



Government of Malawi
Ministry of Health

Training Course on
**INPATIENT
MANAGEMENT OF
SEVERE ACUTE
MALNUTRITION**

**Module 5.
Daily Care**



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Preface

The *Malawi Inpatient Management of Severe Acute Malnutrition Training Package* includes training modules, training guides, training aids, training planning tools, and job aids. The training package is based on the 2002 WHO Training Course on the Management of Severe Malnutrition (SAM) and has been updated to include the 2013 WHO update on management of SAM in infants and children. The training package guides participants in applying the National Guidelines for the Community-based Management of Acute Malnutrition (CMAM), 2016.

This *Module* is one of a set of training guides and modules for conducting the *Training Course on Inpatient Management of Severe Acute Malnutrition*:

Guides

Facilitator Guide

Clinical Instructor Guide

Course Director Guide

Modules

Module 1—Introduction

Module 2—Principles of Care

Module 3—Initial Management

Module 4—Feeding

Module 5—Daily Care

Module 6—Monitoring, Problem Solving and Reporting

Module 7—Involving Mothers in Care

Acronyms and Abbreviations

AWG	Average Daily Weight Gain
cm	Centimetre(s)
CMAM	Community-Based Management of Acute Malnutrition
CMV	Combined Mineral and Vitamin Mix
dl	Decilitre(s)
g	Gram(s)
Hg	Haemoglobin
HFA	Height-for-Age
HIV	Human Immunodeficiency Virus
IGF	Insulin Growth Factor
IM	Intramuscular
IMCI	Integrated Management of Childhood Illness
IU	International Unit(s)
IV	Intravenous
IYCF	Infant and Young Child Feeding
kcal	Kilocalorie(s)
kg	Kilogram(s)
L	Litre(s)
LOS	Length of Stay
M&R	Monitoring and Reporting
MAM	Moderate Acute Malnutrition
mg	Milligram(s)
ml	Millilitre(s)
mm	Millimetre(s)
MOH	Ministry of Health
MUAC	Mid-Upper Arm Circumference
NG	Nasogastric
OPD	Outpatient Department
ORS	Oral Rehydration Solution
PCR	Polymerase Chain Reaction
PCV	Packed Cell Volume
QI	Quality Improvement
RDT	Rapid Diagnostic Test
ReSoMal	Rehydration Solution for Malnutrition
RUTF	Ready-to-Use Therapeutic Food
SAM	Severe Acute Malnutrition

SFP	Supplementary Feeding Programme
TB	Tuberculosis
WFH	Weight-for-Height
WFL	Weight-for-Length
WFP	World Food Programme
WHO	World Health Organisation
µg	Microgram(s)

Introduction

Attentive and consistent daily care will make the difference in the recovery of a child with severe acute malnutrition (SAM). The routine of daily care in inpatient management of SAM includes such tasks as feeding, bathing, weighing, giving antibiotics and monitoring and recording each child's progress. Throughout a very busy day, and through the night, the staff must be patient and caring with both the children and their mothers¹.

Weighing and measuring tasks were described in **Module 2. Principles of Care**. Feeding tasks were described in **Module 4. Feeding**. This module describes other aspects of daily care. You will practise tasks related to daily care during ward visits. Written practice in the module focuses on completing and interpreting the Daily Care, Monitoring and Weight Charts of the Treatment Card.

Learning Objectives

This module and related clinical sessions describe and allow you to practise the following skills:

- Handling a child with SAM with poor appetite and medical complications
- Caring for the skin and bathing
- Giving prescribed antibiotics and other medications and supplements
- Caring for the eyes
- Monitoring pulse, respirations and temperature, and watching for danger signs
- Continuing care at night
- Completing and interpreting the Daily Care page and Monitoring Record of the treatment card
- Preparing and maintaining a weight chart

¹ The term 'mother' is used throughout this module. It is understood that the person who is responsible for the care of the child might not always be that child's mother, but rather some other caregiver. For the sake of readability, however, 'mother' means 'mother/caregiver' throughout this module, 'she' means 'she or he' and 'her' means 'her or his'.

1.0 Handling a Child with SAM with Poor Appetite and Medical Complications

Children with SAM must be handled very gently, especially at the beginning of their care. The body of a child with SAM is fragile and bruises easily. The child needs all his or her energy to recover, so he or she 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.

Through tone of voice, gentle manner and caring attitude, nurses set a good example for the mothers of how to provide tender, loving care. Good health workers also win the trust of mothers and make them more likely to stay with their children in the hospital for the necessary length of time. It is critical for mothers to stay with their children in the hospital. The number of other adults who interact with each child should be limited, and the most skilled staff available should perform medical procedures, preferably out of earshot and sight of the other children.

Health workers 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 **Module 7. Involving Mothers in Care**.



SHORT ANSWER EXERCISE

Check all of the appropriate responses or actions in the situations described below.

1. A child is crying after having an intramuscular (IM) injection. The mother appears upset and uncertain what to do.

A. Leave the child alone until he or she calms down.

B. Hold and comfort the child.

C. Explain to the mother why the procedure was necessary and how it will help the child.

D. Show the mother how to hold the child gently without rubbing the site of the injection.

2. A mother pays little attention while a nurse bathes her child. The mother sits quietly, does not participate and is hesitant to touch the child.

A. Look at the mother directly and explain the bathing procedure.

B. Reassure the mother that she will not hurt her child by bathing and holding her or him gently.

C. Show the mother how to bathe and hold the child gently.

D. Leave the mother alone with the child, assuming she will figure out how to finish the bath.

E. Watch and help while having the mother dress and warm the child after the bath.

3. A mother falls asleep and does not finish feeding her child F-75 during the night.

A. Let the mother sleep while you feed the child yourself.

B. Gently wake the mother and ask, 'Can you finish the feed?'

- _____ C. Wake the mother and tell her that the child could die if not fed every 2 hours.

- _____ D. Suggest that the mother take turns sleeping and giving feeds with another woman whose child is nearby.

Check your own answers to this exercise against the answers given on page 39 at the end of the module

Example of Daily Care Chart of the Treatment Card

The next page shows an example of a completed Daily Care Chart of the Treatment Card. When daily care tasks are performed, the nursing staff should record their signature on this page.

Tell a facilitator when you have reached this point in the module. When everyone is ready, your facilitator will present a brief demonstration on how to use the Daily Care Chart. In the meantime, you may continue reading.

CHILD NAME: Atuweni M/F AGE: 2 ^{years} _{Months} HOSPITAL NUMBER: Date: Time: 7:00

DAILY CARE CHART

DAYS IN HOSPITAL	Week 1							Week 2		Week 3											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Date	1/15	1/16	1/17	1/18	1/19	1/20	1/21	1/22	1/23												
Daily weight (kg)	8.8	8.8	8.8	8.8	8.7	8.85	8.9	9.0													
Weight gain (g/kg) <i>Calculate when on RUTF/F-100 and breastfed infant</i>	-	-	-	-	-	-	5.6	0	11.2												
Bilateral pitting oedema 0 + + + + +	0	0	0	0	0	0	0	0	0												
Diarrhoea (Write number of loose stools), Vomiting (write the frequency)	0	0	0	0	0	0	0	0	0												
RESOMAL.....mls																					
FEED PLAN: Type of feed	F75	F75	F75	F75	F75	F100	F100	RUTF	RUTF												
# daily feeds	12	12	8	6	6	6	6	6	6												
Amount to give per feed (ml)(packet)	95	95	145	135	195	195	195	1/2	1/2												
Total amount taken (ml)(packet)	310	1140	1130	1120	1170	1170	1170	2.8	2.8												
NG tube Yes/No	No	No	No	No	No	No	No	No	No												
Breastfeeding Yes/No	Y	Y	Y	Y	Y	Y	Y	Y	Y												
ANTIBIOTICS AND OTHER DRUGS	<i>List prescribed antibiotics and other drugs in left column. Allow one row for each daily dose. Draw a box around days/times that each drug should be given. Sign when given.</i>																				
<u>Benzylpenicillin</u>	08:00	AC	AC																		
	14:00	BP	BP																		
	20:00	TA	TA																		
	02:00	AC	AC																		
<u>Gentamicin</u>	08:00	AC	AC	AC	AC	AC	AC	AC													
<u>Amoxycillin</u>	08:00	///	///	AC	AC	AC	AC	AC													
	16:00	///	///	BP	BP	BP	BP	BP													
	00:00	///	///	TA	TA	TA	TA	TA													
ANTIMALARIAL:	<u>None</u>																				
VITAMIN A treatment dose on days 1, 2, and 14																					
Albendazole/Mebendazole. Give after 1 week.																					
IRON Give 3 mg/kg/day, 2 x daily, after 2 days starting to gain weight during transition. Do not give when on RUTF.	Crush 200 mg ferrous sulphate in 2-2.4 L F-100 or F-100 Diluted. Do not give iron if child is on RUTF.																				
EYE INFECTIONS	08:00	AC	AC	AC	AC	AC	AC	AC													
Tetracycline ointment 3x daily or Chloramphenicol 1 drop 4x daily	14:00	BP	BP	BP	BP	BP	BP	BP													
	20:00	PA	PA	PA	PA	PA	PA	PA													
	02:00	TA	TA	TA	TA	TA	TA	TA													
Corneal ulceration: As above, plus Atropine 1 drop 3 x daily	<u>None</u>																				
Ear, mouth, or throat problems																					
Dermatosis 0 + + + + +	++	+++	++	++	+	+	++	0													
Bathing, 1% potassium permanganate or zinc oxide	UR	UR	UR	UR	UR	UR	UR														

2.0 Caring for the Skin and Bathing

Bathe children daily unless they are very sick. If a child is very sick, wait until the child is recovering before bathing him or her.

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 minutes/day in a 1 percent 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 prevent loss of serum and inhibits infection. Sign on the Daily Care Chart of the Treatment Card when the bath is done. Circle '1% potassium permanganate' if it is used. (See example on the [previous page](#).)

If the child has severe dermatosis but is too sick to be bathed, dab 1 percent 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.

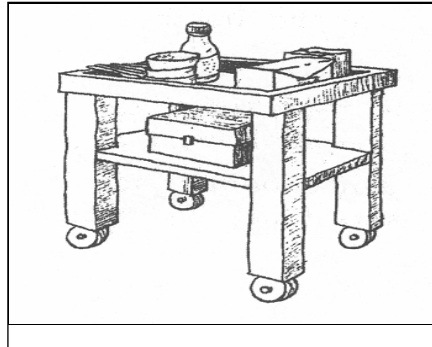
Apply barrier cream to raw areas. Useful ointments are zinc oxide and castor oil ointment, petroleum jelly or paraffin gauze dressing. These help relieve pain and prevent infection. Use a different tube of ointment for each child to avoid spreading infection. If the nappy (diaper) area becomes colonised with *candida*, use nystatin ointment or cream after bathing. (Candidiasis is also treated with oral nystatin.)

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



3.0 Giving Prescribed Antibiotics and Other Medications and Supplements

It is efficient to give antibiotics and other medications using a nursing trolley that is wheeled around the ward regularly (for example, every 2 or 4 hours). As the nurse passes each bed, he or she checks the Treatment Card and gives the child any medication needed at that time. In addition, he or she may monitor respirations, pulse and temperature, give eye drops and so on. The needed equipment and medications are kept on the trolley.



3.1 Giving Antibiotics as Prescribed

Note: The prescription of appropriate antibiotics has already been covered in **Module 3. Initial Management**. This section is about administering them.

When antibiotics are prescribed, list them on the Daily Care Chart of the Treatment Card. Also list the time that each dose should be given, allowing one row per dose. **Draw a box around the days and times** that the antibiotic should be given. If the prescription changes, be sure to update the Daily Care Chart. Whenever a dose is given, sign in the appropriate box of the drug on the Daily Care Chart.

Look at the example of the Daily Care Chart on [page 5](#). Notice how the ‘ANTIBIOTICS’ section is set up and completed.

It is assumed that nursing staff know how to measure and administer oral doses, so that will not be discussed here. However, giving antibiotics by IM injection may be difficult in a child with SAM and requires special care and attention. You can apply lidocaine cream on the skin to reduce the pain.

Possible sites for IM injections are the buttocks or upper arm. Carefully select the site for an injection:

- Choose a site with enough muscle.
- Change the site when it becomes sore.

3.2 Giving Folic Acid

Folic acid is a vitamin of the B complex that is important for treating and preventing anaemia and repairing the damaged gut.

- Do not give additional folic acid to children if they are fed using commercial (pre-packaged) therapeutic foods (F-75, F-100, ready-to-use therapeutic food [RUTF] and rehydration solution for malnutrition [ReSoMal]) that meet World Health Organisation (WHO)

specifications. Only give additional folic acid if therapeutic feeds do not comply with WHO specifications.

- If the feeds do not comply with WHO specifications, give each child a large dose (5 mg) on day 1 and subsequent daily 1 mg folic acid.

Initial on the Daily Care page of the treatment card when folic acid is given.

3.3 Giving Vitamin A

Children with SAM are at high risk of blindness due to vitamin A deficiency. Thus, all therapeutic feeds that comply with WHO specification contain the adequate daily requirement of vitamin A.

- Do not give additional vitamin A if the child is getting these feeds unless the child has eye signs of vitamin A deficiency or history of recent measles.
- If eye signs present, (Bitot's spots, corneal clouding or corneal ulceration) or recent measles, give treatment dose on day 1, 2 and 14.
 - SAM children with signs of eye infection (pus, inflammation) should receive vitamin A. Pus in the eye may mask the eye signs of vitamin A deficiency.

Treatment dosages of vitamin A

Treatment dosages of vitamin A are given if:

- The child has visible eye signs of vitamin A deficiency: Bitot's spots, corneal clouding or corneal ulceration, *or*
- The child has recent measles: now or in the past 3 months

The treatment doses are given regardless the SAM status, on day 1, day 2 and at least 2 weeks later, preferably on day 14.

Timing and Oral Treatment Dosages of Vitamin A

	Timing	Age	Dosage (IU)
Only children with eye signs or recent measles	Day 1	< 6 months	50,000
		6–12 months	100,000
		> 12 months	200,000
	Day 2	Same age-specific dose	
	Day 14	Same age-specific dose	

Oral treatment with vitamin A is standard. However, for children with severe anorexia, oedema or septic shock, if available, IM treatment is preferred for the first dose only.

For oral administration, an oil-based formulation is preferred. When using IM treatment, only water-based formulations should be used. The IM doses are 100,000 IU (water-based), except for children under 6 months of age, who should be given 50,000 IU.

Enter the dose in the first column of the Daily Care Chart, and sign when vitamin A is given. Sometimes the first dose is given immediately when the child arrives at the hospital for emergency treatment of corneal ulceration. If so, be sure that this dose is entered on the Daily Care Chart, so that a duplicate dose is not given on day 1.

3.4 Giving Multi-Vitamin

Commercial (pre-packaged) F-75, F-100 and RUTF currently available comply with WHO specifications and contain sufficient minerals and vitamins to supplement the daily requirements of a child with SAM.

A commercial combined mineral and vitamin mix (CMV) may be used if available. CMV contains all essential minerals and vitamins, including vitamin A, and is added to the recipes for local preparation of therapeutic foods to comply with the WHO specifications.

If CMV cannot be added, then a multivitamin supplement is given to the child daily until transitioned to RUTF.

Note: Vitamin A should be added as per standard requirement.



SHORT ANSWER EXERCISE

1. Look again at the example of the Daily Care Chart for Atuweni ([page 5](#)). Atuweni is 2 years of age and was admitted with some pus in her left eye. Should she be given a dose of vitamin A on day 14? What is the dose?

COMMENT: WHO Update suggests giving at the end of rehabilitation and not on day 14. There is need to agree with this change or leave it as before (decision by country).

2. Another child with SAM, Luntha, is admitted with no signs of vitamin A deficiency or eye infection. Luntha is 12 months of age and has never had measles. He has no record of previous doses of vitamin A. On what day(s) should Luntha be given vitamin A? What is the dose?
3. George is 3 years of age and has severe oedema. He has Bitot's spots, and there is no evidence that he has had a dose of vitamin A in the past month. Should George's first dose of vitamin A be given orally, or by IM injection? What is the dose?

When and how should George's next dose be given? What is the dose?

4. Delia (age 20 months) was referred from a health centre where she was given 200,000 IU vitamin A yesterday. She has corneal clouding. Should she be given another dose today, on day 1 at the hospital?

Should she be given a dose on day 2? On day 14?

Check your own answers to this exercise against those given on page 39 at the end of the module.

3.5 Giving Treatment for Worms

Worms are common in older children who play outside, and they can be a problem in children with SAM. They can cause dysentery and anaemia.

In prevalent areas, all children over 1 year of age are routinely treated for worms as soon as their appetite has returned and they have started gaining weight (about 2 days on RUTF or F-100). Treatment may be needed immediately, however, whenever a very severe infection with worms has been diagnosed.

If the child has severe infection with worms, record that fact on the Daily Care Chart, along with the drug(s) given. Sign when drugs are given. If no worms are diagnosed, give the drug after 1 week as presumptive treatment and sign.

3.6 Giving Iron

Even if a child or infant is anaemic, he or she should not be given iron (ferrous sulphate) until he or she is recovering, that is, the child is on F-100 or F-100 Diluted during transition and gaining weight for 2 consecutive days. If given earlier, iron can have toxic effects and promote certain bacteria growth and resistance (e.g., Salmonella sp.).

Iron is not given if the child is on RUTF. RUTF contains enough iron to cover the daily corrective needs of the child. Iron is not given during stabilisation.

Note: If malaria is confirmed or suspected, the child should be treated for malaria first before starting iron therapy.

Calculate and administer the amount needed: Give 3 mg elemental Fe/kg/day in two divided doses. Always give iron orally, never by injection. Preferably give iron between meals using a liquid preparation or add iron in the milk: Crush one tablet of 200 mg ferrous sulphate in 2–2.4 L of F-100 or infant formula or F-100 Diluted.

Write the dose for the specific child on the Daily Care Chart in the left column. Sign each time on each day that the dose is given. Continue giving iron throughout the hospital stay if the child is not taking RUTF.

Iron syrup may come in different formulations that affect how much to measure for each dose. The following table shows a common formulation and how much to measure for each dose so that the child receives approximately 3 mg elemental Fe/kg/day. The amounts in the dosages are very small (less than a ¼ teaspoon) and will need to be measured with a syringe.

Doses of Iron Syrup for a Common Formulation

Weight of child	Dose of Iron:
	Ferrous sulphate 100 mg per 5 ml (20 mg elemental iron per ml)
3 up to 6 kg	0.5 ml
6 up to 10 kg	0.75 ml
10 up to 15 kg	1 ml

3.7 Use of Mineral and Vitamin Mix

Commercial (pre-packaged) F-75, F-100 and RUTF currently available comply with WHO specifications and contain sufficient mineral and vitamins to supplement the daily requirements of a child with SAM.

In case the commercial (pre-packaged) F-75, RUTF or F-100 is not used, a **mineral and vitamin mix** must be added to the recipes for local preparation of therapeutic foods to correct the electrolyte and vitamin imbalance of the child with SAM, or separate multivitamin drops that include vitamin A will be needed. The mineral mix should contain potassium, magnesium and other essential minerals. The mineral mix and vitamin mix recipes are described in **Module 2. Principles of Care**.

A commercial CMV may be used if available. CMV contains all essential minerals and vitamins, including vitamin A, and is added to the recipes for local preparation of therapeutic foods to comply with the WHO specifications.

Whether using CMV or vitamin mix and mineral mix in preparing therapeutic foods, extra folic acid is needed.

If the mineral mix is not commercially available or affordable:

- Make a 10 percent solution of potassium chloride (100 g in 1 litre of water) and a 1.5 percent solution of zinc acetate (15 g in 1 litre of water).
- For 1 litre F-75 and F-100, add 22.5 ml of potassium chloride solution to 1 litre of milk.
- For 2 litres ReSoMal, add 45 ml of potassium chloride solution to a 1-litre standard ORS package.
- Give the child 1.5 percent zinc acetate solution 1 ml/kg/day orally, and 50 percent magnesium sulfate 0.3 ml/kg to maximum 2 ml/kg IM single dose.

Vitamin mix

The vitamin mix is added to therapeutic foods to comply with WHO specifications. If the vitamin mix cannot be added, a multivitamin supplement plus vitamin A should be given to the child.

4.0 Caring for the Eyes

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

Here is a summary of the eye drops needed for the eye signs discussed in this course.

If the child has:	Then:
Bitot's spots only (no other eye signs)	No eye treatment is needed. (Note that vitamin A treatment is given.)
Pus or inflammation	Give chloramphenicol or tetracycline.
Corneal clouding and ulceration	Give both: <ul style="list-style-type: none">• Chloramphenicol or tetracycline, <i>and</i>• Atropine

Doses are as follows. Instil drops into the affected eye(s):

- Chloramphenicol eye drops, 1 drop four times per day, or, tetracycline (1 percent) eye ointment application three times per day, for 7–10 days
- Atropine (1 percent) 1 drop three times per day until the condition has resolved

If both types of drops are needed, they are given at the same time for convenience. Continue treatment for at least 7 days, until all eye signs are gone.

Use special care and tenderness 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 your 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 normal (0.90 percent) saline solution, held in place with gauze bandages. The damp pads and bandages will cool the soreness, prevent the child from scratching his or her eyes and promote healing. Change pads and bandages whenever drops are given.

To bandage the eyes:

- Wash your hands.
- Soak eye pads with normal (0.90 percent) 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 children with SAM sleep with their eyes open. Nurses should gently close the child's eyes while sleeping to prevent abrasion. Sign on the Daily Care Chart when eye drops are given. Shade out the boxes when eye drops are no longer needed.



Exercise A

In this exercise, you will decide on treatment for children with various eye signs. For some of the cases, you will need to refer to the *Photographs* booklet. For each child pictured or described, determine how many doses of vitamin A are needed and what kind of eye drops are needed.

1. Photo 8 – It was necessary to clean and open this child's eyes to examine them. Pus and inflammation were the only eye signs found. The child 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. Photo 9 – This child has corneal clouding. 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?

3. Photo 10 – This child 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?

4. (No photo) A severely malnourished child (age 2 years) has measles. He has some inflammation in both eyes but no other eye signs. He was referred from a health centre, where he received a dose of vitamin A yesterday.

On what days should this child receive vitamin A?

What eye drops should be given, if any?

5. (No photo) A severely malnourished child has clear eyes. The child is 20 months old and had measles 2 months ago. There is no evidence that he had a dose of vitamin A in the past month.

On what days should this child receive vitamin A?

What eye drops should be given, if any?

6. (No photo) A severely malnourished child of 11 months has clear eyes with no signs of eye problems. She has not had measles. She has not had a dose of vitamin A in the past month.

On what days should this child receive vitamin A?

What eye drops should be given, if any?

7. Photo 12 – This child has corneal ulceration. He has not had a dose of vitamin A in the past month.

On what days should this child receive vitamin A?

What eye drops should be given, if any?

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



Exercise B

This exercise will be done as a group. Your facilitator will prompt you as you set up the Daily Care Chart. Obtain a blank Daily Care Chart to use in this exercise. (There should be a supply in your classroom.) When you have completed this exercise, save the Daily Care Chart for later use in Exercise C.

Case – Bwerani

Bwerani is an 18-month-old girl with severe wasting and oedema of both feet. She also has severe dermatosis, corneal ulceration of her left eye and pus draining from her left ear. Her Initial Management Chart is provided on the [next page](#).

Nurses take the nursing trolley around the ward to give antibiotics, eye drops and so on at the following times:

8:00, 14:00, 16:00, 20:00, 24:00, 2:00

Use the information on Bwerani's Initial Management Chart and the above information on nursing rounds to set up Bwerani's Daily Care Chart. Your facilitator will prompt you to include the necessary information.

When the group has completed this exercise,
your facilitator will give you an answer sheet.

CHILD NAME: Bwerani M/F 18 Months HOSPITAL NUMBER: _____ Date: 15/8/2001 Time: 7:30



INITIAL MANAGEMENT CHART

Comments on pre-referral and/or emergency treatment already given:

SIGNS OF SAM Severe wasting? Yes/No Bilateral Pitting Oedema? 0 <u>+</u> ++ +++ Dermatitis? 0 + ++ <u>+++</u> (raw skin, fissures) Weight: <u>7.0</u> kg Height / length: <u>76</u> cm WFH: <u>-3</u> z-score MUAC: <u>112</u> mm		SIGNS OF SHOCK: None Lethargic/unconscious Cold hands Slow capillary refill (> 3 seconds) Weak or fast pulse If lethargic or unconscious, cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids: Amounts IV fluids per hour: 15 ml X _____ kg (child's wt.) = _____ ml					
TEMPERATURE: <u>38.2</u> °C axillary / Rectal Cover child. If axillary <35° C or rectal <35.5° C, actively warm child. Check temperature every 30 min.		1 st hr Start Monitor every 10 minutes 2 nd hr Monitor every 10 minutes					
BLOOD GLUCOSE (<3 mmol/L or <54 mg/dl): <u>4</u> (If no test, treat for hypoglycaemia.) If alert, give 10% glucose 50 ml (infant 25 ml) orally or by NG. If lethargic/unconscious, give sterile 10% glucose 5 ml/kg IV, then 50 ml (25 ml infant) by NG. Amount IV: 5 ml x _____ kg (child's weight) = _____ ml. Amount oral: _____ ml Time glucose given: _____ H Route: Oral NG IV		Respiratory rate Pulse rate					
HAEMOGLOBIN (Hb): <u>9</u> g/dl (or PCV: _____ %) Blood type: _____ If Hb <4 g/dl (or Hb 4-6 g/dl AND respiratory distress), transfuse 10 ml/kg whole fresh blood slowly over 3 hours (or 7 ml/kg packed cells in case of suspected heart failure). Amount: _____ Time started: _____ H Ended: _____ H		SIGNS OF DEHYDRATION: Watery diarrhoea? Yes No Blood in stool? Yes No Vomiting? Yes No Number of days with diarrhoea: _____ If diarrhoea, circle signs present: Restless/irritable Lethargic Thirsty Recent sunken eyes Dry mouth/tongue No tears					
EYE SIGNS: None Left Right MEASLES: Yes No Bitot's spots, Corneal clouding, Corneal ulceration Pus or Inflammation If eye signs (Bitot's spots, corneal clouding and corneal ulceration) or measles, give vitamin A treatment dose and atropine immediately. Record vitamin A in box below, and on Daily Care Chart. <u>+ pus from left ear</u>		If diarrhoea and/or vomiting, give ReSoMal orally (or by NG tube if too ill) every 30 minutes for first 2 hours and monitor ***. Amount: 5 ml x _____ kg (child's weight) = _____ ml ReSoMal		For up to 10 hours, give ReSoMal and F-75 orally (or by NG tube) in alternate hours and monitor every hour ***. Amount: 5-10 ml x _____ kg (child's weight) = _____ to _____ ml ReSoMal every 2 hours			
VITAMIN A: If eye signs or recent measles, give treatment dose on day 1, 2, and 14. Time first dose: <u>08:00</u> (Do not give vitamin A if the child does not have eye signs.)		< 6 months 50,000 IU 6-12 months 100,000 IU > 12 months <u>200,000 IU</u>		Time Start:			
FEEDING: Begin feeding with F-75 as soon as possible. If child is rehydrated, reweigh before determining amount to feed. New weight: _____ kg. Amount for 2-hourly feedings: <u>75</u> ml of F-75* Time first fed: <u>08:00</u> Record all feeds on 24-Hour Food Intake Chart. * If hypoglycaemic, feed ¼ of this amount every half hour for first 2 hours; continue until blood glucose reaches 3 mmol/L, or 54 mg/dl		Passed urine (YES/NO) Number of stools Number of vomits Hydration signs (Yes/No)** Amount ReSoMal taken (ml)		F-75 F-75 F-75 F-75 F-75			
ANTIBIOTICS: Prescription/Route		Dose/Frequency/Duration				Time of 1 st Dose	
<u>Benzylpenicillin IV</u>		<u>350,000 IU 4x/day 2/7</u>				<u>08:00</u>	
<u>Gentamicin</u>		<u>50 mg 1x/day 7/7</u>				<u>08:00</u>	
MALARIA TEST (Type/Date/Outcome): <u>Other</u>		<u>Atropine 1% 1 drop 3x/day, c'cal 1 drop 4x/day</u>				<u>08:00</u>	
HTS Date: / / Outcome: NR R Exposed DNA PCR: Positive Negative Not done N/A		Date started cotrimoxazole: / /		Date started ART: / /			

5.0 Monitoring Pulse, Respirations and Temperature and Watching for Danger Signs

Measure pulse, count respirations and measure temperature every 4 hours, before feeding. This monitoring is very important because an increase in pulse rate or respiratory rate can signal a problem, such as an infection, or heart failure from over-hydration due to feeding or rehydrating too fast. An increase or decrease in temperature to above or below normal can also indicate infection.

It is critical to monitor the child closely (every 4 hours) during initial treatment and during transition when feeding on RUTF and/or F-100. After the child is stable and feeding well on RUTF or freely on F-100, you may decrease monitoring of pulse, respirations and temperature to once a day as long as the child is gaining weight. If there is no weight gain, or if the child loses weight, resume monitoring every 4 hours.

Record results of monitoring on the Monitoring Chart, which is the third chart of the Treatment Card. There is space on the Monitoring Chart to record six readings per day on pulse, respirations and temperature for a number of days. It is convenient to keep the charts of the Treatment Card in order on a clipboard. When the first Monitoring Chart is full, simply add another one to the stack.

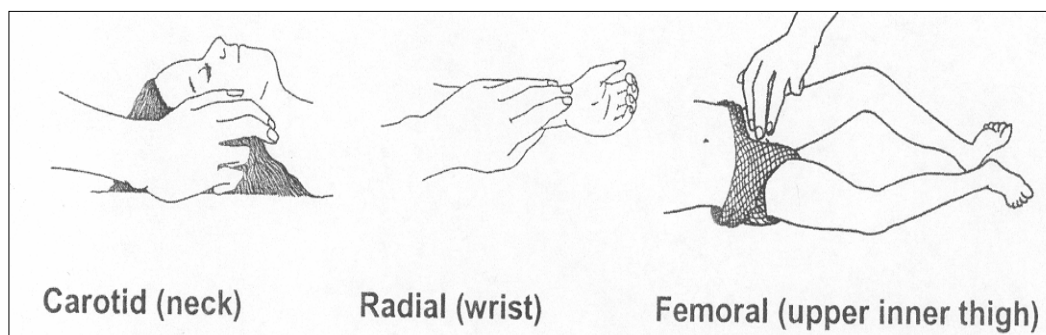
Example of Monitoring Chart of the Treatment Card

Page 22 shows an example of a completed Monitoring Chart of the Treatment Card.

Tell a facilitator when you have reached this point in the module. When everyone is ready, your facilitator will present a brief demonstration of how to use the Monitoring Chart. In the meantime, you may continue reading.

5.1 Measuring Pulse Rate

Find the child's pulse in one of the following places:



Count pulses (beats) per minute, or count pulses per 30 seconds and multiply by 2. Record pulses (beats) per minute on the Monitoring Chart of the Treatment Card.

5.2 Measuring Respiratory Rate

Watch the child's chest while the child is quiet. Count breaths per minute. Count for a full minute, since breathing may be irregular.

Look for breathing movement anywhere on the child's chest or abdomen. Usually you can see breathing movement even when a child is dressed. If you cannot see the movement easily, ask the mother to lift the child's shirt. If the child starts to cry, ask the mother to calm the child before you start counting.

Record breaths per minute on the Monitoring Chart of the Treatment Card.



5.3 Taking Temperature

Steps for taking temperature are discussed in **Module 3. Initial Management.**

A graph is used for recording temperature on the Monitoring Chart so that increases and decreases can easily be seen. Along the bottom of the graph, enter the times at which monitoring will be done (at 4-hour intervals). When a temperature is taken, write an 'X' or large dot on the line above the time and across from the temperature. You may connect the points with a line. Indicate whether axillary or rectal temperature is taken.

5.4 Recognising Danger Signs

Changes in pulse, respirations and temperature

The following increases in pulse or respiratory rate should be confirmed to determine whether there is problem:

- If pulse increases by 25 or more beats per minute, repeat to confirm.
- If respiratory rate increases by 5 or more breaths per minute, repeat to confirm.

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. Call a physician for help. Stop feeds and ReSoMal, and slow fluids until a physician has checked the child.

If only the respiratory rate increases, determine whether the child has fast breathing, which may indicate pneumonia. If the child is from 0–2 months of age, a rate of 60 breaths per minute or more is considered fast. If the child is from 2–12 months of age, a rate of 50 breaths per minute or more is considered fast. If the child is 12 months–5 years of age, a rate of 40 breaths per minute or more is considered fast.

If only the pulse rate increases, there is no cause for concern, because the increase may be the result of many reasons, such as fear or crying.

If a child's axillary temperature drops below 35° C, the child is hypothermic and needs re-warming. Have the mother hold the child next to her skin (apply the Kangaroo technique) or use a heater or lamp (with caution). Be sure the room is warm (25° C–30° C if possible) and the child is covered. Hypothermia may be a sign of infection. If the temperature drops suddenly, call a physician.

Increases in temperature can also indicate infection.

Call a physician for help if there is a sudden increase or decrease in temperature. Changes in temperature can easily be seen on the temperature graph on the Monitoring Chart of the Treatment Card. Notice the changes in temperature on the example of the Monitoring Chart on [page 22](#).

Summary of Danger Signs Related to Pulse, Respirations and Temperature

	Danger sign:	Suggests:
Pulse and respirations	Confirmed increase in pulse rate of 25 or more beats per minute, along with confirmed increase in respiratory rate of 5 or more breaths per minute	Infection <i>or</i> Heart failure (possibly from over-hydration due to feeding or rehydrating too fast)
Respirations only	Fast breathing: <ul style="list-style-type: none"> • ≥ 60 breaths/minute in infant less than 2 months • ≥ 50 breaths/minute in an infant 2–11 months • ≥ 40 breaths/minute in a child 1–5 years 	Pneumonia
Temperature	Any sudden increase or decrease Axillary temperature $< 35^{\circ}\text{C}$, or rectal temperature $< 35.5^{\circ}\text{C}$	Infection Hypothermia (possibly due to infection, a missed feed or child being uncovered)

Other danger signs

Carefully watch any child with an infection, such as pneumonia or sepsis, ear infection or urinary tract infection. 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. For example, isolate the child behind a screen or keep him or her in a separate area. Take special care with handwashing after handling these children.

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

- Loss of appetite
- Change in mental state (e.g., becoming lethargic)
- Jaundice (yellowish skin or eyes)
- Cyanosis (tongue/lips turning blue from lack of oxygen)
- Difficult breathing
- Difficult feeding or waking (drowsy)
- Abdominal distension
- Appearance or re-appearance of oedema
- Large weight changes (> 5 g/kg/day)
- Increased vomiting
- Petechiae (bruising)

Alert a physician if any of these danger signs appear. **Annex A**, Monitoring Danger Signs in Inpatient Management of SAM provides a useful summary.

6.0 Continuing Care at Night

Many deaths in children with SAM 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 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.



SHORT ANSWER EXERCISE

The following questions relate to the example of the Monitoring Chart on the previous page. The child monitored is 2 years of age.

1. What were the child's temperature, respiratory rate and pulse rate at 14:00 on day 2?

_____ ° C _____ breaths/minute _____ beats/minute

2. What is the trend for the child's temperature over days 1 through 3? (Check one answer.)

- _____ A. There are sharp increases in temperature.
_____ B. The temperature rises slowly and steadily.
_____ C. The temperature stays below normal.

3. Has there been any significant change in the child's pulse rate? If so, when?

4. Has there been any significant change in the child's respiratory rate? If so, when?

5. At 22:00, the nurse finds that the child has a rectal temperature of 38° C, a pulse rate of 100 beats per minute and a respiratory rate of 45 breaths per minute (confirmed after 30 minutes). Enter this information on the Monitoring Chart.

6. Are there any danger signs? If so, what are they? Should the nurse call a physician?

Compare your answers to this exercise to the answers given beginning on page 39.



Exercise C

In this exercise, you will make entries on a Daily Care Chart and Monitoring Chart of a Treatment Card. You will use the Daily Care Chart that you set up for Bwerani in Exercise B. Obtain a blank Monitoring Chart from the supply in your classroom.

Pretend that you are the nurse who cares for Bwerani on her first day in the ward. At the times shown below, you give Bwerani her medications and/or monitor her progress. Make appropriate entries on the Daily Care Chart and Monitoring Chart. For example, enter your signature or record results of monitoring. *Additional information about feeding is provided in italics. You do not need to record this information.*

Day 1

8:00 *Bwerani is given her first feed of F-75. It is recorded on the 24-Hour Food Intake Chart.*

- You give Bwerani benzyl penicillin and gentamycin IV dosages adapted to her bodyweight of 7 kg.
- You give her 200,000 IU of vitamin A.
- You put 1 drop of chloramphenicol in both eyes.
- Her ear is draining, and you gently wick it with a clean cloth.
- Since Bwerani is ill, you do not bathe her, but you dab potassium permanganate solution on the worst patches of dermatosis, and you cover the raw areas with ointment and gauze.

9:00 You check Bwerani's pulse, respiratory rate and temperature. Her pulse rate is 100 beats per minute, her respiratory rate is 35 breaths per minute and her axillary temperature is 38° C.

10:00 *Bwerani is given her second feed of F-75. It is recorded on the 24-Hour Food Intake Chart.*

12:00 *Bwerani is given her third feed of F-75. It is recorded on the 24-Hour Food Intake Chart.*

13:00 You check Bwerani's pulse, respiratory rate and temperature. Her pulse rate is 105 beats per minute, her respiratory rate is 35 breaths per minute and her rectal temperature is 38° C.

14:00 *The shift changes. Now pretend that you are the nurse on the next shift.*

Bwerani is given her fourth feed of F-75. It is recorded on the 24-Hour Food Intake Chart. You give Bwerani benzyl penicillin 350,000 IU IV.

16:00 You put one drop of chloramphenicol in both eyes.

Bwerani is given her fifth feed of F-75. It is recorded on the 24-Hour Food Intake Chart.

17:00 You check Bwerani's pulse, respiratory rate and temperature. Her pulse rate is 110 beats per minute, her respiratory rate is 35 breaths per minute and her rectal temperature is 37.8° C.

18:00 *Bwerani is given her sixth feed of F-75. It is recorded on the 24-Hour Food Intake Chart.*

20:00 You give Bwerani benzyl penicillin 350,000 IU IV and *her seventh F-75 feed*.

Answer the following questions:

1. At 20:00 and at 22:00, Bwerani will be fed again. At that time, what else should be given to Bwerani?
2. When should Bwerani's pulse rate, respiratory rate and temperature next be monitored?
3. What should be done for Bwerani at 24:00?
4. What should Bwerani receive at 02:00 in the morning?

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



Exercise D

In this exercise, you will review several Monitoring Charts and identify any danger signs.

Case 1 – Bwerani

You will remember that Bwerani was admitted to the SAM ward with an ear infection and fever. You began Bwerani's Monitoring Chart in the last exercise. Bwerani's continuing Monitoring Chart for the first 2 days is on the next page. Review her Monitoring Chart; then answer the questions below.

1. What happens to Bwerani's temperature at 5:00 on day 2?
2. Is this temperature change a danger sign? Why or why not?
3. What might be a cause of the temperature change?
4. Do Bwerani's pulse and respiratory rates indicate any danger signs?
5. What should be done for Bwerani at 5:00 in the morning?

Case 2 – Karen

Karen is 2 years of age and was admitted to inpatient care with severe wasting and diarrhoea. She took ReSoMal orally for 2 hours. Then she began taking ReSoMal and F-75 in alternate hours. She did not take enough F-75 by mouth, so now she is being fed by nasogastric (NG) tube. She still has some diarrhoea and is given ReSoMal after each loose stool.

Review Karen's Monitoring Chart on the next page and answer the questions below.

1. Does Karen's temperature graph indicate any danger sign? If yes, what is the danger sign?
2. Do Karen's pulse and respiratory rates indicate any potential danger sign? If yes, what is the danger sign?
3. What should be done in 30 minutes?
4. In 30 minutes, Karen's pulse rate is 125 and her respiratory rate is 45. What should the nurse do?
5. What is a possible reason for the increase in Karen's pulse and respiratory rates?

Case 3 – Beni

Beni is 2 years of age. He has severe wasting with moderate oedema (++), but has no obvious complications or infections on admission to inpatient cCare. He is prescribed a routine course of amoxicillin for 5 days.

Review Beni's Monitoring Chart on the next page and answer the questions below:

1. What happens to Beni's temperature during the night of day 2 and morning of day 3? Does this indicate a danger sign?
2. Does the record of Beni's pulse rates suggest any danger sign? Why or why not?
3. Does the record of Beni's respiratory rates suggest any problem? Why or why not?
4. Should the physician be alerted?
5. The nurse notes that Beni has chest in-drawing. What could be the problem? What treatment should be given to Beni?

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

7.0 Preparing and Maintaining a Weight Chart

How to weigh a child was explained in **Module 2, Principles of Care**. Remember to weigh the child at about the same time each day, about 1 hour before or after a feed.

After weighing the child each day, record the child's weight on the Daily Care Chart of the Treatment Card. Then plot the child's weight on the weight chart included in the Treatment Card. The weight chart shows the child's progress toward discharge weight, any loss of weight due to oedema and/or failure to improve.

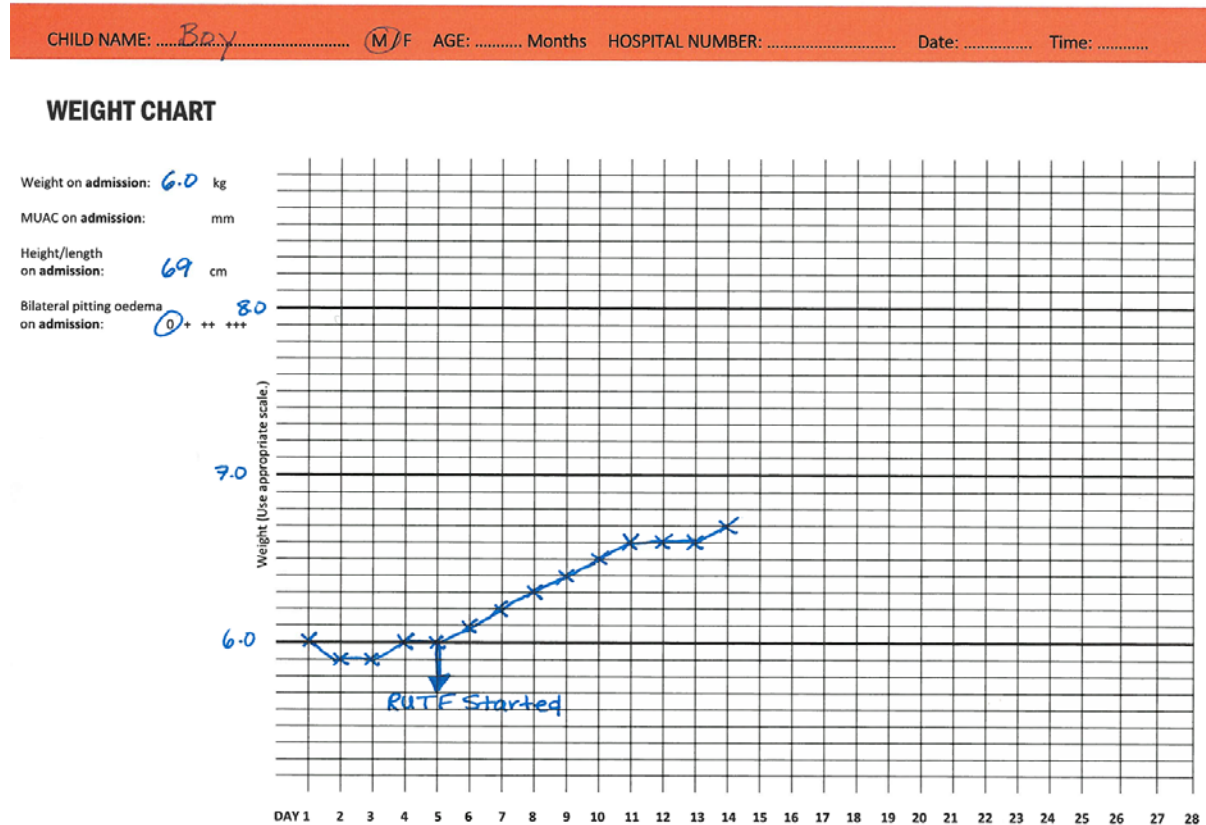
An example of a completed weight chart is shown on the [next page](#). Study the example as you read the instructions below for preparing and maintaining a weight chart.

- Label the vertical axis of the graph with a range of weights that includes the child's starting weight and allows for some weight loss as well as weight gain. Each horizontal line on the graph should represent a difference of 0.1 kg.
 - If the child has no oedema, label the axis so that the starting weight will be near the bottom, but allow a little space below for possible weight loss.
 - If the child has oedema, allow more space for weight loss (up to 30 percent) by placing the starting weight higher on the axis. As a general guideline, allow for up to:
 - 1 kg weight loss if mild (+) or moderate (++) oedema
 - 2 kg weight loss if severe (+++) oedema and child is ≤ 7 kg
 - 3 kg weight loss if severe (+++) oedema and child is > 7 kg
- If the child is admitted on WFH, one could determine the child's desired discharge weight by using the WFH Look-Up Table, and defining the weight at $WFH \geq -2$ z-score and mark the desired discharge weight with a horizontal line across the chart. This practice is not useful for children who will transfer to outpatient care, however, and criteria for discharge from hospital are not based on anthropometry; therefore, it is no longer recommended.
- Each day, plot the child's weight on the chart. Plot the starting weight above day 1, the next day above day 2 and so on. Mark each point with an 'X' or large dot so that it shows up clearly.
- Connect the points for the daily weights to see the child's progress.
- To highlight the day that RUTF or F-100 is begun (the first day of transition), draw and label an arrow pointing to the weight for that day.

Example of Weight Chart for a Boy with No Oedema

Starting weight: 6.0 kg Length: 69 cm

WEIGHT CHART



The chart above shows a child who lost a little weight during the first few days on F-75, but then began to gain steadily after transition to RUTF.

Note: If possible, the child is transferred to outpatient care after stabilisation as soon as transfer criteria are met.



SHORT ANSWER EXERCISE

An example of a partially completed weight chart for a girl with mild (+) oedema is on the next page. The child's starting weight is 5.3 kg and is 67 cm. Since she has mild oedema, space should be allowed for a 1 kg weight loss. To allow for this loss, the vertical axis is labelled so that 4.0 kg is at the bottom.

1. Plot the weights for the next several days on the chart and connect them with a line:

Day 11 weight: 5.1 kg

Day 12 weight: 5.2 kg

Day 13 weight: 5.3 kg

2. What was the child's lowest weight? On what day did this occur?
3. Why did the child lose weight?
4. Has the child made progress?

Compare your answers to those given on page 39 at the end of the module.

Example of Weight Chart for a Girl with Mild Oedema (+)

Starting weight: 5.3 kg Length: 67 cm

WEIGHT CHART

CHILD NAME: Girl M/F AGE: Months HOSPITAL NUMBER: Date: Time:

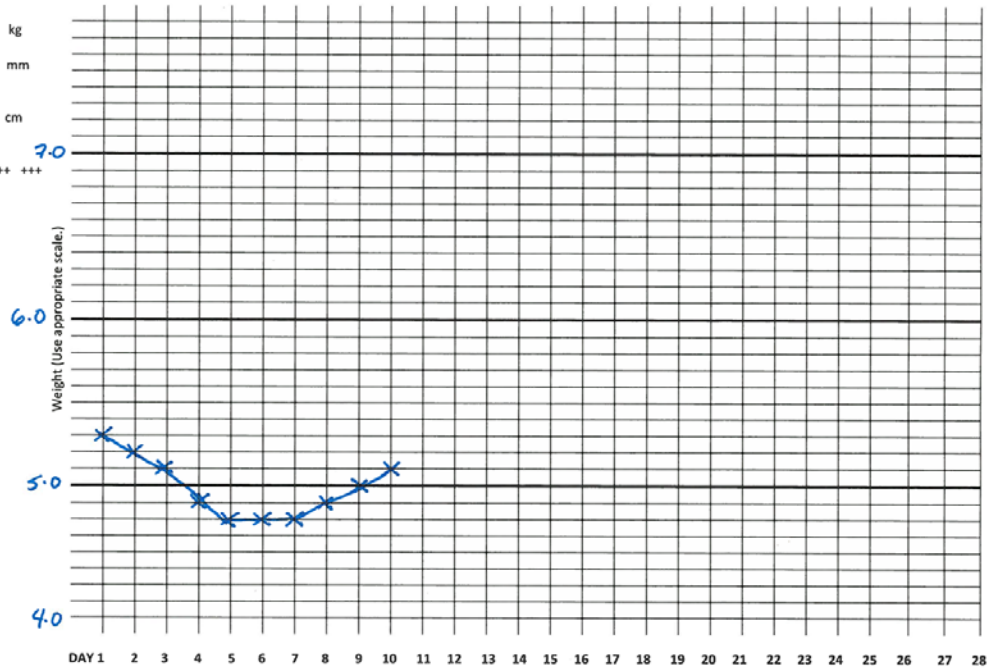
WEIGHT CHART

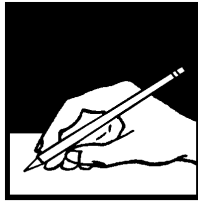
Weight on admission: 5.3 kg

MUAC on admission: mm

Height/length on admission: 67 cm

Bilateral pitting oedema on admission: 0 ++ +++





Exercise E

In this exercise, you will prepare a weight chart for Daniel, a boy admitted with oedema of both feet (+), severe wasting and corneal clouding. Daniel's weight on admission is 10.1 kg. His height is 91 cm and mid-upper arm circumference (MUAC) is 112 mm. Enter this information in the blanks beside the weight chart on the next page.

1. When labelling the vertical axis of Daniel's weight chart, how much weight loss should one allow for?

2. Label the vertical axis of Daniel's weight chart. Be sure that the range of weights includes the starting weight and the discharge weight, and allows for weight loss. Let each row of the weight chart represent 0.1 kg.

3. Plot Daniel'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 2 – 10.05 kg	Day 6, transition to RUTF – 9.2 kg	Day 10 – 9.6 kg	Day 14 – 9.9 kg
Day 3 – 9.8 kg	Day 7, transition – 9.2 kg	Day 11 – 9.7 kg	
Day 4 – 9.6 kg	Day 8, transition – 9.3 kg	Day 12 – 9.65 kg	
Day 5 – 9.4 kg	Day 9, free feeding on RUTF – 9.4 kg	Day 13 – 9.8 kg	

4. Summarise Daniel's weight changes briefly in words:

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

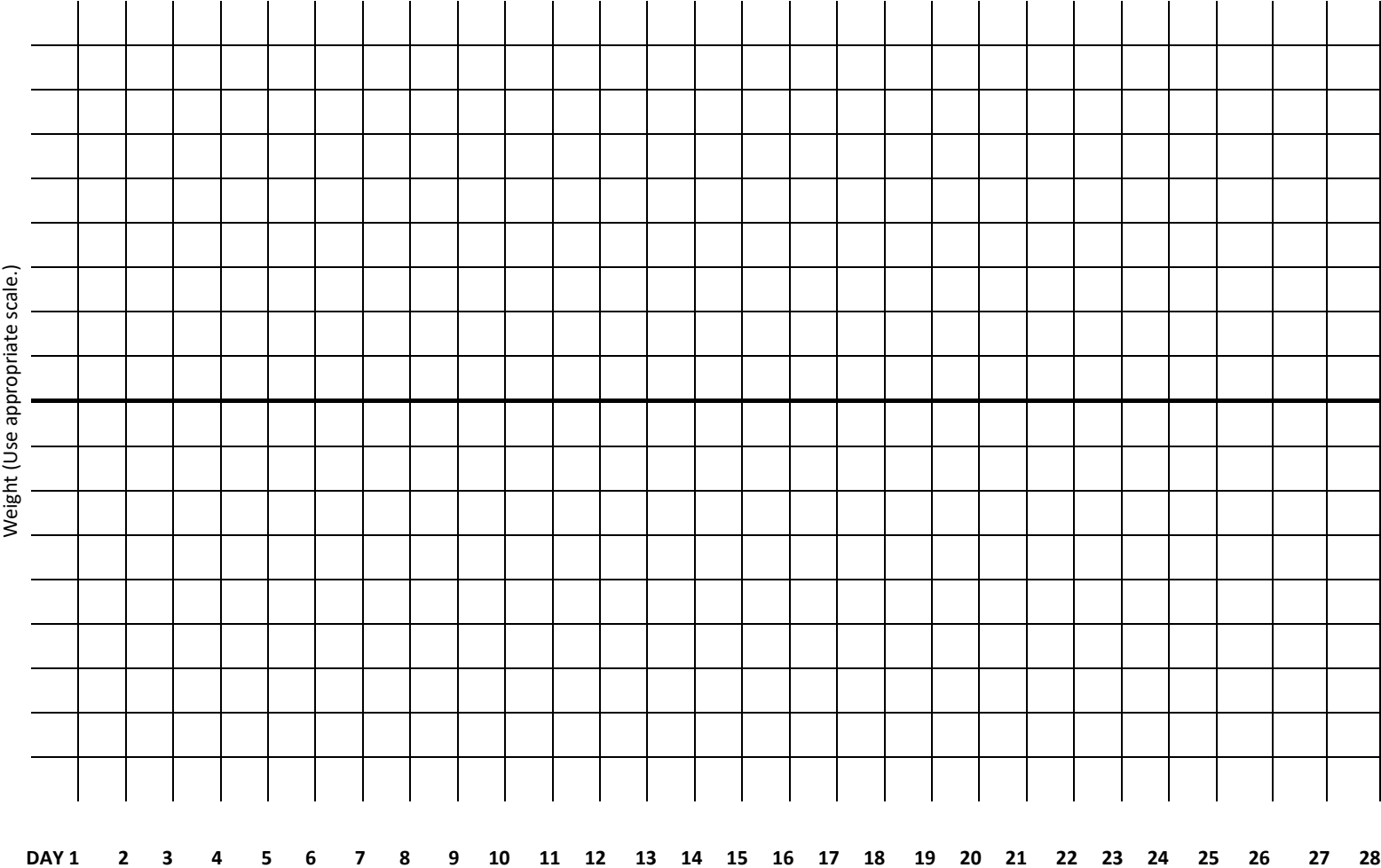
WEIGHT CHART

Weight on admission: kg

MUAC on admission: mm

Height/length on admission: cm

Bilateral pitting oedema on admission: 0 + ++ +++



8.0 Infection Prevention

- All health care workers should exercise handwashing:
 - Before and after handling a patient
 - When conducting a clean/aseptic procedure
 - After conducting procedures involving risk of exposure to bodily fluids
- Health care workers should wear gloves for all procedures involving potential contact with bodily fluids.
- Keep all decontaminated utensils and equipment in well-covered storage containers, such as basin/buckets with lids.
- Label all decontamination and storage containers with their correct labels.
- During health talks, responsible staff should educate caregivers on handwashing before preparing food, feeding their children, administering oral drugs and administering oral rehydration fluids. Caregivers should also wash their hands before and after changing an infant's nappy and after using the toilet.
- Health care workers should treat all reusable utensils such as oxygen tube connectors, prongs and suction tubes by soaking in 0.5 percent chlorine solution for 10 minutes, and then, they should be cleaned with soapy water, rinsed and allowed to dry.
- Decontaminate and clean medical equipment such as tubes in separate basins from feeding/kitchen utensils.
- Responsible staff should ensure caregivers and children with SAM maintain high standards of personal hygiene by educating caregivers on hygiene and sanitation and providing clean linens and clean water for personal hygiene.

Answers to Exercises

Answers to short answer exercise, page 3

1. Answers B, C and D should be checked.
2. Answers A, B, C and E should be checked.
3. Answer B should be checked. Answers A and D may be appropriate in certain circumstances. If the mother is extremely tired, it may be best to let her sleep and feed the child yourself. If several mothers can be trusted to take turns feeding and sleeping, then answer D may be appropriate.

Answer C would make the mother feel guilty and afraid, and would never be appropriate.

Answers to short answer exercise, page 10

1. No, Atuwani should not be given vitamin A because she has no eye signs or recent measles, and receives therapeutic food that complies with WHO specifications.
2. No preventive dose of vitamin A is given if Luntha receives therapeutic food that complies with WHO specifications.
3. Give George's first dose 200,000 IU orally or 100,000 IU by IM injection.

Give the second dose 200,000 IU orally on day 2.

(Note: Give the third dose 200,000 IU orally on day 14.)

4. Yes, Delia should be given a dose on day 1 at the hospital since she has corneal clouding. This will be her second therapeutic dose.

No, she should not be given a dose on day 2 because that would be the third day in a row to receive vitamin A. But, Delia should be given a last treatment dose on day 14 in hospital.

Answers to short answer exercise, page 23

1. 36.4°C 30 breaths/minute 92 beats/minute
2. Answer b should be checked.
3. There has been no significant change in the child's pulse rate.
4. Yes, the respiratory rate increased from 35 to 40 beats per minute between 10:00 and 14:00 on day 4.
5. A temperature of 38°C, a pulse rate of 100 beats/minute and a respiratory rate of 45 breaths/minute should be entered on the Monitoring Chart.
6. Yes, there is a danger sign. There is a sudden increase in temperature. Also, the respiratory rate has again increased by 5 breaths/minute and is at 45, which is considered fast breathing for a 2-year-old. The physician should be called.

Answers to short answer exercise, page 34

1. See below.
2. 4.7 kg on days 6 and 7.
3. The child lost weight due to loss of oedema fluid.

4. Yes, the child has made progress in two ways. First, she lost her oedema, and her weight fell to her true weight of 4.7 kg. Then she put on new tissue and her weight increased to 5.3 kg.

Annex A: Monitoring Danger Signs in Inpatient Management of SAM

Vital signs*	Normal Ranges	Danger Signs	Danger sign could suggest:
Appetite	Good appetite is eating well, asking for more, passing observed RUTF appetite test	Anorexia, appetite loss, no re-gain of appetite after stabilisation treatment	Failure to respond to treatment Infection
Blood glucose	≥ 3 mmol/L or ≥ 54 mg/dl	< 3 mmol/L or < 54 mg/dl; sleeping with eyelids open	Hypoglycaemia
Cold extremities	None	Cold hands (check with back of the hand) with capillary refill longer than 3 seconds and/or weak and fast pulse	Shock
Haemoglobin (Hb)	≥ 4 g/dl or ≥ 6 g/dl with respiratory distress	Severe pallor; Hg < 4 g/dl or < 6 g/dl with respiratory distress	Severe anaemia Anaemic heart failure
Mental state	Clinically well and alert	Change in mental state, drowsy, lethargic, unconscious	Shock, failure to respond to treatment, severe infection
Oedema	None	New oedema, eyelid oedema (puffy eyes), increasing oedema	Fluid overload No response to treatment
Pulse rate	0–2 months: Pulse 80–160 beats/minute 2–12 months: Pulse 80–160 beats/minute 12–60 months: Pulse 80–140 beats/minute	Increase in pulse rate of ≥ 25 beats/minute	Many reasons, including crying and fear
Respiratory rate	0–2 months: < 60 breaths/minute** 2–12 months: < 50 breaths/minute** 12–59 months: < 40 breaths/minute	Fast breathing (0–2 months ≥ 60 breaths/minute; 2–12 months: ≥ 50 breaths/minute; 12–59 months: ≥ 40 breaths/minute), difficult laboured breathing	Fast breathing: pneumonia
Pulse AND respiratory rate	See above	Increase in pulse rate of ≥ 25 beats/minute <i>along with</i> increase in respiratory rate of ≥ 5 breaths/minute (Other signs: enlarged liver, distension of jugular veins, eyelid oedema, gallop rhythm, fine crackles in the lungs)	Congestive heart failure (possibly from over-hydration due to feeding or rehydrating too fast) Infection
Stool	Normal stool (< 3 loose stools per day)	Fluid loss by 3 or more loose stools per day, and recent sunken eyes, watery, mucoid or bloody diarrhoea; persistent diarrhoea (for > 14 days)	Dehydration Infection Osmotic or lactase diarrhoea
Temperature	Axillary temperature ≥ 35.0°C and < 37.5°C (Rectal temp. readings are 0.5°C higher)	Any sudden increase or decrease in temperature, very low < 35.0°C or very high ≥ 38.5°C temperature	Infection; hypothermia (child being uncovered, missed feed)
Urine	Normal	Increased frequency of passing urine, pain on passing urine, no passing urine, positive dipstick	Urinary tract infection
Vomiting	None	Fluid loss by severe vomiting, and recent sunken eyes	Dehydration
Weight and weight gain	See WHO growth and weight velocity charts	Weight loss (in the absence of oedema), weight gain during stabilisation (in the absence of rehydration), static weight during rehabilitation, large weight changes	Failure to respond to treatment

* Other danger signs to watch for, e.g., cyanosis, convulsions, petechiae (bruising) or purpura, abdominal distension, jaundice.

** Infants < 12 months will normally breath fast without having pneumonia. Unless the infant's normal respiratory rate is known to be high, assume either overhydration or pneumonia. Careful evaluation and taking into account prior fluid administration will help differentiate the two conditions and plan appropriate treatment. Infants < 2 months may have normal periods of apnoea.

