charts

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

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

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
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 - 2: Appetite Test

The appetite test has been standardised using Ready to use Therapeutic Food (RUTF). As RUTF is currently not available, a method for testing appetite using local therapeutic food and based on experience from Madhya Pradesh is presented below:

Appetite test feed

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

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

How to prepare

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

How to do appetite test?

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

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

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

Annexure - 3: Antibiotics Reference Card

STATUS	ANTIBIOTICS
All admitted cases without any complications or complications other than shock, meningitis or dysentery	❖ Inj. Ampicillin 50 mg/kg/dose 6 hourly and Inj. ❖ Gentamicin 7.5 mg/kg once a day for 7 days. ❖ Add Inj. Cloxacillin 100 mg/kg day 6 hourly ifstaphylococcal 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 hourly 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 - 4: Daily Ward Feeding Chart

Date:_____ Ward: _____

Name of Child	Starter diet			Catch-up diet		
	Number feeds (ml)	Amount/ feed (ml)	Total (ml)	Number feeds	Amount/ feed	Total (ml)
Starter diet (total ml) needed for 24 hours				Catch-up diet (total ml) needed for 24 hours		
Amount needed for __ hours*				Amount needed for _ hours*		
Amount to prepare (round up to whole litre)				Amount to prepare (round up to whole litre)		

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

Annexure - 5: 24 Hour Food Intake Chart

Name: _____ Hospital ID Number: _____ Admission weight (kg): _____ Today's weight (kg): _____
Date: _____ Type of Feed: _____ Give: _____ Feeds of _____ ml

Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a-b)	d. Amount taken by NG, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)
		Column Total	c.	d.	e	Total yes:

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

Instructions for completing chart

In the spaces above the chart, record the child's name, hospital ID number, admission weight and today's weight. On the top row of the chart, record the date, the type of feed to be given, the number of feeds per day, and the amount to give at each feed.

At each feed:

In the left column, record the time that the feed is given. Then record in each column as follows:

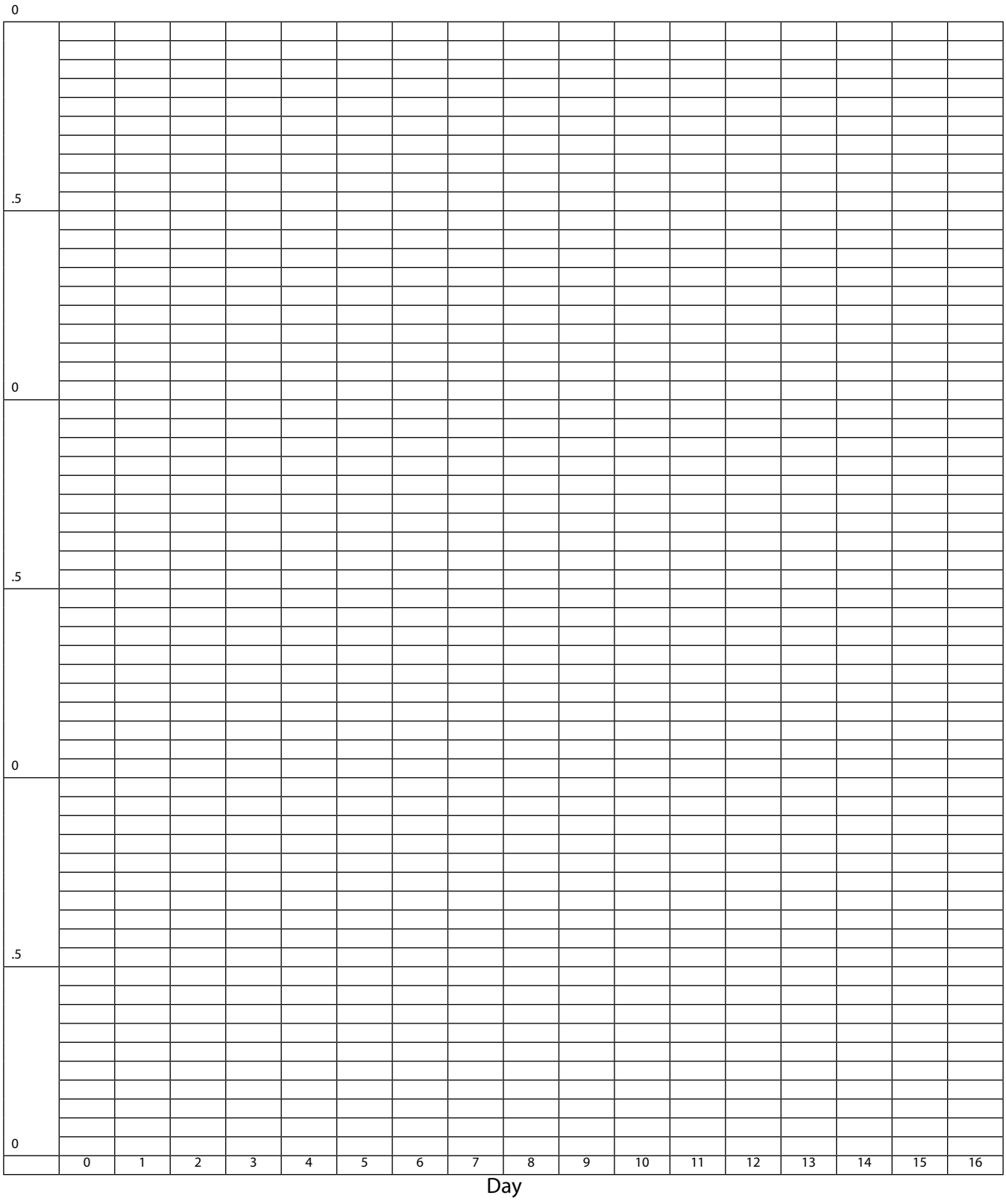
a. Record the amount of feed offered.
b. After offering the feed orally, measure and record the amount left in cup.
c. Subtract the amount left from the amount offered to determine the amount taken orally by the child.
d. If necessary, give the rest of the feed by NG tube and record this amount.
e. Estimate and record any amount vomited (and not replaced by more feed).
f. Ask whether the child had watery diarrhoea (any loose stool) since last feed. If so, record "yes".

At the end of 24 hours:

- Total the amount of feed taken orally (column c).
- Total the amount of feed taken by NG tube, if any (column d).
- Total the estimated amount lost through vomit (column e).
- Add the totals taken orally and by NG tube. Then subtract any loss from vomiting. The result is the total volume taken over 24 hours. Record this at the bottom of the 24-Hour Food Intake Chart and on the Daily Care page.

Annexure - 6: Weight Chart

Name of the Child _____Weight on admission_____ Weight on discharge_____



Annexure - 7: Daily Care Chart

Name_____ Hospitals ID Number_____ Date of admission_____

	Week 1						Week 2							Week 3						
Days in hospital	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Date																				
Daily weight (kg)																				
Weight gain (g/kg)	Calculate daily after one Catch-up diet.																			
Oedema 0 + ++ +++ Diarrhoea/vomit																				
0/D/V FEED PLAN: Type																				
feed No. of feeds daily																				
Total volume taken (ml)																				
Antibiotics (Name and dose)																				
	List prescribed antibiotics in left column. Allow one row for each daily dose. Draw a box around days/times that each drug should be given. Initial when given.																			
Folic acid																				
Vitamin A																				
Multivitamin syrup																				
Iron																				
Potassium																				
Magnesium																				

Annexure 8: Starter Diet Reference Card

Weight of child (kg)	Volume of Starter diet per feed (ml)[a]			Daily total (130 (ml/kg)	80% of daily totala (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 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 9: Starter Diet Reference Card for Children with Severe Oedema

Volume of Starter diet for children with severe (+++) oedema

Weight with +++ oedema (kg)	Volume of Starter diet per feed (ml)[a]			Daily total (130 (ml/kg)	80% of daily totala (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 10: Catch-up Diet (Free Feeding) Reference Chart

Weight of child (kg)	Range of volumes per 4-hourly feed of Catch up diet (6 feeds daily)		Range of daily volumes of Catch up diet	
	Minimum (ml)	Maximum (ml)[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.

[b] If the child's weight is between the weights given on the Catch up diet Reference Card, use the range for the nearest lower weight.

Annexure - 11: Homemade Alternative Food Items

Example of homemade culturally acceptable alternatives to Catch-up diet.

1. Khichri

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

2. Halwa

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

Annexure - 12: Composition of Concentrated Electrolyte Mineral Solution

Weigh the following ingredients and make up to 2500 ml. Add 20 ml of electrolyte/mineral solution to 1000 ml of milk feed.

	Quantity (g)	Molar content of 20 ml
Potassium Chloride: KCl	224	24 mmol
Tripotassium Citrate: C6H5K3O7.H2O	81	2 mmol
Magnesium Chloride: MgCl2.6H2O	76	3 mmol
Zinc Acetate: Zn(CH3COO)2.2H20	8.2	300 µmol
Copper Sulphate: CuSO4.5H2O	1.4	300 µmol
Water: make up to 2500 ml		

Note: Add selenium if available (sodium selenate 0.028 g, NaSeO410H20) and iodine (potassium iodide 0.012 g, KI) per 2500 ml.

Preparation: Dissolve the ingredients in cooled boiled water. Store the solution in sterilised bottles in the fridge to retard deterioration. Discard if it turns cloudy. Make fresh each month.

If the preparation of this electrolyte/mineral solution is not possible and if premixed sachets (see Step 4) are not available, give K, Mg and Zn separately:

Potassium

- Make a 10% stock solution of potassium chloride (100 g KCl in 1 litre of water):
  - For oral rehydration solution, use 40 ml of stock KCl solution instead of 33 ml electrolyte/mineral solution.
  - For milk feeds, add 22.5 ml of stock KCl solution instead of 20 ml of the electrolyte/ mineral solution.
- If KCl is not available, give syrup K (4 mmol/kg/day).

Magnesium

- Give 50% magnesium sulphate intramuscularly once (0.3 ml/kg up to a maximum of 2ml).

Zinc

- Make a 1.5% solution of zinc acetate (15 g zinc acetate in 1 litre of water). Give the 1.5% zinc acetate solution orally, 1 ml/kg/day.

Annexure - 13: Preparation of Rehydration Solution for Malnourished Children

Composition of Rehydration Solution

Component	Concentration (mmol/l)
Glucose	125
Sodium	45
Potassium	40
Chloride	70
Citrate	7
Magnesium	3
Zinc	0.3
Copper	0.045
Osmolarity	300

Oral Rehydration Solution

The recipe using the new ORS formulation* for preparing Rehydration Solution for malnourished children is given below:

Ingredient	Amount
Water (boiled and cooled)	1700 ml
WHO-ORS (new formulation)	One 1000 ml-packet
Sugar	40 g
Electrolyte-mineral solution	35 ml (composition given in Annexure12.)

** 2.6 g sodium chloride, 2.9 g trisodium citrate dihydrate, 1.5 g potassium chloride and 13.5 g glucose.*

Annexure - 14: Management of Continuing Diarrhoea

- **Persistent diarrhoea:** Diarrhoea is common in severe malnutrition but with cautious refeeding, it should subside during the first week. In the rehabilitation phase, the poorly formed loose stools are not a cause for concern, provided the child's weight gain is satisfactory. If the child has persistent diarrhoea, screen for non-intestinal infections and treat appropriately. Diarrhoea due to lactose intolerance is suspected if child is having large volume, loose stools with perianal excoriation. If loose stool is persisting manage with low lactose diet as described in section persistent diarrhoea. Continue breast feeding and try to give feeds with low lactose initially and subsequently change to lactose free options if diarrhoea persists. Details of different type of low lactose and lactose free diets are given in step-7. Suspect and treat associated infections and underlying conditions like UTI, Pneumonia, Fungal infections HIV etc.
- Osmotic diarrhoea- may be suspected if diarrhoea worsens substantially in young children with diarrhoea who are given Starter diet prepared with milk powder, which has slightly higher osmolarity. In these cases low osmolar cereal based Starter diet may help and then Catch-up diet may be introduced gradually.
- **Giardiasis & Amoebiasis:** Examine stool by microscopy. Treat with metronidazole if positive (7.5 mg/kg 8-hrly for 7 days).

Annexure - 15: Severe Anaemia in Malnourished Children

A blood transfusion is required if:

- Hb is less than 4g/dl or packed cell volume is less than 12 g/dl; or
- If there is respiratory distress and Hb is between 4 and 6 g/dl.

If haemoglobin is less than 40 g/l, (or packed cell volume is less than 12%), give a packed cell/blood transfusion.

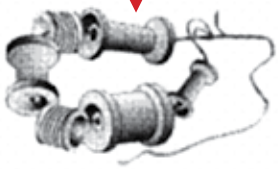
1. Stop all oral intake and IV fluids during the transfusion.
2. Look for signs of congestive heart failure such as fast breathing, respiratory distress, rapid pulse, engorgement of the jugular vein, cold hands and feet, cyanosis of the fingertips and under the tongue.
3. Give 10 ml/kg of packed cells or whole fresh blood. If there are signs of congestive heart failure, be ready to give packed cells (5-7 ml/kg) instead of whole blood.
4. Give Furosemide (1 mg/kg, given by IV) after starting BT.
5. If there are no signs of congestive heart failure, transfuse whole fresh blood at 10 ml/kg slowly over 3 hours. If there are signs of heart failure, give 5-7 ml/kg packed cells over

3 hours instead of whole blood.

6. Look for transfusion reactions.

Annexure - 16: Examples of Simple Toys (Adapted from WHO Guideline)

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.



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).

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.

Pull-along toy (from 12 months)
As above, except that string is used instead of wire.

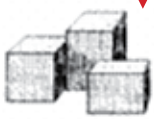
Doll (from 12 months)
Cut out two doll shapes from a piece of cloth and sew the edges together, leaving a small opening. Turn the doll inside-out and stuff with scraps of materials. Stitch up the opening and sew or draw a face on the doll.

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.

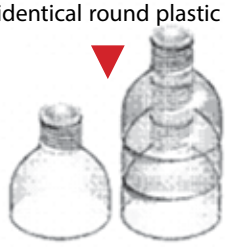
Rattle (from 12 months)
Cut long strips of plastic from coloured plastic bottles. Place them in a small transparent plastic bottle and glue the top on firmly.

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.



Stacking bottle tops (from 12 months)
Cut at least three identical round plastic bottles in half and stack them.



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.

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.

Annexure 17: Examples of Language and Motor Activities with Children

Language activities

At each play session:

- Teach local songs and games using the finger and toes.
- Encourage the child to laugh.
- Describe what s(he) is doing , and repeat what s(he) says.
- Teach action words with activities e.g. 'bang bang' as s(he) beats a drum, 'bye bye' as s(he) waves etc.
- Teach words at every opportunity.

Motor activities

Encourage the child to perform the next motor milestones. For example:

- Bounce the child up and down and hold him/her under the arms so that the feet support the child weight.
- Prop the child up , roll toys out of reach, encourage the child to crawl after them.
- Hold hand and help the child to walk.
- When starting to walk alone, give a 'push-along' and later 'pullalong' toy.

Activities with toys

Simple toys can easily be made from readily available materials. These toys can be used for a variety of different motor activities:

'Ring on a string'

- Swing the ring within the reach and encourage the child to go for it.
- Suspend ring over the crib and encourage the child to knock it and make it swing.
- Let child explore the ring, then place it a little distance from the child with the string stretched towards him/her and within reach.
- Teach the child to retrieve the ring by pulling on the string. Sit the child on the lap, then holding the string, lower the ring towards the ground. Teach child to get the ring by pulling up on the string vertically. Also teach child to dangle the ring.

'Rattle and drum'

- Let the child explore rattle. Show him/her how to shake it saying 'shake shake.
- Encourage the child to shake the rattle by saying 'shake' but without demonstrating.
- Teach child to beat drum with a rattle saying 'bang-bang.
- Roll drum out of reach and let child crawl after it , saying 'fetch-it.
- Get child to say 'bang-bang' as s(he) beats drum.

'In and Out' toys with blocks

- Let the child explore blocks and container. Put blocks into container and shake it then teach child to take them out, one at a time , saying 'out' and 'give me.

- Teach the child to take out blocks by turning container upside down.
- Teach the child to take out blocks by turning containers upside down.
- Teach the child to hold the blocks in hand and bang them together.
- Let the child put blocks in and out of containers saying 'in' and 'out.
- Cover blocks with container saying 'where are they, they are under the cover'. Let the child find them. Then hide them under two and then three covers.
- Turn the containers upside down and teach the child to put blocks on top of the container.
- Teach the child to stack blocks; first stack two then gradually increase the number. Knock them down saying 'up up' then 'down'. Make a game of it.
- Line up blocks horizontally: first line up two then more; teach the child to push them along making train or noises.
- Teach to sort blocks by colour, first two then more, and teach high and low building make up games.

Posting bottle

- Put an object in the bottle, shake it and teach the child to turn the bottle upside down and to take the object out saying 'can you get it?' Then teach the child to put the object in and take it out. Later try with several objects.

Stacking bottle tops

- Let the child play with two bottle tops then teach the child to stack them saying - 'I am going to put one on top of the other'. Later, increase the number of tops. Older children can sort tops by colour.

Books

- Sit the child on your lap. Teach the child to turn the pages of the book and to point to the pictures. Then teach the child to point the pictures that you name. Talk about the pictures. Show the child picture of the simple familiar objects, people and animals.

Dolls

- Encourage the child to hold and cuddle the doll. Sing songs whilst rocking the child.
- Teach the child to identify his/her own body parts and those of the doll when you name them. Teach older children to name their own body parts.
- Put the doll in a box as a bed and give sheets , teach the words 'bed and sleep' and describe the games you play.

Annexure - 18: Sample Discharge Card

Danger Signs - Bring Child for Immediate Care if:

Not able to drink or breastfeed

Diarrhoea more than 1 day or blood stool

Swelling in feel, hands,

Fever (feels hot)

Convulsion (fits)

Fast or difficult breathing

Not able to drink or breastfeed

Next Planned Follow-Up		Record of Visit			
Date	Place	Date	Hight/length	Weight	% wt-for ht

Vitamin A - Bring Child for a Dose Every Six Months

Next Planned Follow-Up		Record of Visit	
Date	Place	Date	Dose

Vitamin A - Bring Child for a Dose Every Six Months

Immunization Glven
Trick or record date given:

BCG	DTP1	DTP2	DTP3
OPV0	OPV1	OPV2	OPV3
			Measles

Next Immunization	
Date	Does (s) needed

DISCHARGE CARD

For Child Recovering from Severe Malnutrution Hospital Name

Chaild Name:_____ M F Date of Birth:_____

Address: _____

	Date	Weight (kg)	Ht/length (cm)	% weight for height
Admission				
Discharge				

Instructions for Feeding at Home

What to feed? (Include recipe if needed) _____

_____

_____

_____

How much and how often ?_____

_____

_____

Medications and SUpplements

Give _____ drops_____ (multivitamin preparation) with food once daily.

Give 1 tablet to folic acid once daily ofr _____ days.

Give _____ iron twick daily for 1 month.

Other : _____

_____

_____

_____

Annexure - 19: Checklist Proforma for Monitoring Food Preparation

Observe	Yes	No	Comments
Are ingredients for the recipes available?			
Is the correct recipe used for the ingredients that are available?			
Are ingredients stored appropriately and discarded at appropriate times?			
Are containers and utensils kept clean?			
Does kitchen staff (or those preparing feeds) wash hands with soap before preparing food?			
Are the recipes for Starter diet and Catch up diet followed exactly? (If changes are made due to lack of ingredients, are these changes appropriate?)			
Are measurements made exactly with proper measuring utensils (e.g., correct scoops)?			
Are ingredients thoroughly mixed (and cooked, if necessary)?			
Is the appropriate amount of oil mixed in (i.e., not left stuck in the measuring container)?			
Is correct amount of water added to make up a litre of formula? (Staff should not add a litre of water, but just enough to make a litre of formula.)			
Is food served at an appropriate temperature? Is the food consistently mixed when served (i.e., oil is mixed in, not separated)?			
Are correct amounts put in the dish for each child?			
Is leftover prepared food discarded promptly?			

Annexure - 20: Checklist for Monitoring Ward Procedures

Observe	Yes	No	Comments
A. 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 diet kept the same throughout the initial phase, even if weight is lost?			
After transition, are amounts of Catch-up diet given freely and increased as the child gains weight?			
B. Warming			
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?			
C. 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?			
D. 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 diet for 2 days, is the correct.			
Dose of iron given twice daily and recorded?			
E. 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 - 21: Checklist for Monitoring Hygiene

Observe	Yes	No	Comments
Hand washing			
Are there 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 off properly?			
Is there a place for mothers to do laundry? Is laundry done in hot water?			
General maintenance			
Are floors swept?			
Is trash disposed off 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 - 22: Equipment and Supplies

Ward Equipment/Supplies	Pharmacy Equipment/Supplies	Kitchen Equipment/Supplies
Glucometer Thermometers (preferably low-reading) Weighing scales Infantometer Stadiometer (to measure standing height) Haemoglobinometer IV cannulas IV Sets Bottles or bags Paediatric nasogastric tubes Safe, homemade toys Clock Calculator	ORS Electrolytes and minerals: Potassium chloride Magnesium chloride/Sulfate Zinc acetate/sulfate Iron syrup (e.g., ferrous fumarate) Multivitamin without iron Folic acid Vitamin A syrup Glucose (or sucrose) IV Fluids Ringer's lactate solution with 5% glucose* 0.45% (half-normal) saline with 5% glucose* 0.9% saline (for soaking eye pads) **Drugs** Amoxicillin /Ampicillin/ Benzylpenicillin Chloramphenicol Cotrimoxazole Ceftriaxone Gentamicin Metronidazole Tetracycline or chloramphenicol eye drops Atropine eye drops	Dietary scales able to weigh to 5 g Electric blender or manual whisks Large containers and spoons for mixing/cooking feed for the ward Feeding cups, saucers, spoons Measuring cylinders (or suitable utensils for measuring ingredients and leftovers) Jugs (1-litre and 2-litre) Refrigeration Supply for making Starter diet and Catch-up diet: Dried skimmed milk, whole dried milk, fresh whole milk, Sugar Puffed rice flour Vegetable oil Clean water supply Foods similar to those used in homes (for teaching/use in transition to home foods)

In addition, Nutrition Rehabilitation Centres require kitchen equipment. Also equipment and supplies will vary depending on the level of care. Refer to 'Operational Guidelines on Facility based Management of Children with Severe Acute Malnutrition' for further information.

Annexure - 23: Calculate Case Fatality Rate for the Ward

In a big ward (for example, with 100 admissions per month), calculate the case-fatality rate once each month if possible. Also calculate the case-fatality rate monthly in any ward where the current rate is poor or unacceptable. This will allow improvements to be seen rapidly.

In a small ward (for example, 10 cases per month), or in a ward where the case-fatality rate is moderate or better, the case fatality rate may be calculated less often (e.g., every 3 months).

To calculate the case-fatality rate:

- Determine the number of patients admitted to the severe malnutrition ward in the past month(s).
- Determine the number of those patients who died. (Wait to count deaths until the outcomes for the patients are known. For example, wait until mid-November to count deaths among patients admitted in October.)
- Divide the number of deaths by the number of patients and express the result as a percentage.

For the purposes of this training course, a case-fatality rate of:

- >20% is unacceptable
- 11-20% is poor
- 5-10% is moderate
- <5% is acceptable

Carefully review the circumstances of deaths and identify and solve related problems in order to reduce the case-fatality rate.

The objective of a severe malnutrition ward should be to achieve a case-fatality rate of less than 5%.

Annexure - 24: Guidance Table to Identify Target Weight

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

** Or weight, free of oedema.*

Annexure - 25: Feeding Recommendations for Children 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*	❖ 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 / cheeku/ 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 / cheeku/ 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

National Rural Health Mission

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