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5. Daily care

TRAINING COURSE ON THE MANAGEMENT OF SEVERE MALNUTRITION

WORLD HEALTH ORGANIZATION
DEPARTMENT OF NUTRITION FOR HEALTH AND DEVELOPMENT

TRAINING COURSE ON THE MANAGEMENT OF SEVERE MALNUTRITION

DAILY CARE

World Health Organization
Department of Nutrition for Health and Development

Training Course on the Management of Severe Malnutrition

was prepared by the

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TRAINING COURSE ON THEMANAGEMENT OF SEVERE MALNUTRITION: DAILY CARE

Introduction

Attentive and consistent daily care will make the difference in a severely malnourished child's recovery. The routine of daily care in a severe malnutrition ward includes such tasks as feeding, bathing, 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* module. Weighing and measuring tasks were described in *Principles of Care*. This module will describe other aspects of daily care. You will practise tasks related to daily care during ward visits. Written practice in the module will focus on completing and interpreting the Daily Care page, Monitoring Record, and Weight Chart of the Critical Care Pathway (CCP).

Learning Objectives

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

- Handling a severely malnourished child appropriately
- Caring for the skin and bathing a severely 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 and Monitoring Record of the CCP
- Preparing and maintaining a weight chart (graph)

1.0 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.

Through tone of voice, gentle manner, and caring attitude, nurses will set a good example for the mothers of providing tender, loving care. They will also win the trust of the 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 interacting 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.

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*.

SHORT ANSWER EXERCISE

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

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

   ____ a. Leave the child alone until he 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 her child is bathed by a nurse. 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 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 two 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 by comparing them to the answers given on page 38 at the end of the module.

Example of Daily Care page of CCP

The next page shows an example of a completed Daily Care page of the CCP. When daily care tasks are performed, the nursing staff should record their initials 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 page. In the meantime, you may continue reading.

DAILY CARE

Bianca

	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	21
Date	8/1	9/1	10/1	11/1	12/1	13/1	14/1	15/1	16/1												
Daily weight (kg)	8.8	8.8	8.75	8.8	8.85	8.85	8.9	8.95	9.0												
Weight gain (g/kg)	*Calculate daily after on F-100.*				////	////	5.6	5.6	5.6												
Oedema 0 + ++ +++	0	0	0	0	0	0	0	0	0												
Diarrhoea/vomit 0 D V	D	D	D	0	0	0	0	0	0												
FEED PLAN: Type feed	F-75	F-75	F-75	F-75	F-75	F-100	F-100	F-100	F-100												
# feeds daily	12	12	8	6	6	6	6	6	6												
Total volume taken (ml)	910	1140	1130	1120	1170	1170	1170	1220	1280												
ANTIBIOTICS	*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.*																				
Cotrimoxazole 8:00	AC	AC	AC	AC	AC																
5ml syrup 20:00	BP	BP	BP	BP	BP																
FOLIC ACID 8:00	5mg AC	5mg AC	AC	AC	AC	MP	MP	AC	AC												
VITAMIN A 200 000IU	AC	AC	**Give Day 1 routinely unless evidence of dose in past month & no eye sign. Give Day 2 & Day 15 if child admitted with eye sign or recent measles.*																		
Multivitamin (if not in feed)	AC	AC	AC	AC	AC	MP	MP	AC	AC												
Drug for worms (Note type of worm) NONE																					
IRON 0.75ml 8:00	*Begin iron after 2 days on F-100.*					////	////	AC	AC												
2 X daily 20:00						////	////	BP	BP												
FOR EYE PROBLEMS: 8:00	AC	AC	AC	AC	AC	MP	MP				*After 7-10 days, when eye drops are no longer needed, shade boxes for eye drops.*										
Tetracycline or 14:00	HP	HP	HP	HP	HP	CN	CN														
Chloramphenicol 20:00	BP	BP	BP	BP	BP	RS	RS														
1 drop 4 X daily left eye 2:00	BP	BP	BP	BP	BP	RS	RS														
Atropine																					
1 drop None																					
3 X daily																					
Dermatosis 0 + ++ +++	+++	+++	+++	+++	++	++	+	+	0												
Bathing 1% permanganate	VR	VR	VR	VR	VR	NR	NR	VR	VR												
OTHER																					

2.0 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 CCP when the bath is done. Circle "1% 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% 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 nystatin as described on page 32 in the manual.)

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.

3.0 Give 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 CCP and gives the child any medication needed at that time. In addition, she may monitor respirations, pulse, and temperature; give eye drops, etc. The needed equipment and medications are kept on the trolley.

3.1 Give antibiotics as prescribed

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

When antibiotics are prescribed, list them on the Daily Care page of the CCP. 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 page of the CCP. Whenever a dose is given, initial on the Daily Care page.

Look at the example of the Daily Care page 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 severely malnourished child and requires special care and attention.

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 Give folic acid

Folic acid is a vitamin of the B complex that is important for treating and preventing anaemia and repairing the damaged gut. Each child should be given a large dose (5mg) on Day 1 and a smaller dose (1mg) on subsequent days.

Unless CMV (Combined Mineral Vitamin Mix) is being used to make F-75 and F-100, folic acid must be provided separately from the feeds. If CMV is used, give 5 mg of folic acid extra on the first day; then the daily dose of 1 mg is included in the feed.

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

At least a week's supply of folic acid should be sent home with the child at discharge. When the child returns for follow-up, more can be given.

3.3 Give vitamin A

Severely malnourished children are at high risk of blindness due to vitamin A deficiency. Thus vitamin A should be given to all severely malnourished children on Day 1, unless there is definite evidence that a dose has been given in the past month and the child has no signs of eye problems.

Additional doses are given if:

- the child has visible clinical signs of vitamin A deficiency (Bitot's spots, corneal clouding, or corneal ulceration);
- the child has signs of eye infection (pus, inflammation); or
- the child has measles now or has had measles in the past 3 months.

The additional doses are given on Day 2 and at least 2 weeks later, preferably on Day 15.

Timing and oral dosages of vitamin A:

<table>
<tr><th></th><th>Timing</th><th>Age</th><th>Dosage</th></tr>
<tr><td rowspan="3">All children*</td><td rowspan="3">Day 1</td><td><6 months</td><td>50 000 IU</td></tr>
<tr><td>6 – 12 months</td><td>100 000 IU</td></tr>
<tr><td>> 12 months</td><td>200 000 IU</td></tr>
<tr><td rowspan="2">Only children with eye signs or recent measles</td><td>Day 2</td><td colspan="2">Same age-specific dose</td></tr>
<tr><td>Day 15</td><td colspan="2">Same age-specific dose</td></tr>
</table>

*Unless definite evidence of a dose in the last month and no eye signs.

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

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

Enter the dose in the first column of the Daily Care page, and initial 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 page, so that a duplicate dose is not given on Day 1.

On the CCP shade out the boxes for Day 2 and Day 15 vitamin A if these doses are not needed (i.e., child has no eye signs and no recent measles).

SHORT ANSWER EXERCISE

1. Look again at the example of the Daily Care page for Bianca (page 5). Bianca is 2 years old and was admitted with some pus in her left eye. Should she be given a dose of vitamin A on Day 15? If yes, what is the dose?

2. Another severely malnourished child, Nawaz, is admitted with no signs of vitamin A deficiency or eye infection. Nawaz is 12 months old and has never had measles. He has no record of previous doses of vitamin A. On what day(s) should Nawaz be given vitamin A? What is the dose?

3. Georgio is 3 years old 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 Georgio's first dose of vitamin A be given orally, or by IM injection? What is the dose?

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

4. Dalia (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 15?

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

3.4 Give a multivitamin

If CMV is used in preparing feeds, then the feeds will include appropriate vitamins. Otherwise give multivitamin drops daily (not including iron).

Appendix 5 of the manual lists water-soluble and fat-soluble vitamins that should be included in the multivitamin drops.

Initial on the Daily Care page of the CCP when the multivitamin drops are given.

3.5 If the child has worms, give appropriate drugs

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

Ask the mother if the child has worms. If so, give an appropriate drug for worms. See pages 32 –.33 of the manual for appropriate drugs and dosages. Treatment is usually delayed until the rehabilitation phase (after 2 days on F-100). However, treatment may be started earlier if necessary (e.g., very severe infection with worms).

If the child has worms, record on the Daily Care page the type of worm and the drug(s) given. Initial when drugs for worms are given. If no worms are reported, write “none” or shade out the spaces for these drugs.

3.6 After two days on F-100, give iron daily

Even if the child is anaemic, he should not be given iron until he is recovering and has been two days on F-100 (i.e., after two days of transition). If given earlier, iron can have toxic effects and reduce resistance to infection.

Calculate and administer the amount needed: Give 3 mg elemental Fe/kg/day in 2 divided doses. Always give iron orally, never by injection. Preferably give iron between meals using a liquid preparation.

Write the dose for the specific child on the Daily Care page of the CCP in the left column. Initial twice each day when the dose is given. Continue giving iron throughout the hospital stay.

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 of two daily doses so that the child receives approximately 3 mg elemental Fe/kg/day.

Doses of Iron Syrup for a Common Formulation

Weight of child	**Dose of Iron Syrup**: Ferrous Fumarate 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

Note that the amounts in the above dosages are very small (less than ¼ teaspoon) and will need to be measured with a syringe.

The above table is also printed on the reverse side of the Antibiotics Reference Card.

4.0 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.

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 drops needed
Pus or inflammation	Give chloramphenicol or tetracycline (1%) eye drops
Corneal clouding or Corneal ulceration	Give both: - chloramphenicol or tetracycline (1%) eye drops and - atropine (1%) eye drops

Doses are as follows. Instil 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 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 hands before and after treating each child.

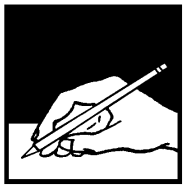
The affected eye(s) should also be bandaged for 3 –.5 days until inflammation and irritation subside. Use eye pads soaked in 0.9% saline solution, held in place with gauze bandages. The damp pads and bandages will cool the soreness, prevent the child's scratching his eyes, and promote healing. Change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

Initial on the Daily Care page 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 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 kind of 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 two 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 (age 11 months) has clear eyes with no signs of eye problems. She has never had measles. She has not had a dose of vitamin A in the past month.

   On what days should this child receive vitamin A?

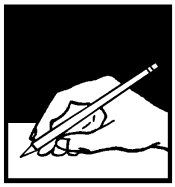
   What eye drops should be given, if any?

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 page of a CCP. Obtain a blank Daily Care page to use in this exercise. (There should be a supply in your classroom.) When you have completed this exercise, save the Daily Care page for later use in Exercise C.

Case – Lani

Lani is an 18-month-old girl with severe wasting and oedema of both feet. She also has severe dermatosis, corneal clouding, and pus draining from her left ear. Lani does not seem to have worms. Her Initial Management page is provided on the next page.

Nurses take the nursing trolley around the ward to give antibiotics, eye drops etc. at the following times:

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

Use the information on Lani's Initial Management page, and the above information on nursing rounds, to set up Lani's Daily Care page. 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.

CRITICAL CARE PATHWAY (CCP) — SEVERE MALNUTRITION WARD

NAME Lani M (F) DATE OF BIRTH OR AGE 18 mos DATE OF ADMISSION 14/2/01 TIME 7:30 HOSP. ID NUMBER 324

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

SIGNS OF SEVERE MALNUTRITION Severe wasting? (Yes) No

Oedema?	0	(+)	++	+++
Dermatosis?	0	+	++	(+++) (raw skin, fissures)

Weight(kg): 7.0 kg Height/length (cm): 76 cm

SD score: < -3 or % of median: < 70%

TEMPERATURE 38 °C (rectal) axillary

If rectal < 35.5°C (95.9°F), or axillary < 35°C (95°F), actively warm child. Check temperature every 30 minutes.

BLOOD GLUCOSE (mmol/l): 4

If < 3mmol/l and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG). If < 3 mmol/l and lethargic, unconscious, or convulsing, give sterile 10% glucose IV: 5 ml x ___ kg (child's wt) = ___ ml *Then give 50 ml bolus NG.*

Time glucose given: Oral NG IV

HAEMOGLOBIN (Hb) (g/l): 90 or Packed cell vol (PCV): Blood type:

If Hb < 40 g/l or PCV < 12%, transfuse 10 ml/kg whole fresh blood (or 5-7 ml/kg packed cells) slowly over 3 hours. Amount: Time started: Ended:

EYE SIGNS None (Left) Right **MEASLES** Yes (No)

Bitot's spots Pus/Inflammation (Corneal clouding) Corneal ulceration

If ulceration, give vitamin A & atropine immediately. Record on Daily Care page.

Oral doses vitamin A:	
< 6 months	50 000 IU
6 - 12 months	100 000 IU
> 12 months	(200 000 IU)

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: 75 **ml F-75*** **Time first fed:** 8:00

** If hypoglycaemic, feed ¾ of this amount every half hour for first 2 hours; continue until blood glucose reaches 3 mmol/l.*

Record all feeds on 24-hour Food Intake Chart.

SIGNS OF SHOCK None Lethargic/unconsious Cold hand Slow capillary refill(> 3 seconds) Weak/fast pulse

If lethargic or unconscious, plus cold hand, plus either slow capillary refill or weak/fast pulse, *give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids:*

Amount IV fluids per hour: 15 ml x ___ kg (child's wt) = _____ ml

	Start:	Monitor every 10 minutes					*2nd hr:	Monitor every 10 minutes				
Time							*					
Resp. rate							*					
Pulse rate							*					

**If respiratory & pulse rates are slower after 1 hour, repeat same amount IV fluids for 2nd hour; then alternate ReSoMal and F-75 for up to 10 hours as in right part of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See left, Haemoglobin.)*

DIARRHOEA Watery diarrhoea? Yes (No) → *If diarrhoea, circle signs present:* Skin pinch goes back slowly, Restless/irritable, Lethargic, Thirsty, Sunken eyes, Dry mouth/tongue, No tears

Blood in stool? Yes (No)

Vomiting? Yes (No)

If diarrhoea and/or vomiting, give ReSoMal. Every 30 minutes for first 2 hours, monitor and give:*

5 ml x ___ kg (child's wt) = ___ ml ReSoMal

For up to 10 hours, give ReSoMal and F-75 in alternate hours. Monitor every hour. Amount of ReSoMal to offer:*

5 to 10 ml x ___ kg (child's wt) = _____ to _____ ml ReSoMal

Time	Start:											
Resp. rate												
Pulse rate												
Passed urine? Y N												
Number stools												
Number vomits												
Hydration signs												
Amount taken (ml)					F-75		F-75		F-75		F-75	

Stop ReSoMal if: Increase in pulse & resp. rates Jugular veins engorged Increasing oedema, e.g., puffy eyelids

ANTIBIOTICS *(All receive)* Drug / Route	Dose / Frequency / Duration	Time of 1st dose
Gentamicin (heparinised IV cannula)	1.3 ml once daily for 7 days	8:00
Ampicillin (heparinised IV cannula)	1.75 ml every 6 hours for 2 days	8:00
Then: Amoxicillin - oral	2 ml every 8 hours for 5 days	start on Day 3

5.0 Monitor pulse, respirations, and temperature, and watch 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 overhydration due to feeding or rehydrating too fast. An increase or decrease in temperature to above or below normal can indicate infection.

It is critical to monitor the child closely (every four hours) during initial treatment and during transition to free feeding on F-100. After the child is stable and feeding 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 four hours.

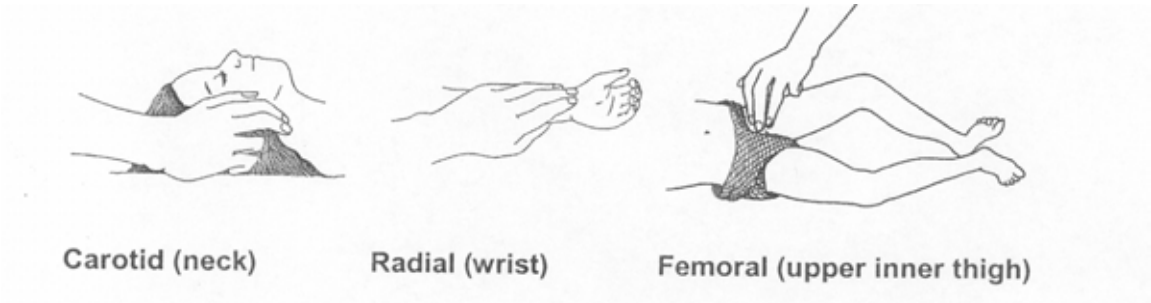
Record results of monitoring on the Monitoring Record, which is the third page of the CCP. There is space on the Monitoring Record to record 6 readings per day on pulse, respirations, and temperature for a number of days. It is convenient to keep the pages of a CCP in order on a clipboard. When the first Monitoring Record is full, simply add another one to the stack.

Example of Monitoring Record of the CCP

Page 22 shows an example of a completed Monitoring Record of the CCP. 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 Record. In the meantime, you may continue reading.

5.1 Measure 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 Record in the CCP.

5.2 Measure respiratory rate

Watch the child's chest while the child is quiet. Count breaths per minute. Count for a full minute, as 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 Record of the CCP.

5.3 Take temperature

As discussed in *Initial Management* module, rectal temperature is preferred. Steps for taking temperature have also been discussed in *Initial Management.*

A graph is used for recording temperature on the Monitoring Record 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.

5.4 Recognize danger signs

Changes in pulse, respirations, temperature

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

- If pulse increases by 25 or more beats per minute, confirm in 30 minutes.*
- If respiratory rate increases by 5 or more breaths per minute, 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 overhydration due to feeding or rehydrating too fast. Call a doctor for help. Stop feeds and ReSoMal, and slow fluids until a doctor has checked the child.

If just the respiratory rate increases, determine if the child has fast breathing, which may indicate pneumonia. If the child is from 2 up to 12 months old, a rate of 50 breaths per minute or more is considered fast. If the child is 12 months up to 5 years old, a rate of 40 breaths per minute or more is considered fast.

If just the pulse increases, there is no cause for concern, as the pulse may increase for many reasons, such as fear or crying.

If a child's rectal temperature drops below 35.5°C (95.9°F), or the axillary temperature drops below 35°C (95.0°F), the child is hypothermic and needs re-warming. Have the mother hold the child next to her skin, or use a heater or lamp with caution. Be sure the room is warm (25 – 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 infections. 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 Record of the CCP. Notice the changes in temperature on the example of the Monitoring Record 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 or Heart failure (possibly from overhydration 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	Any sudden increase or decrease Rectal temperature below 35.5°C (95.9°F)	Infection Hypothermia (possibly due to infection, a missed feed, or child being uncovered)

Other danger signs

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. For example, isolate the child behind a screen or in a separate area. Take special care with hand washing after handling these children.

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 distention
- new oedema
- large weight changes
- increased vomiting
- petechiae (bruising)

Alert a physician if any of these danger signs appear.

Danger signs are summarized on the back of the *F-100 Reference Card.*

6.0 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 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.

MONITORING RECORD Bianca

page ___ of ___

Monitor respiratory rate, pulse rate, and temperature 4-hourly until after transition to F-100 and patient is stable. Then monitoring may be less frequent (e.g., twice daily).

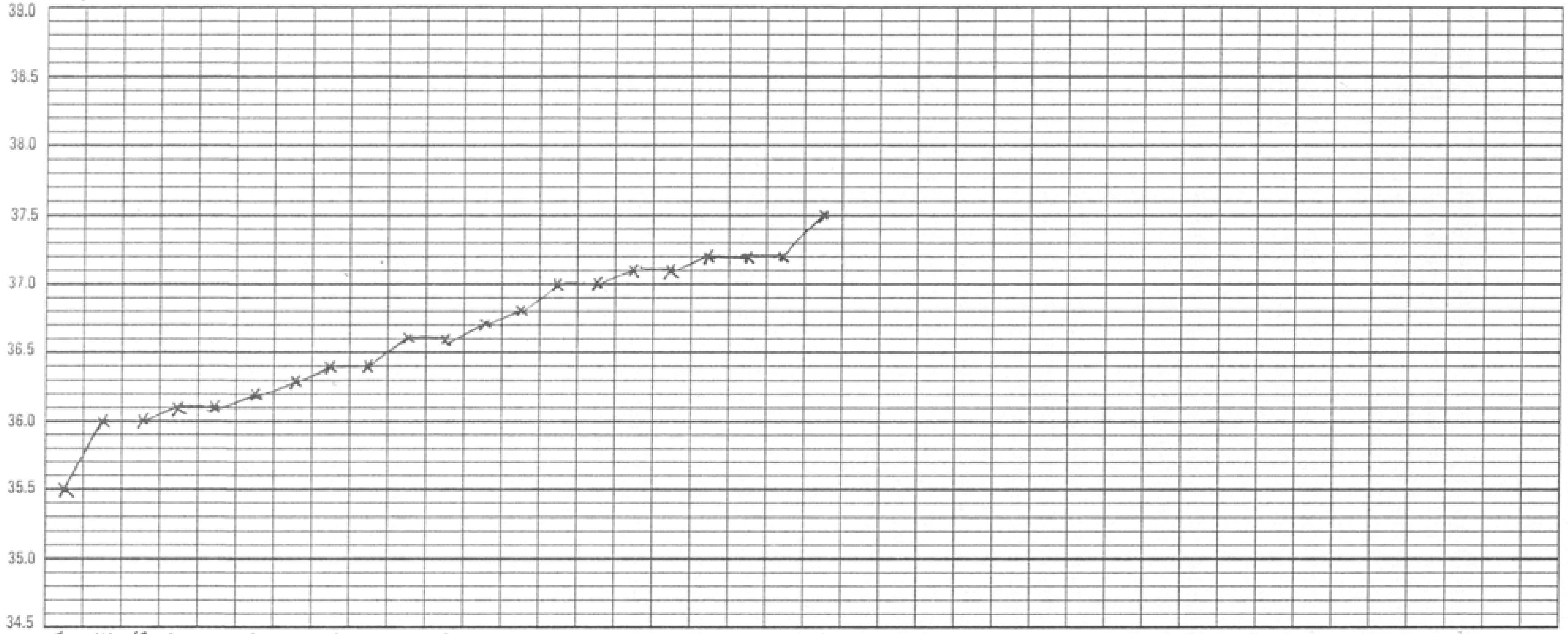
Respiratory rate

Breaths/ minute	35	30	32	35	35	32	35	30	32	35	32	35	35	35	35	35	32	35	35	40	40

Pulse rate

Beats/ minute	90	86	90	90	92	90	86	92	86	90	90	90	90	90	92	92	90	90	92	95	95

Temperature



Date/time: 8.8 14 18 22 2 6 10 14 18 22 2 6 10 14 18 22 2 6 10 14 18 22

Day 1 Day 2 Day 3 Day 4

***Danger Signs:** Watch for increasing pulse and respirations, fast or difficult breathing, sudden increase or decrease in temperature, rectal temperature below 35.5°C, and other changes in condition. See Danger Signs listed on back of F-100 Reference Card. Normal ranges of pulse and respiratory rates are also listed on back of F-100 Reference Card.*

SHORT ANSWER EXERCISE

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

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

   _____°C _____ beats/minute _____ breaths/minute

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

   ____ a. There are sharp increases in temperature.
   ____ b. The temperature rises slowly and steadily.
   _____ c. The temperature stays below normal.

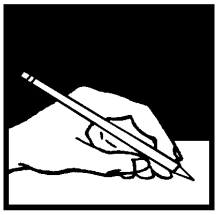
3. Has there been any significant change in the child's pulse rate? If so, when?

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 Record opposite.

6. Is there a danger sign(s)? If so, what is the danger sign(s)? Should the nurse call a physician?

Check your own answers to this exercise by comparing them to the answers given on page 39 at the end of the module.



EXERCISE C

In this exercise you will make entries on a Daily Care page and Monitoring Record of a CCP. You will use the Daily Care page that you set up for Lani in Exercise B. Obtain a blank Monitoring Record from the supply in your classroom.

Pretend that you are the nurse who cares for Lani on her first day in the ward. At the following times you give Lani her medications or monitor her progress. Make appropriate entries on the Daily Care page and Monitoring Record; for example, enter your initials 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 *Lani is given her first feed of F-75. It is recorded on the 24-Hour Food Intake Chart.*

- You give Lani 1.75 ml ampicillin and 1.3 ml gentamicin through her heparinised IV cannula.
- You also give her 5 mg folic acid and 200 000 IU vitamin A.
- You put one drop of tetracycline and one drop of atropine in her left eye.
- Her ear is draining, and you gently wick it with a clean cloth.
- Since Lani is very 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 Lani's pulse, respiratory rate, and temperature. Her pulse rate is 100 beats per minute, her respiratory rate is 35 breaths per minute, and her rectal temperature is 38°C.

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

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

13:00 You check Lani'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 *Lani is given her fourth feed of F-75. It is recorded on the 24-Hour Food Intake Chart.*

- You give Lani 1.7 ml ampicillin IV.
- You give Lani her multivitamin (which is needed since F-75 is not prepared with CMV at this hospital).
- You put one drop of tetracycline and one drop of atropine in her left eye.

15:00 The shift changes. Now pretend that you are the nurse on the next shift.

16:00 Lani is given her fifth feed of F-75. It is recorded on the 24-Hour Food Intake Chart.

17:00 You check Lani'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 Lani is given her sixth feed of F-75. It is recorded on the 24-Hour Food Intake Chart.

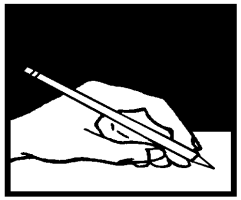
Answer the following questions:

1. At 20:00 Lani will be fed again. At that time what else should be given to Lani?

2. When should Lani's respiratory rate, pulse rate, and temperature next be monitored?

3. In addition to feeding, what should be done for Lani at 2:00 a.m.?

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



EXERCISE D

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

Case 1 – Lani

You will remember that Lani was admitted with an ear infection and fever. You began Lani's Monitoring Record in the last exercise. Lani's continuing Monitoring Record for the first two days is on the opposite page. Review her Monitoring Record; then answer the questions below.

1. What happens to Lani's temperature at 5:00 a.m. 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 Lani's pulse and respiratory rates indicate any danger signs?

5. What should be done for Lani at 5:00 a.m.?

LANI

MONITORING RECORD

Monitor respiratory rate, pulse rate, and temperature 4-hourly until after transition to F-100 and patient is stable. Then monitoring may be less frequent (e.g., twice daily).

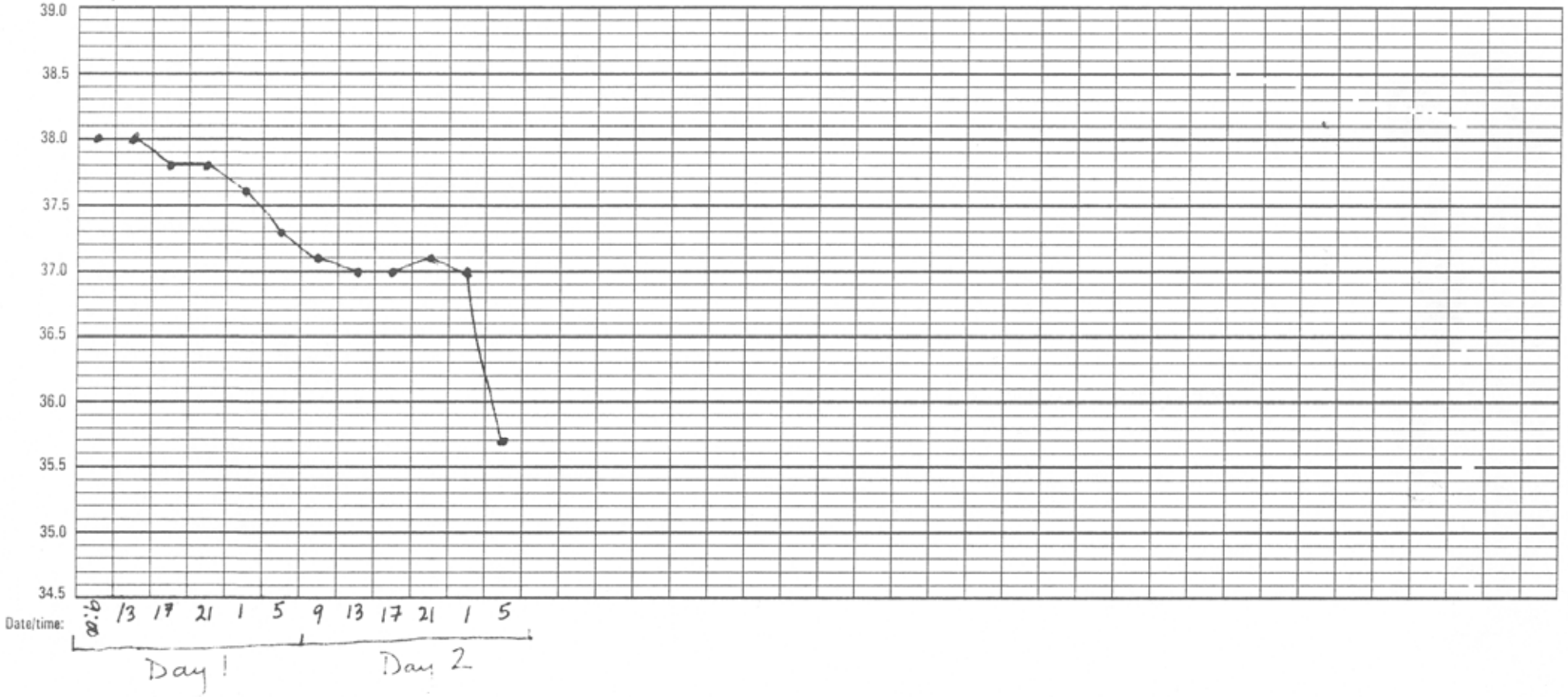
Respiratory rate

Breaths/ minute	35	35	35	35	30	35	35	32	35	32	35	35																								

Pulse rate

Beats/ minute	100	100	105	110	100	105	102	105	105	100	105	105																								

Temperature



***Danger Signs:** Watch for increasing pulse and respirations, fast or difficult breathing, sudden increase or decrease in temperature, rectal temperature below 35.5°C, and other changes in condition. See Danger Signs listed on back of F-100 Reference Card. Normal ranges of pulse and respiratory rates are also listed on back of F-100 Reference Card.*

Case 2 – Carla

Carla is 2 years old and was admitted with 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 NG tube. She still has some diarrhoea and is given ReSoMal after each loose stool.

Review Carla's Monitoring Record on the opposite page and answer the questions below.

1. Does Carla's temperature graph indicate any danger sign? If yes, what is the danger sign?

2. Do Carla'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 Carla'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 Carla's pulse and respiratory rates?

CARLA

page ___ of ___

MONITORING RECORD

Monitor respiratory rate, pulse rate, and temperature 4-hourly until after transition to F-100 and patient is stable. Then monitoring may be less frequent (e.g., twice daily).

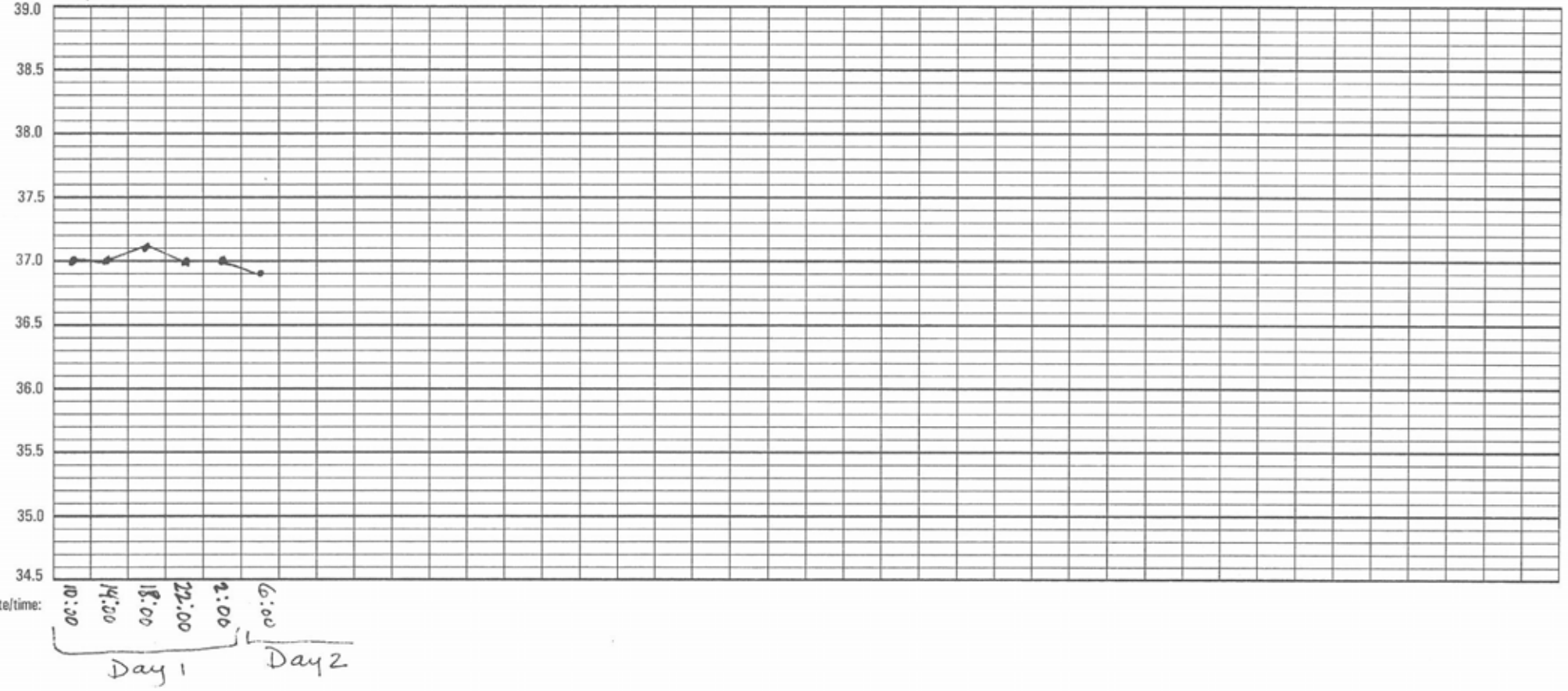
Respiratory rate

Breaths/minute: 30 | 30 | 32 | 35 | 35 | 40

Pulse rate

Beats/minute: 90 | 90 | 95 | 100 | 100 | 125

Temperature



Danger Signs: Watch for increasing pulse and respirations, fast or difficult breathing, sudden increase or decrease in temperature, rectal temperature below 35.5°C, and other changes in condition. See Danger Signs listed on back of F-100 Reference Card. Normal ranges of pulse and respiratory rates are also listed on back of F-100 Reference Card.

Case 3 – Bijouli

Bijouli is 2 years old. He is severely wasted but has no obvious complications or infections on admission. He is prescribed a routine course of cotrimoxazole for 5 days.

Review Bijouli's Monitoring Record and answer the questions below:

1. What happens to Bijouli's temperature during the night of Day 2 and morning of Day 3? Does this indicate a danger sign?

2. Does the record of Bijouli's pulse rates suggest any danger sign? Why or why not?

3. Does the record of Bijouli's respiratory rates suggest any problem? Why or why not?

4. Should the physician be alerted?

5. The nurse notes that Bijouli has chest indrawing. What could be the problem? What treatment should be given to Bijouli? (Hint: Refer to page 31 of the manual.)

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

Bijouli

page ___ of ___

MONITORING RECORD

Monitor respiratory rate, pulse rate, and temperature 4-hourly until after transition to F-100 and patient is stable. Then monitoring may be less frequent (e.g., twice daily).

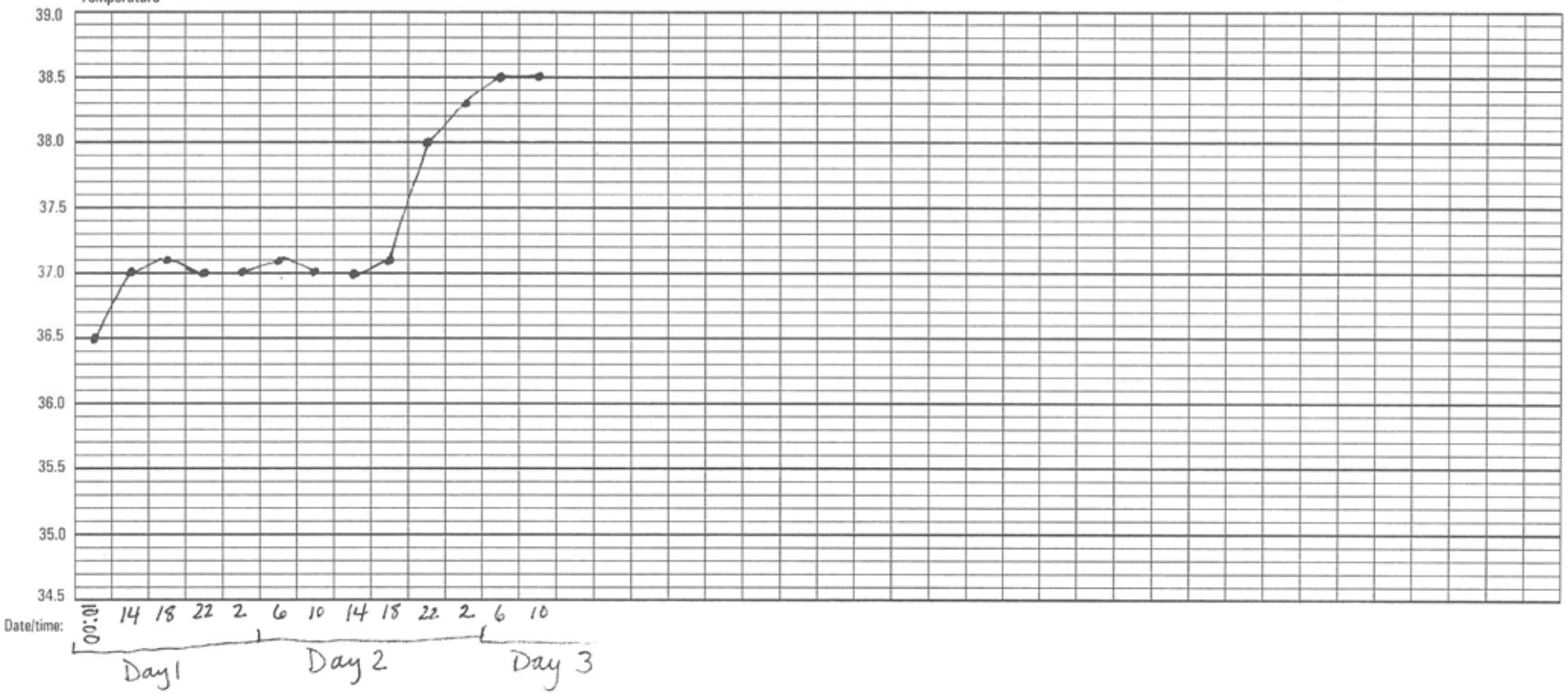
Respiratory rate

Breaths/minute	35	30	32	35	35	35	35	38	35	40	4°	45	50

Pulse rate

Beats/minute	90	86	90	92	90	90	90	92	90	90	96	100	110

Temperature



Danger Signs: Watch for increasing pulse and respirations, fast or difficult breathing, sudden increase or decrease in temperature, rectal temperature below 35.5°C, and other changes in condition. See Danger Signs listed on back of F-100 Reference Card. Normal ranges of pulse and respiratory rates are also listed on back of F-100 Reference Card.

7.0 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 page of the CCP. Then plot the child's weight on the Weight Chart included in the CCP. The Weight Chart will visually show the child's progress towards discharge weight, any loss of weight due to oedema, or failure to improve.

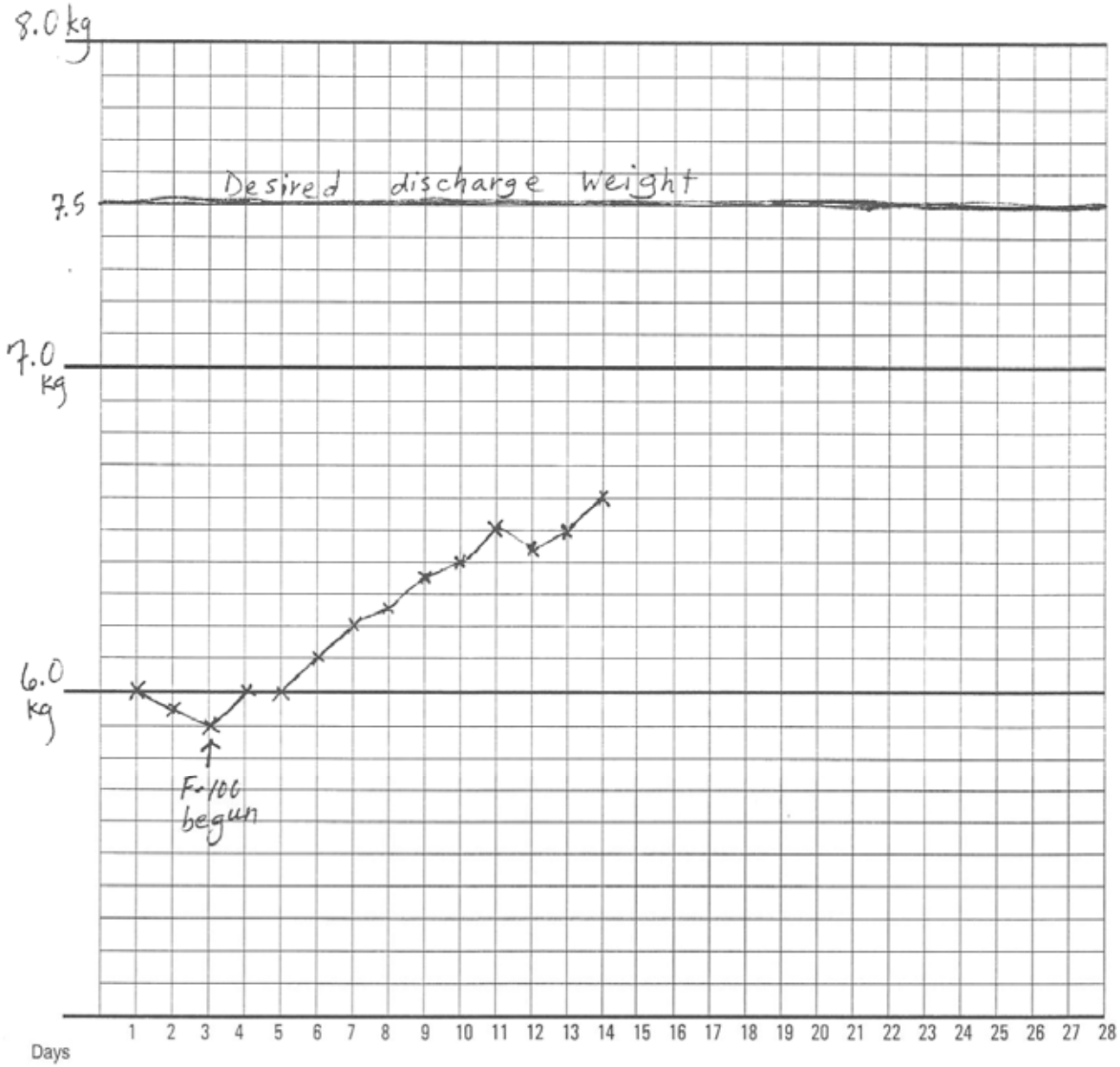
An example of a completed weight chart is shown on the opposite page. Study the example as you read the instructions below for preparing and maintaining a Weight Chart:

- Label the vertical axis of the graph with a range of weights that includes the child's starting weight and desired discharge 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%) 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
- Use a reference table to determine the child's desired discharge weight (i.e., –1 SD or 90% weight for height). Mark the desired discharge weight with a horizontal line across the chart.
- Each day, plot the child's weight on the chart. Plot the starting weight above Day 1, the next day above Day 2, etc. 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 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
Desired discharge weight (-1 SD, 90% weight for height): 7.5 kg



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 F-100.

.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. Since she has mild oedema, space should be allowed for a 1 kg weight loss. To allow for this loss, the vertical axis is labeled so that 4.0 kg is at the bottom.

SHORT ANSWER EXERCISE

1. Look up the desired discharge weight for the child whose weight chart is shown opposite. Enter the desired discharge weight above the chart, and mark it with a bold line on the chart.

2. 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

3. What was the child's lowest weight? On what day did this occur?

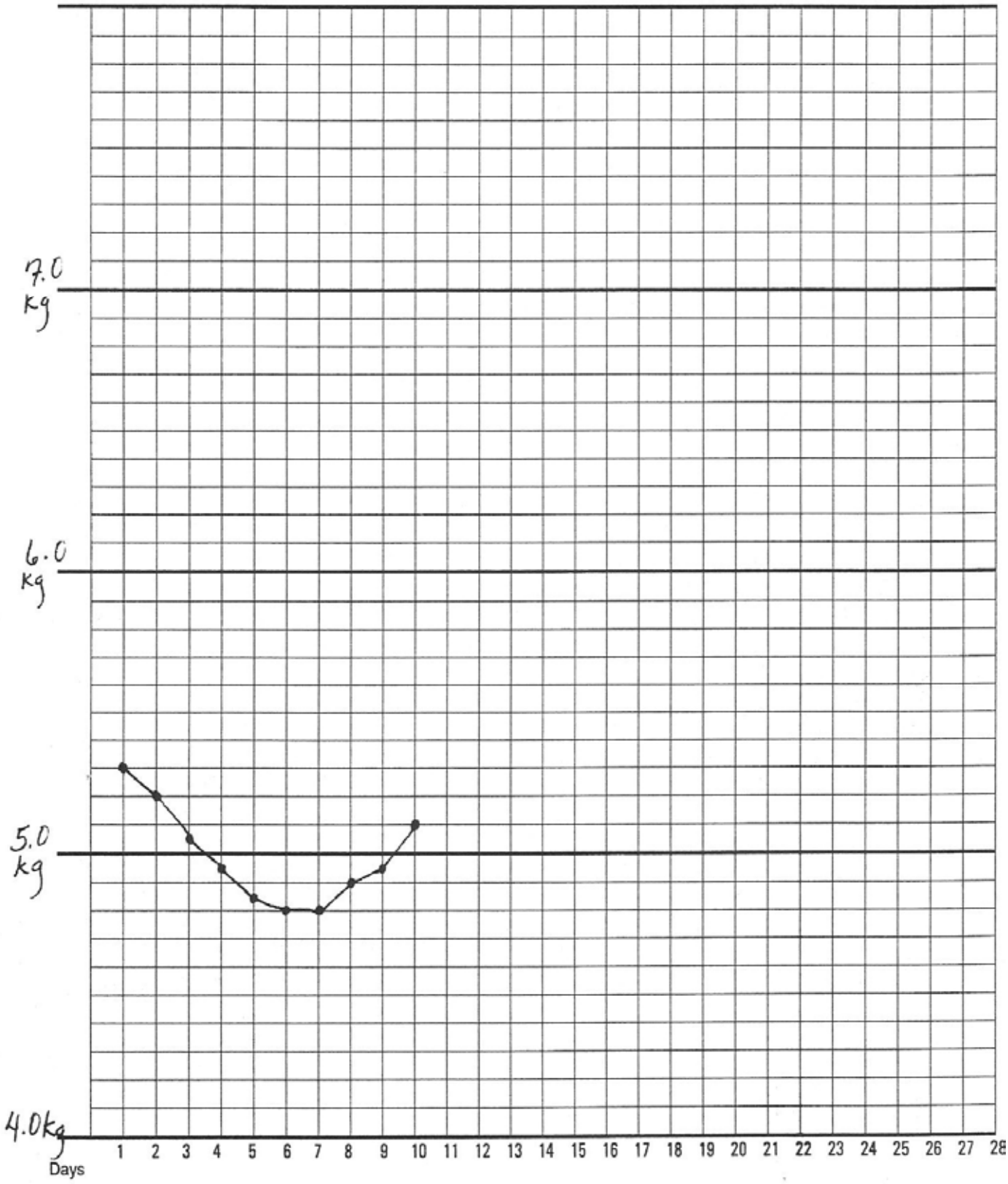
4. Why did the child lose weight?

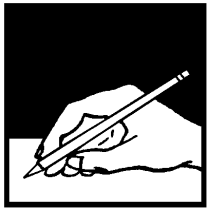
5. Has the child made progress?

Check your own answers to this exercise
by comparing them to those given on page 40 at the end of the module.

Example of weight chart for a girl with mild oedema (+)

Starting weight: 5.3 kg Length: 67 cm
Desired discharge weight (-1 SD, 90% weight for height): _____ kg





EXERCISE E

In this exercise you will prepare a weight chart for Daniel, a boy admitted with oedema of both feet (+). Daniel'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. What is Daniel's desired discharge weight? Enter this weight in the appropriate blank beside the Weight Chart.

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

3. 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.

4. Mark Daniel's desired discharge weight with a bold line across the chart.

5. 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 F-100 – 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 F-100 – 9.4 kg	Day 13 – 9.8 kg	

6. Summarize Daniel's weight changes briefly in words:

7. 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

Name: Daniel

Weight on admission: _____kg

Height / length: _____cm

Oedema on admission: 0 + ++ +++

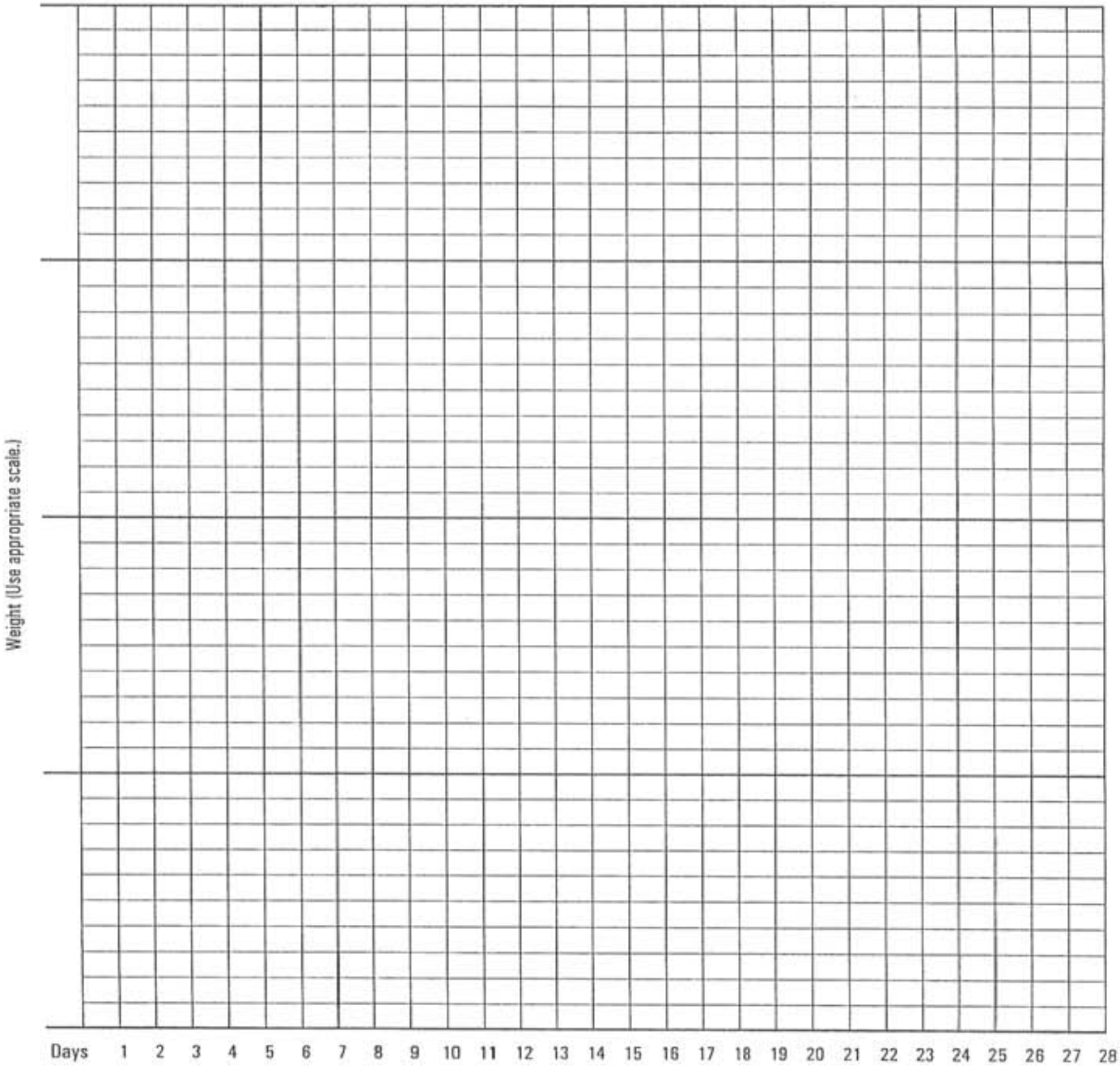
Desired weight at discharge
(-1SD, 90% weight for height): _____kg

Actual weight at discharge: _____kg

Enter likely range of weights on the vertical axis in an appropriate scale (e.g., each row representing 0.1 kg). Allow rows below the starting weight in case weight decreases; weight may decrease by as much as 30% if the child has severe oedema.

Draw a bold horizontal line across the graph to show the desired discharge weight.

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



ANSWERS TO SHORT ANSWER EXERCISES

Answers, page 3

1. Answers b, c, and d should be ticked.

2. Answers a, b, c, and e should be ticked.

3. Answer b should be ticked. 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, page 10

1. Yes, the child should be given a dose of 200 000 IU on Day 15.

2. Day 1 only, 100 000 IU oral.

3. Give Georgio's first dose by intramuscular injection. Give 100 000 IU, which is half of the oral dose.

   Give the second dose orally on Day 2. Give 200 000 IU.

4. Yes, Dalia should be given a dose on Day 1 at the hospital since she has corneal clouding.

   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.

   Yes, she should be given a dose on Day 15.

If you have any questions about the vitamin A schedule, please see a facilitator.

Answers, page 23

1. 36.4°C 92 beats/minute 30 breaths/minute

2. Answer b should be ticked.

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, pulse rate of 100 beats/minute, and respiratory rate of 45 breaths/minute should be entered on the Monitoring Record.

   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, page 34

1. The desired discharge weight for a girl who is 67 cm long is 6.8 kg. Thi weight should be marked with a bold line on the weight chart. See belov

2. A reduced version of the graph is below.

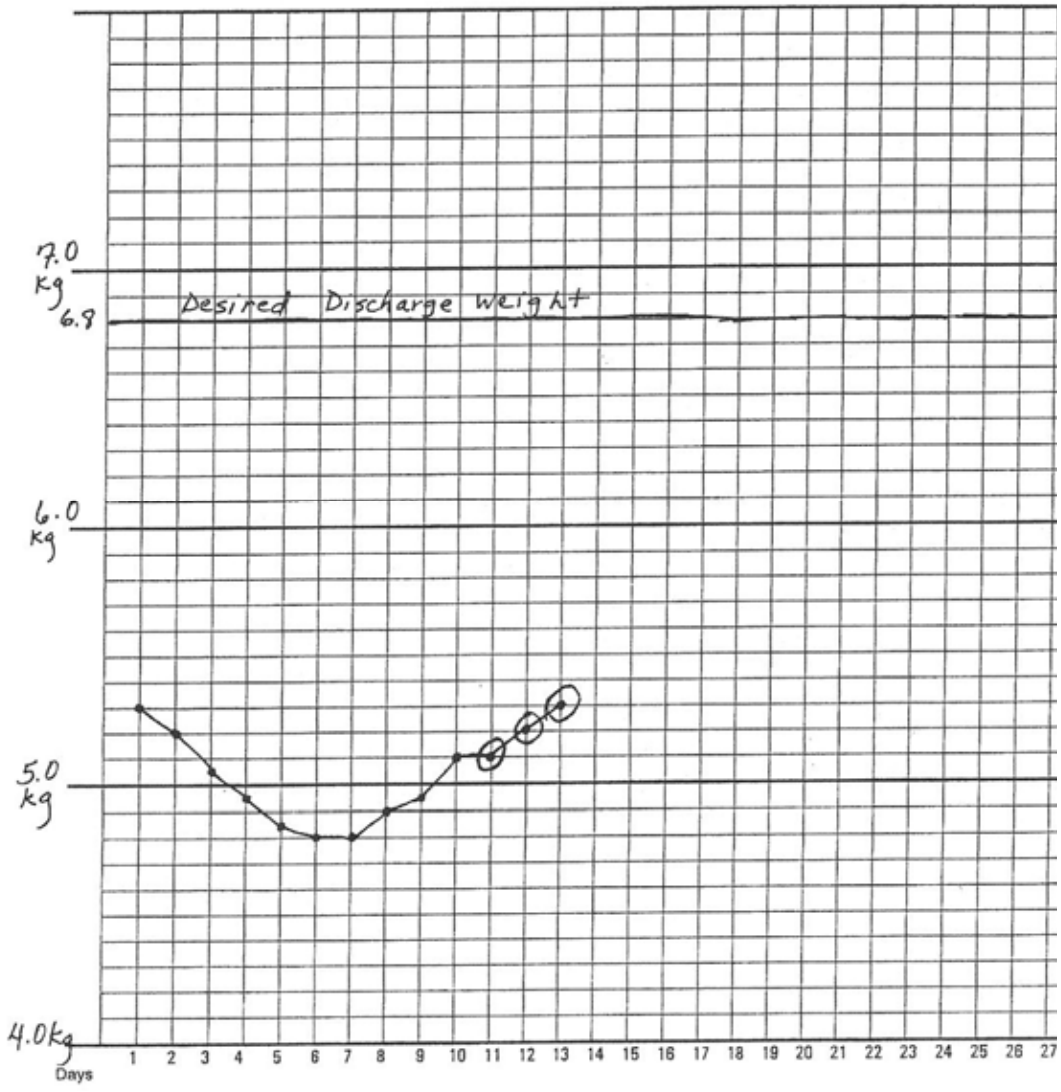
3. 4.8 kg on Days 6 and 7

4. The child lost weight due to loss of oedema fluid.

5. Yes, the child has made progress in two ways. First, she lost her oedem her weight fell to her true weight of 4.8 kg. Then she put on new tissue her weight increased to 5.3 kg.

Example of weight chart for a girl with mild oedema (+)

Starting weight: 5.3 kg Length: 67 cm
Desired discharge weight (-1 SD, 90% weight for height): 6.8 kg



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Website: http://www.who.int/nut/publications