

MODULE 4

FEEDING



Government of Sudan

Training Course on Inpatient Management of Severe Acute Malnutrition

**Children 6–59 Months with SAM
and Medical Complications**

June 2011

This modified version of the 2002 World Health Organisation's *Training Course on Inpatient Management of Severe Acute Malnutrition (SAM)* is the practical application of the 2009 Government of Sudan (GOS) Federal Ministry of Health (FMOH) *Interim Manual Community-Based Management of Severe Acute Malnutrition (November 2009)*. The training course is made possible by the generous support of the American people through the support of the Office of U.S. Foreign Disaster Assistance, Bureau for Democracy, Conflict and Humanitarian Assistance, and the Office of Health, Infectious Diseases, and Nutrition, Bureau for Global Health, United States Agency for International Development (USAID), under terms of Cooperative Agreement No. AID-OAA-A-11-00014, through the FANTA-2 Bridge, managed by FHI 360. The contents are the responsibility of FHI 360 and do not necessarily reflect the views of USAID or the United States Government.

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Acronyms and Abbreviations

AIDS	acquired immune deficiency syndrome
ART	antiretroviral therapy
AWG	average daily weight gain
BMI	body mass index
cm	centimetre(s)
CMAM	Community-Based Management of Acute Malnutrition
CMV	combined mineral and vitamin mix
dl	decilitre(s)
ENA	Essential Nutrition Actions
FMOH	Federal Ministry of Health
g	gram(s)
GOS	Government of Sudan
Hb	haemoglobin
HFA	height-for-age
HIV	human immunodeficiency virus
IGF	insulin growth factor
IM	intramuscular
IMNCI	Integrated Management of Neonatal and 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
ml	millilitre(s)
mm	millimetre(s)
MUAC	mid-upper arm circumference
µg	microgram(s)
NG	nasogastric
NGT	nasogastric tube
OPD	outpatient department
ORS	oral rehydration solution
PCV	packed cell volume
PLHIV	people living with HIV
PMTCT	prevention of mother-to-child transmission of HIV
QI	quality improvement
ReSoMal	Rehydration Solution for Malnutrition
RUTF	ready-to-use therapeutic food
SAM	severe acute malnutrition
SFP	supplementary feeding programme
TB	tuberculosis
UNSCN	United Nations Standing Committee on Nutrition
WFA	weight-for-age
WFH	weight-for-height
WFP	World Food Programme
WHO	World Health Organisation

Introduction

Feeding is obviously a critical part of managing severe acute malnutrition (SAM). However, as explained in **Module 2, Principles of Care**, feeding must be started cautiously, in frequent, small amounts. If feeding begins too aggressively, or if feeds contain too much protein or sodium, a child's systems may be overwhelmed, and the child may die.

To prevent death, feeding should begin as soon as possible with F-75, the 'starter' formula used until the child is stabilised. F-75 is specially made to meet a child's needs without overwhelming the body's systems at this early stage of treatment. F-75 contains 75 kcal and 0.9 g protein per 100 ml. F-75 is low in protein and sodium and high in carbohydrate, which is more easily handled by the child and provides much-needed glucose.

When the child is stabilised (usually after 2–7 days), the 'catch-up' formula F-100 or ready-to-use therapeutic food (RUTF) is used to rebuild wasted tissues. RUTF or F-100 contains more calories and protein: 100 kcal and 2.9 g protein per 100 ml.

The contents of F-75, RUTF and F-100, and the need for these contents, were discussed in **Module 2, Principles of Care**. This module focuses on preparing feeds, planning feeding and giving the feeds according to the plan.

Learning Objectives

This module describes how and allows you to practise the following skills:

- Preparing F-75 and F-100 and learning about RUTF
- Planning feeding and recording the intake and output for a 24-hour period for a child who is:
 - Feeding on F-75 during stabilisation
 - Adjusting to RUTF and/or F-100 during transition, including conducting the appetite test with RUTF
 - Feeding on RUTF or freely with F-100 during rehabilitation
- Planning feeding for Inpatient Care

The module also contains materials on managing acute malnutrition in infants under 6 months. (This category also includes infants over 6 months who weigh less than 4.0 kg.)

In addition, the module allows you to discuss ideas for training staff at your hospital to do feeding-related tasks.

1.0 Preparing F-75 and F-100 and Learning about RUTF

Recipes for F-75 and F-100 and the contents of RUTF were given in **Module 2, Principles of Care**; they are repeated in Table 1 on [page 4](#).

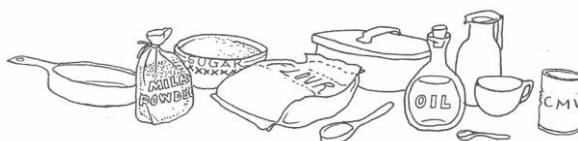
1.1 F-75 and F-100

In the next exercise, you will prepare F-75 and F-100 using one of the recipes in Table 1, or a similar recipe that is used in Inpatient Care (SAM ward) that you will visit during this course.

The first three recipes for F-75 include cereal flour and require cooking. Cooking directions are given on [pages 2 and 3](#).

The last three recipes for F-75 can be used if there is no cereal flour or cooking facility. However, the recipes with no cereal flour have a high osmolarity (415 mOsmol/L) and may not be tolerated well by some children with diarrhoea.

Note: F-75 and F-100 can also be obtained commercially. In that case, follow the preparation instructions on the package. Usually the contents of the package are added to cooled boiled water: 2,000 ml for F-75 and F-100 and 2,700 ml for F-100-Diluted. (See the Government of Sudan Interim Manual: Community-Based Management of Severe Acute Malnutrition, Version 1.0 [November 2009] [the CMAM Manual], Sections 4.3.2, 4.4.2, 4.5.2 and 5.1.3, Feed Preparations, [pages 42, 45, 50 and 58](#), respectively.)



Tips for Correct Preparation of F-75 and F-100 Recipes

- If possible, use a dietary scale that is accurate to at least 5 g. A scale made with its own bowl is convenient. If yours has only a flat platform, choose a suitable container for weighing the ingredients. Weigh the empty container first, and account for this when weighing the ingredients.
Small plastic bags can be used as containers for dry ingredients. They are so light that their weight can be ignored.
For measuring oil, choose a small container to reduce the surface to which the oil can stick. Let the oil drain out well when transferring it to the blender or jug. Then rinse the container with a little boiled water and add the rinsings to the blender or jug.
- Be sure that the scale is set to zero before weighing.
- Wash hands before measuring ingredients.
- If using scoops for measurement, level ingredients with a knife to ensure consistent measurement. Be aware that equal weights of milk powder and sugar do not occupy the same volume; milk powder has a larger volume. Therefore, one must either weigh these ingredients or know the corresponding volume for each.
- Mix oil well so that it does not separate out. Oil is a vital source of energy; if oil floats to the top of the mixture, there is a risk that some children will get too much and others too little. If possible, use an electric blender to thoroughly mix the oil. Otherwise, use a strong rotary whisk or balloon whisk. Use a long whisk so that your hands do not dip into the formula while whisking.

- If there is a change in the type of milk supplied, change to a recipe appropriate for the type of milk available.
- For using combined mineral and vitamin mix (CMV), read the label carefully to ensure that you use the correct amount for your recipe. For example, if the scoop provided with the CMV is for making 2 L, use half a scoop to make 1 L. Carefully measure to determine the exact amount in half-scoops.
- Be careful to add the correct amount of water to make 1,000 ml of formula. If 1,000 ml of water is mistakenly added, the resulting formula will be about 15% too dilute.

Directions for Making Cooked F-75 with Cereal Flour (first three recipes)

You will need a 1-litre electric blender or a hand whisk (rotary whisk or balloon whisk), a 1-litre measuring jug, a cooking pot and a stove or hot plate. Amounts of ingredients are listed on [page 4](#). Cereal flour may be maize meal, rice flour or whatever is the staple cereal in the area. The CMV is not cooked with the mixture, but rather added at the end.

It is important to use cooled boiled water, even for recipes that involve cooking. Cooking the cereal mixture requires only 4 minutes of gentle boiling, and this may not be enough to kill all pathogens in the water. Make sure to cool the water before adding it to the powdered ingredients; adding boiling water may create lumps.

If using an electric blender:

1. Put about 200 ml of the cooled boiled water into the blender. (If you are using liquid milk instead of milk powder, omit this step.)
2. Add the flour, milk or milk powder, sugar and oil. Blend.
3. Add cooled boiled water to the 1,000 ml mark and blend at high speed.
4. Transfer the mixture to a cooking pot and boil gently for 4 minutes, stirring continuously.
5. Some water will evaporate while cooking, so transfer the mixture back to the blender after cooking and add enough cooled boiled water to make 1,000 ml. Add the CMV. Blend again.

If using a hand whisk:

1. Mix the flour, milk or milk powder, sugar and oil in a 1-litre measuring jug. (If using milk powder, this will be a paste.)
2. Slowly add cooled boiled water up to 1,000 ml.
3. Transfer to cooking pot and whisk the mixture vigorously.
4. Boil gently for 4 minutes, stirring continuously.
5. Some water will evaporate while cooking, so transfer the mixture back to the measuring jug after cooking and add enough boiled water to make 1,000 ml. Add the CMV. Whisk again.

Directions for No-Cooking Recipes (last three recipes)

If using an electric blender:

1. Put about 200 ml of the cooled boiled water into the blender. (If you are using liquid milk instead of milk powder, omit this step.)
2. Add the required amounts of milk or milk powder, sugar, oil and mineral mix.
3. Add cooled boiled water to the 1,000 ml mark and then blend at high speed.*

If using a hand whisk:

1. Mix the required amounts of milk powder and sugar in a 1-litre measuring jug.
2. Add the oil and stir well to make a paste. (If you use liquid milk, mix the sugar and oil, and then add the milk.)
3. Add the mineral mix, and slowly add cooled boiled water up to 1,000 ml, stirring continuously.*
4. Whisk vigorously.

* Whether using a blender or a whisk, it is important to measure up to the 1,000 ml mark before blending/whisking. Otherwise, the mixture becomes too frothy to judge where the liquid line is.

Table 1. Recipes for F-75 and F-100

If you have cereal flour and cooking facilities, use one of the top three recipes for F-75:

Alternatives	Ingredients	Amount for F-75
If you have dried skimmed milk	Dried skimmed milk Sugar Cereal flour Vegetable oil CMV* <i>Water to make 1000 ml</i>	25 g 70 g 35 g 30 g ½ levelled scoop 1000 ml**
If you have dried whole milk	Dried whole milk Sugar Cereal flour Vegetable oil CMV* <i>Water to make 1000 ml</i>	35 g 70 g 35 g 20 g ½ levelled scoop 1000 ml**
If you have fresh cow's milk, or full-cream (whole) long-life milk	Fresh cow's milk, or full-cream (whole) long-life milk Sugar Cereal flour Vegetable oil CMV* <i>Water to make 1000 ml</i>	300 ml 70 g 35 g 20 g ½ levelled scoop 1000 ml**
If you do not have cereal flour, or there are no cooking facilities, use one of the following recipes for F-100:		No cooking is required for F-100:
If you have dried skimmed milk	Dried skimmed milk Sugar Vegetable oil CMV* <i>Water to make 1000 ml</i>	80 g 50 g 60 g ½ levelled scoop 1000 ml**
If you have dried whole milk	Dried whole milk Sugar Vegetable oil CMV* <i>Water to make 1000 ml</i>	110 g 50 g 30 g ½ levelled scoop 1000 ml**
If you have fresh cow's milk, or full-cream (whole) long-life milk	Fresh cow's milk, or full-cream (whole) long-life milk Sugar Vegetable oil CMV* <i>Water to make 1000 ml</i>	880 ml 75 g 20 g ½ levelled scoop 1000 ml**

* The contents of CMV are in *Module 2, Annex B*.

** **Adding water for the preparation of the recipes:** Add just the amount of cooled boiled water needed to make 1000 ml of formula. (This amount will vary from recipe to recipe, depending on the other ingredients.) Do not simply add 1000 ml of water, as this will make the formula too dilute. A mark for 1000 ml should be made on the mixing container for the formula, so that water can be added to the other ingredients up to this mark.

Adding cooled boiled water when using commercial F-75 and F-100: Follow the preparation instructions on the package. Usually the contents of the package are added to 2000 ml of water.

1.2 RUTF

RUTF is an energy-dense, mineral-/vitamin-enriched food that is equivalent to F-100. RUTF is an integral part of Outpatient Care, as it allows children to be treated at home rather than at inpatient treatment centres.

There are currently two forms and several commercial types of RUTF: a lipid-based spread, such as Plumpy'nut®, and a biscuit bar, such as BP 100®. Several countries are producing their own lipid-based RUTF. Their products have similar nutritional quality as F-100 and have been shown to be physiologically similar to commercial forms of F-100 and RUTF.

Plumpy'Nut® is a ready-to-eat therapeutic spread presented in individual packets. It is a groundnut paste composed of vegetable fat, peanut butter, skimmed milk powder, lactoserum, maltodextrin, sugar and mineral and vitamin complex.

Instructions for Use

Clean drinking water must be made available to children while they consume ready-to-eat therapeutic spread. The product should be given only to children that can express their thirst.

Recommendations for Use

It is recommended to use the product for the dietetic management of SAM in the transition and rehabilitation phases.

Storage and Packaging

Plumpy'nut® has a shelf life of 24 months from manufacturing date and should be stored in a cool and dry place. It often comes in a 92 g packet that contains 500 kcal. A carton (around 15.1 kg) contains 150 packets.

To learn more, see **Module 2, Annex B**, and CMAM Manual, Annex 13 RUTF Specifications.



Exercise A

In this exercise, your group will prepare F-75 and F-100 according to the recipes used in the hospital that you will visit during this course. Your facilitator will give you a copy of the recipes to be used.

Notice the differences in the recipes for F-75 and F-100. You will have a chance to taste each formula.

While preparing the recipes, think about the following issues in relation to your own hospital, and be prepared to discuss them with the group:

- What aspects of preparing these recipes would be difficult in my hospital?
- How can I make sure that the recipes are prepared correctly?
- Are the necessary ingredients available?
- Do any new supplies need to be purchased, such as correctly sized scoops?

When you have finished preparing F-75 and F-100,
your facilitator will distribute packets of RUTF and discuss
with you the contents of the RUTF and how it is used.

2.0 Feeding F-75 during Stabilisation

2.1 Determining Frequency of Feeds

On the first day, feed the child small amounts of F-75 every 2 hours (12 feeds in 24 hours, including through the night). If the child is hypoglycaemic, give one-quarter of the 2-hourly amount every half-hour for the first 2 hours or until the child's blood glucose is at least 3 mmol/L.

Night feeds are extremely important. Many children die from hypoglycaemia as a result of missed feeds at night. Children must be awakened for these feeds. (Some practitioners believe that the risk for the child to develop hypoglycaemia during the night is reduced if it is certain that the child has taken all his/her daily food amount during the day.)

After the first day, increase the volume per feed gradually so that the child's system is not overwhelmed. The child will gradually be able to take larger, less frequent feeds (every 3 hours or every 4 hours). Criteria for increasing the volume and decreasing the frequency of feeds are presented in Section 2.6.

2.2 Determining the Amount of F-75 Needed per Feed

Given the child's starting weight and the frequency of feeding, use a table to look up the amount of F-75 needed per feed. These look-up tables are found in the Therapeutic Milk Look-Up Tables Job Aid and the CMAM Manual.

Look at the F-75 Look-Up Tables in the job aid. One table is for children with SAM with no oedema, or with mild or moderate oedema. The other table is only for children admitted with severe (+++) oedema.

On the F-75 Look-Up Tables, the required daily amount has been divided by the number of feeds to show the amount needed per feed.

If the child is severely wasted, notice that the amounts per feed ensure that the child will be offered a total of 130 ml/kg/day of F-75. This amount of F-75 will give the child 100 kcal/kg/day and 1–1.5 g protein/kg/day. This amount is appropriate until the child is stabilised.

If the child has severe (++) oedema, his or her weight will not be a true weight; the child's weight may be as much as 30% higher due to excess fluid. To compensate, a child with severe oedema should be given only 100 ml/kg/day of F-75. Amounts per feed for the child with severe oedema are shown on the F-75 Look-Up Table.

Tips for using the F-75 Look-Up Tables Job Aid

- Be sure that you use the correct look-up table. One table is for most children, including those with mild or moderate oedema. The other table is used only if the child is admitted with severe (++) oedema.

- Note that children's weights listed on the F-75 Look-Up Tables Job Aid are all in even digits (2.0 kg, 2.2 kg, 2.4 kg, etc.). If a child's weight is between these (for example, if the weight is 2.1 kg or 2.3 kg), use the amount of F-75 given for the next lower weight.
- While the child is on F-75, keep using the starting weight to determine feeding amounts even if the child's weight changes. (The weight is not expected to increase on F-75.)
- If the child starts with severe oedema, continue using the F-75 table for severe oedema for the entire time that the child is on F-75. Also continue using the child's starting weight to determine the amount of F-75, even when the oedema (and weight) decreases. The volume per feed on the chart is already based on the child's estimated true weight.



SHORT ANSWER EXERCISE

For each child listed below, use your F-75 Look-Up Tables to determine the amount of F-75 to give per feed. The starting weight and oedema classification is given for each child, as well as the current frequency of feeds for the child.

Child 1: 6.8 kg, no oedema, 3-hourly feeds
Give _____ ml F-75 per feed.

Child 2: 8.5 kg, mild (+) oedema, 2-hourly feeds
Give _____ ml F-75 per feed.

Child 3: 5.2 kg, severe (+++) oedema, 2-hourly feeds
Give _____ ml F-75 per feed.

Child 4: 7.0 kg, severe (+++) oedema, hypoglycaemia, half-hourly feeds
Give _____ ml F-75 per feed.

Child 5: 9.6 kg, moderate (++) oedema, 4-hourly feeds
Give _____ ml F-75 per feed.

Compare your answers to this exercise
to the answers on page 67.

Tell your facilitator when you have reached this point in the module. When everyone is ready, there will be a group oral drill on determining amounts of F-75 to give.

2.3 Recording the Child's 24-Hour Feeding Plan

Each child's feeding plan should be recorded on a 24-Hour Food Intake Chart. (See the Inpatient Management Record Job Aid for a blank copy of a 24-Hour Food Intake Chart.)

At the top of the 24-Hour Food Intake Chart, record the date, the type of feed to be given, the number of feeds per day, the amount to give per feed and the total to give for the day. The details of each feed will be recorded on this form throughout the day. A sample completed 24-Hour Intake Chart is provided on [page 13](#).

Information about feeding is also recorded on the Inpatient Management Record. On the Daily Care page of the Inpatient Management Record, record the type of feed to be given (F-75 or F-100) and the number of feeds to be given daily. For example, if the child is on a 2-hourly feeding schedule, record that 12 feeds will be given. At the end of the day, record the total amount taken that day. The Inpatient Management Record will provide a brief summary of feeds, as opposed to the detailed record of the 24-Hour Food Intake Chart.

Example of Inpatient Care Inpatient Management Record (excerpt)

DAILY CARE		Week 1							Week 2	
DAYS IN HOSPITAL		1	2	3	4	5	6	7	8	9
Date		4/6	5/6	6/6						
Daily weight (kg)		4.4	4.2	4.0						
Weight gain (g/kg)		Calculate when on RUTF or F-100								
Bilateral pitting oedema	0 + ++ +++	+	+	0						
Diarrhoea (D) or Vomit (V)		D	D	0						
FEED PLAN:	Type of feed	F-75	F-75	F-75						
# daily feeds	12	8	6							
Volume to give per feed	50	70	95+							
Total volume taken (ml)	570	560	560							
NGT Y N	N	N	N							
Breastfeeding Y N	Y	Y	Y							
Appetite test with RUTF F failed P passed	F	F	F							

2.4 Feeding F-75 Orally or by Nasogastric Tube if Necessary

Oral Feeding

It is best to feed a child with a cup and saucer (and spoon, if needed). Encourage the child to finish the feed. It may be necessary to feed a very weak child with a dropper. Do not use a feeding bottle.

It takes skill to feed a very weak child, so nursing staff should do this task at first if possible. Mothers¹ may help with feeding after the child becomes stronger and more willing to eat.

¹ The term 'mother' is used throughout this module. However, 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. However, for the sake of readability, 'mother' means 'mother/caregiver' throughout this module, 'she' means 'she or he' and 'her' means 'her or his'.

Never leave a child alone to feed. Spend time with the child, hold the child and encourage him or her to eat. Catch dribbles by holding a saucer under the cup, as shown below. The saucer will allow feeding more quickly without worrying about spilling. At the end of the feed, give the child whatever amount was caught in the saucer.



Feeding orally with cup and saucer.

Encourage breastfeeding on demand before and between F-75 feeds. Ensure that the child still gets the required feeds of F-75 even if breastfeeding.

Feeding Children That Have Diarrhoea and Vomiting

If a child has continuing watery diarrhoea after he or she has been rehydrated, offer Rehydration Solution for Malnutrition (ReSoMal) between feeds to replace losses from stools. As a guide, children under 2 years should be given 50–100 ml of ReSoMal after each loose stool, while older children (≥ 2 years) should be given 100–200 ml. The amount given in this range should be based on the child's willingness to drink and the amount of ongoing losses in the stool. Children with oedema should receive 30 ml of ReSoMal after each loose stool when diagnosed with dehydration.

If a child vomits during or after a feed, estimate the amount vomited and offer that amount of feed again. If the child keeps vomiting, offer half the amount of feed twice as often. For example, if the child is supposed to take 40 ml of F-75 every 2 hours, offer half that amount (20 ml) every hour until vomiting stops.

Nasogastric Feeding

It may be necessary to use a nasogastric tube (NGT) if a child is very weak, has mouth ulcers that prevent drinking or cannot take enough F-75 by mouth. The minimum acceptable amount for the child to take is 80% of the amount offered. At each feed, offer the F-75 orally first. Use an NGT if the child does not take 80% of the feed (i.e., leaves more than 20%) for 2 or 3 consecutive feeds.

Nasogastric (NG) feeding should be done by experienced staff. A child with an NGT is shown below. The NGT should be checked every time food is put down. Check placement by injecting air with a syringe and listening for gurgling sounds in the stomach. Change the tube if blocked. Do not plunge F-75 through the NGT; let it drip in, or use gentle pressure.



Child with nasogastric tube.

Abdominal distension can occur with oral or NG feeding, but it is more likely with NG feeding. If the child develops a hard distended abdomen with very little bowel sound, give 2 ml of a 50% solution of magnesium sulphate intramuscular (IM).

Remove the NGT when the child takes:

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

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

2.5 Recording Intake and Output on a 24-Hour Food Intake Chart

A sample completed 24-Hour Food Intake Chart is on [page 13](#).

Note: In these modules, a 24-hour clock will be used, but participants may use a.m. and p.m. if they are more accustomed to that.

Instructions for Completing Chart

In the spaces above the chart, record the child's name, hospital ID number, admission weight and today's weight. If the child was rehydrated on the first day, list the rehydrated weight as the admission weight.

On the top row of the chart, record the date, the type of feed to be given, the number of feeds per day and the amount to give at each feed.

At each feed:

In the left column, record the time that the feed is given. Then complete the following steps and record information in the appropriate column:

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

At the end of 24 hours:

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

Tell a facilitator when you have reached this point. When everyone is ready, there will be a demonstration of how to use the 24-Hour Food Intake Chart.

Sample 24-Hour Food Intake Chart

24-HOUR FOOD INTAKE CHART <i>Complete one chart for every 24-hour period.</i>						
DATE: 4/06/01		TYPE OF FEED: F-75		GIVE: 12 feeds of 45 ml		
Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a - b)	d. Amount taken by NGT, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)
8:00	45	0	45	—		
10:00	45	15	30	—		
12:00	45	15	30	—		
14:00	45	25	20	—	10	
16:00	45	35	10	35		
18:00	45	35	10	35		
20:00	45	30	15	30		
22:00	45	25	20	25	10	
24:00	45	20	25	20		
2:00	45	10	35	10		
4:00	45	5	40	—		
6:00	45	5	40	—		
Column totals		320	155	20	Total yes: 0	
If child is ready for transition, test appetite.				Appetite test:	(Failed)	Passed
Total volume taken over 24 hours = amount taken orally (c) + amount taken by NGT (d) – amount vomited (e) = 455 ml						



SHORT ANSWER EXERCISE

Answer the following questions about the 24-Hour Food Intake Chart for Matteu on the previous page:

1. At what times did Matteu's feeding day begin and end?
2. How many times was Matteu fed during the 24-hour period?
3. What amount of F-75 was Matteu offered at each feed?
4. At 10:00 did Matteu take enough (80%) of the F-75 orally?
5. At 12:00 did Matteu take enough of the F-75 offered?
6. What apparently happened at the 14:00 feed?
7. How was the feeding method changed at 16:00? Why do you think the staff changed the feeding method?
8. How was Matteu fed from 20:00 to 2:00?
9. At 4:00 and 6:00 did Matteu take enough F-75 orally?
10. What was the total volume of F-75 taken by Matteu over the 24-hour period? Include the amount taken orally and by NGT, and subtract the amount vomited.
11. Should Matteu's NGT be removed?

Compare your answers to this exercise to the answers beginning on <u>page 67</u> .
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2.6 Adjusting the Feeding Plan for the Next Day

The total amount of F-75 given per day is based on the admission weight and does not change. (If the child is rehydrated on the first day, use the rehydrated weight.) As the child stabilises, the child can take more at each feed, and feeds can be less frequent.

Each day, review the child's 24-Hour Intake Chart to determine if the child is ready for larger, less frequent feeds.

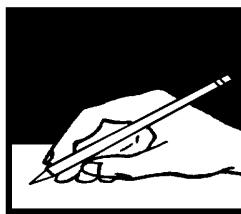
Criteria for Increasing Volume/Decreasing Frequency of Feeds

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

Compare the total amount of F-75 taken for the day to the 80% column on the F-75 Look-Up Tables to confirm that the child has taken enough. If not, NG feeding may be needed.

Continue to offer each feed orally first; then use an NGT to complete the feed if the child does not take at least 80% orally.

Note: Feeding a child with SAM in Inpatient Care is not the task of the nutrition assistant only, or of the mother only. Therapeutic feeding falls under the responsibility of the physician, who together with his/her team is in charge to ensure the correct feeding and monitoring of outcomes of all children in the ward. **Teamwork**, including sharing tasks and responsibilities, is essential for quality care.



Exercise B

In this exercise, you will review 24-Hour Food Intake Charts and descriptions of children to determine their feeding plans for the next day.

Case 1 – Delroy

Delroy was admitted to Inpatient Care with diarrhoea. He had no oedema. He was clinically well and alert, and had poor appetite and signs of dehydration. During the first two feeds of the day, Delroy was still being given ReSoMal. After he was rehydrated, he began 2-hourly feeds of F-75 at 12:00. His rehydrated weight was 4.6 kg, so he was given **10 feeds** of 60 ml each to finish the day's amount of 600 ml. He took all of his feeds very well, although his diarrhoea continued.

Delroy's completed 24-Hour Food Intake Chart for day 1 is shown here. Study the completed chart. Then answer the questions on the following page about Delroy's feeding plan for day 2.

24-HOUR FOOD INTAKE CHART Complete one chart for every 24-hour period.						
Name: <u>Delroy</u>		Admission weight (kg): <u>4.6*</u>		Today's weight (kg): <u>Same</u>		Oedema: <u>0</u> + + + + +
DATE: <u>4/12/01 (day 1)</u>		TYPE OF FEED: <u>F-75</u>		GIVE: <u>10</u> feeds of <u>60</u> ml		
Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a – b)	d. Amount taken by NGT, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)

12:00	60	20	40			
14:00	60	0	60			
16:00	60	0	60			Yes (small)
18:00	60	0	60			
20:00	60	0	60			
22:00	60	0	60			
24:00	60	0	60			Yes (small)
2:00	60	0	60			
4:00	60	0	60			
6:00	60	0	60			Yes (small)
Column totals		580	0	0		Total yes: 3
If child is ready for transition, test appetite.			Appetite test:		<input checked="" type="radio"/> Failed	<input type="radio"/> Passed
Total volume taken over 24 hours = amount taken orally (c) + amount taken by NGT (d) – amount vomited (e) = <u>550</u> ml						

* rehydrated

Case 1 – Delroy, continued

- 1a. Since Delroy only had 10 feeds rather than 12, his total food intake cannot be compared to the 80% column on the F-75 Look-Up Tables Job Aid. Instead, look at how much of each feed he took. Did Delroy take at least 80% of each feed?
- 1b. Although Delroy still has diarrhoea, it is only a small amount. According to the criteria on page 15 of this module, is Delroy ready to change to 3-hourly feeds?
- 1c. Enter instructions for Delroy's feeding plan for day 2 on the following excerpt from the 24-Hour Food Intake Chart: **DATE:** **TYPE OF FEED:** **GIVE:** feeds of ml
- 1d. Starting with the first feed at 8:00, list the times at which Delroy will need to be fed on day 2:
- 1e. On day 2, Delroy took most of every feed for a total of 600 ml during the day. He had two diarrhoea stools and no vomiting. His weight has not changed, and there is still no oedema. Record information from day 2 on the following excerpt from the Daily Care page of the Inpatient Management Record:

DAYS IN HOSPITAL	Week 1							Week 2	
	1	2	3	4	5	6	7	8	9
Date	4/12								
Daily weight (kg)	4.6								
Weight gain (g/kg)	<i>Calculate when on RUTF or F-100</i>								
Bilateral pitting oedema	0 + ++ +++	0							
Diarrhoea (D) or Vomit (V)		D							
FEED PLAN:	Type of feed	F-75							
	# daily feeds	10							
	Volume to give per feed	60							
	Total volume taken (ml)	550							
NGT	Y	N							
Breastfeeding	Y	N							
Appetite test with RUTF	F failed	P passed							
	F								

Case 2 – Pedro

Pedro weighed 4.8 kg when he was admitted to Inpatient Care on day 1. He did not pass the RUTF appetite test. He had no oedema. He was given 12 feeds of 55 ml F-75 on day 1. Pedro was a reluctant eater, but he finished most of his feeds and changed to 3-hourly feeds (8 feeds per day) on day 2. On day 2, Pedro was still reluctant to eat. At two feeds, he took less than 80% of the amount offered, but he took more at the next feeds, so an NGT was never used.

Pedro's completed 24-Hour Food Intake Chart for day 2 is shown below.

- 2a. Did Pedro take at least 80% of the expected daily total? (Refer to the last column of the F-75 and F-100 Look-Up Tables Job Aid.)

- 2b. Should Pedro continue on 3-hourly feeds on day 3, or should he change to 4-hourly larger feeds? Why?

- 2c. Enter instructions for Pedro's feeding plan for day 3 on the following excerpt from the 24-Hour Food Intake Chart: **DATE:** _____ **TYPE OF FEED:** _____ **GIVE:** _____ feeds of _____ ml

24-HOUR FOOD INTAKE CHART <i>Complete one chart for every 24-hour period.</i>						
Name: <u>Pedro</u> Admission weight (kg): <u>4.8</u>		Today's weight (kg): <u>4.8</u>		Oedema: 0 + ++ +++		
DATE: 6/12/01 (day 2)		TYPE OF FEED: F-75		GIVE: 8 feeds of 80 ml		
Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a – b)	d. Amount taken by NGT, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)
8:00	80	10	70			
11:00	80	0	80			Yes
14:00	80	0	80			
17:00	80	20	60			
20:00	80	10	70			
23:00	80	10	70			
2:00	80	20	60			
5:00	80	0	80		40	
Column totals		570	0	40	Total yes: 1	
If child is ready for transition, test appetite.						
Appetite test:				Failed	Passed	
Total volume taken over 24 hours = amount taken orally (c) + amount taken by NGT (d) – amount vomited (e) = <u>530</u> ml						

Case 3 – Rositha

When Rositha was admitted to Inpatient Care, she had severe (++) oedema. She weighed 6.4 kg and was 66 cm long. She refused to eat, so an NGT was inserted. On days 1 and 2, she was given 55 ml of F-75 every 2 hours by NGT. On day 3, her weight was down to 6.1 kg and her oedema was moderate (++) . Rositha's 24-Hour Feeding Chart for day 3 is shown below.

- 3a. At what time did Rositha start taking feeds entirely by mouth?

- 3b. Rositha's NGT was left in during the night, although it was not needed. On day 4, should the NGT be removed?

- 3c. Should Rositha continue on 2-hourly feeds on day 4, or should she change to 3-hourly, larger feeds? Why?

- 3d. On day 4, Rositha weighs 5.8 kg and her oedema is mild (+). Enter instructions for Rositha's feeding plan for day 4 on the following excerpt from the 24-Hour Food Intake Chart: **DATE:** _____ **TYPE OF FEED:** _____ **GIVE:** feeds of _____ ml

24-HOUR FOOD INTAKE CHART <i>Complete one chart for every 24-hour period.</i>						
DATE: 8/02/01 (day 3)		TYPE OF FEED: F-75		GIVE: 12 feeds of 55 ml		
Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a – b)	d. Amount taken by NGT, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)
8:00	55	0	0	55	/	
10:00	55	30	25	30	/	Yes (lots)
12:00	55	10	45	10	/	
14:00	55	10	45	10	/	
16:00	55	0	55		/	
18:00	55	0	55		/	Yes (small)
20:00	55	0	55		/	
22:00	55	0	55		/	Yes (small)
24:00	55	0	55		/	
2:00	55	0	55		/	
4:00	55	0	55		/	
6:00	55	0	55		/	
Column totals		555	105	0	Total yes: 3	
If child is ready for transition, test appetite.			Appetite test:		Failed	Passed
Total volume taken over 24 hours = amount taken orally (c) + amount taken by NGT (d) – amount vomited (e) = 660 ml						

Case 4 – Suraiya

When Suraiya was admitted to Inpatient Care, she weighed 5.7 kg and had mild oedema (+), mild dermatosis (+) and no appetite. Since she had only mild oedema, the physician used the regular F-75 feeding table. Suraiya's weight of 5.7 kg was between the weights listed on the table, so she was given the next lower amount of F-75 (that is, 60 ml every 2 hours, the amount for a 5.6 kg child).

Suraiya had mouth sores and refused to eat, so an NGT was inserted for feeding. She began treatment for *Candida*. On day 2, she began taking F-75 by mouth and had several good feeds orally. On the morning of day 3, the NGT was removed. Suraiya's 24-Hour Food Intake Chart for day 3 is on the [next page](#).

- 4a. According to Suraiya's 24-Hour Food Intake Chart for day 3, when did she begin to refuse most of her feeds?

- 4b. What should the night staff have done in response to Suraiya's refusal to feed? When should they have done this?

- 4c. What should be done for Suraiya on the morning of day 4?

- 4d. Enter instructions for Suraiya's feeding plan for day 4 on the following excerpt from the 24-Hour Food Intake Chart: **DATE:** **TYPE OF FEED:** **GIVE:** *feeds of ml*

Case 4 – Suraiya, continued

24-HOUR FOOD INTAKE CHART <i>Complete one chart for every 24-hour period.</i>						
Name: <u>Suraiya</u>		Admission weight (kg): <u>5.7</u>		Today's weight (kg): <u>5.6</u>		Oedema: <u>0</u> + <u>++</u> <u>+++</u>
DATE: <u>14/03/01 (day 3)</u>		TYPE OF FEED: <u>F-75</u>		GIVE: <u>12</u> feeds of <u>60</u> ml		
Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a – b)	d. Amount taken by NGT, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)
8:00	<u>60</u>	<u>10</u>	<u>50</u>			
10:00	<u>60</u>	<u>10</u>	<u>50</u>			
12:00	<u>60</u>	<u>10</u>	<u>50</u>			
14:00	<u>60</u>	<u>10</u>	<u>50</u>			
16:00	<u>60</u>	<u>20</u>	<u>40</u>			
18:00	<u>60</u>	<u>10</u>	<u>50</u>			
20:00	<u>60</u>	<u>40</u>	<u>20</u>			
22:00	<u>60</u>	<u>30</u>	<u>30</u>			
24:00	<u>60</u>	<u>40</u>	<u>20</u>			
2:00	<u>60</u>	<u>60</u>	<u>0</u>			
4:00	<u>60</u>	<u>60</u>	<u>0</u>			
6:00	<u>60</u>	<u>60</u>	<u>0</u>			
Column totals		<u>360</u>	<u>0</u>	<u>0</u>		Total yes: <u>0</u>
If child is ready for transition, test appetite.			Appetite test:	Failed	Passed	
Total volume taken over 24 hours = amount taken orally (c) + amount taken by NGT (d) – amount vomited (e) = <u>360</u> ml						

3.0 Adjusting to RUTF and/or F-100 during Transition

It may take 7 days, or even longer, for a child to stabilise on F-75. When the child has stabilised, and the appetite returns, the *RUTF appetite test* is done.

When the child starts eating RUTF, only RUTF is offered. In case the child does not eat well or enough RUTF (or in the absence of RUTF or when there is a medical problem that precludes consumption of RUTF), F-100 is offered in combination with RUTF, or alone.

The majority of children with SAM will be able to take the RUTF diet as soon as their appetite has returned after stabilisation. However, a small number of children with SAM will take longer to move from the milk diet to the RUTF diet. A child who refuses RUTF should continue to be offered RUTF at each feed (appetite test) while his or her diet is complemented with F-100 until the child eats his or her full diet of RUTF and is ready for referral to Outpatient Care.

RUTF and F-100 are the higher-calorie, higher-protein ‘catch-up’ feed intended to rebuild wasted tissues. After 1–3 days of feeding on RUTF or F-100 in transition, a child will be referred to Outpatient Care to continue rehabilitation with RUTF or will remain in Inpatient Care and receive F-100 freely (in the absence of RUTF or when there is a medical problem that precludes consumption of RUTF). However, it is extremely important to make the transition to RUTF or free feeding on F-100 gradually and to monitor the transition carefully. If the transition happens too rapidly, heart failure may occur.

3.1 Recognising Readiness for Transition

Look for the following signs of readiness, usually after 2–7 days on F-75:

- Return of appetite (easily finishes 4-hourly feeds of F-75)
- Reduced oedema or minimal oedema
- Resolving medical complication

The child may also smile at this stage.

3.2 Introducing RUTF, and Complementing with F-100 if Necessary

The transition phase prepares the child for referral to Outpatient Care and may last up to 3 days. The RUTF appetite test is performed, and repeated, until the child passes the test. As such, RUTF is offered at every feed, 5–6 times a day, and complemented by F-100 if needed. Breastfed children should be offered breast milk before and between the feeds.

A few children might refuse the RUTF, but they should be encouraged to eat RUTF at every meal. If the child takes RUTF voluntarily, stop providing F-100.

If the child does not yet eat the entire daily amount of RUTF, complement the RUTF with F-100 based on 20 mg of RUTF equals about 100 ml of F-100². Or, if the child started feeding in transition on F-100, and RUTF is gradually introduced, complement the amount of F-100 with amounts of RUTF based on 100 ml of F-100 equals about 20 mg of RUTF.

² This is an acceptable approximation. If tables are to be constructed, $100 \text{ ml of F-100} = 18.5 \text{ g of RUTF}$ and $10 \text{ g of RUTF} = 54 \text{ ml of F-100}$ should be used for conversion and the resulting values rounded to the nearest 5 or 10 ml.

If the child takes RUTF voluntarily and up to 75% of its daily prescribed amount, stop providing F-100. The child is ready for referral to Outpatient Care.

Points to Consider when Conducting an Appetite Test

- Conduct the appetite test in a quiet area away from day-to-day ward operations.
- Provide an explanation to the mother regarding the purpose of the appetite test and outline the procedures involved.
- Advise the mother to:
 - Wash hands before giving the RUTF.
 - Sit with the child in her lap and gently offer the RUTF.
 - Encourage the child to eat the RUTF without force-feeding.
 - Offer the child plenty of clean water to drink from a cup while the child eats the RUTF.
- Observe the child for 30 minutes and then the health care provider determines whether the child passes or fails the test according to the criteria below.

Appetite Test Pass/Fail Criteria

Pass	Fail
The child eats at least one-third of a packet of RUTF (92 g) or 3 teaspoons from a pot within 30 minutes.	The child does NOT eat one-third of a packet of RUTF (92 g) or 3 teaspoons from a pot within 30 minutes.

Feeding Procedures

RUTF

- Provide the RUTF to the mother to feed the child. The mother should be encouraged to provide RUTF feeds at the same time as feeds were provided during the stabilisation phase (6–8 feeds per day).
- Breastfed children should be offered breast milk on demand before being fed RUTF.
- Children should be offered as much clean water to drink as they want during and after they have taken some of the RUTF.
- Some children initially refuse the RUTF. In this case, they should be given the F-100 diet for 1–2 days and then reintroduced to RUTF when their appetite is fully established.

F-100

- Feeding and timing of F-100 feeds in the transition phase is the same as in the stabilisation phase.
- Breastfed children should be offered breast milk on demand before being fed F-100.
- Never force-feed the child.

Feeding Technique

- RUTF and clean drinking water should be given to the mother to feed the child.
- The feeding technique for F-100 is the same as for F-75 in the stabilisation phase.

3.3 If No RUTF Can Be Given, Give F-100 Slowly and Gradually

If no RUTF can be given (e.g., no RUTF is available, medical condition does not allow, child refuses RUTF), F-100 should be given according to the following schedule:

- **First 48 hours (2 days):** Give F-100 every 4 hours in the same amount as you last gave F-75. Do not increase this amount for 2 days.
- **Then, on the third day:** Increase each feed by 10 ml as long as the child is finishing feeds. If the child does not finish a feed, offer the same amount at the next feed; then if feed finished, increase by 10 ml. Continue increasing the amount until some food is left after most feeds (usually when amount reaches about 30 ml/kg per feed).

If the child is breastfeeding, encourage the mother to breastfeed between feeds of F-100.

Example of Feeding Schedule during Transition

You may remember Delroy from the last exercise. On day 1, Delroy's rehydrated weight was 4.6 kg, and he started on 60 ml of F-75 every 2 hours. Delroy continued to feed well over the next 2 days. On day 2, he took 3-hourly feeds of 80 ml F-75. On day 3, he took 4-hourly feeds of 100 ml F-75. He also smiled at his mother and the nurses.

On day 3, Delroy easily finished all of his 4-hourly feeds. Thus, on day 4, Delroy is ready for transition.

Delroy's feeding schedule during transition would be as follows.

Day 4:

1. Do the RUTF appetite test and record how much Delroy has taken from the packet. Delroy will take the RUTF test at every feed until he passes the test and eats RUTF well during every feed.
If one-third of the packet is eaten within 30 minutes, Delroy passed the test, and can continue to eat RUTF according to his weight 6–8 feeds per day (for instance, a 4.6 kg child is offered 1.5 packets of 92 g RUTF each day). In that case, Delroy has already eaten enough for one feed. During the next feeds and days, he will be offered RUTF again per his body weight based on 150 kcal/kg/day.
If he did not eat one-third of the packet within 30 minutes, Delroy did not pass the test. His diet is complemented with F-100.

Complement Delroy's RUTF diet with F-100 by subtracting the RUTF amount he could eat from the 100 ml of F-100 every 4 hours, which is the same amount and frequency as he previously took F-75.

2. If Delroy remains on F-100 because there is no RUTF or because there is a medical indication for doing so, his feeding schedule during transition will be as follows.

Day 4: 100 ml of F-100 every 4 hours (same amount and frequency as he previously took F-75).

Day 5: Continue 100 ml of F-100 every 4 hours (same as day 4).

Day 6: Continue 4-hourly feeds, increasing amount by 10 ml each time: 110 ml, 120 ml, 130 ml, etc. If Delroy does not finish a feed, give the same amount at the next feed.

Continue increasing the amount until some food is left after most feeds.

(Note: In Exercise C, Case 1, we assume that Delroy is a special case and cannot eat RUTF.)

For more information about use in transition, consult one of the following:

- Job Aids: F-75 and F-100 Look-Up Tables and Use of RUTF in Inpatient Care
- CMAM Manual, Therapeutic Feeds Look-Up Tables

3.4 Monitoring Carefully during Transition

Every 4 hours, check the child's respiratory and pulse rate. If RUTF or F-100 is introduced carefully and gradually, problems are unlikely; however, increasing respiratory or pulse rate may signal heart failure. Call a physician for help. (More information on danger signs and monitoring is given in **Module 5, Daily Care**, and in the Danger Signs for the Management of Severe Acute Malnutrition in Children under 5 in Inpatient Care Job Aid.)

3.5 Recording Intake/Output; Planning Feeds for the Next 24 Hours

Record the amount of RUTF or F-100 offered at each feed, and the child's intake and output (vomiting or diarrhoea) on the 24-Hour Food Intake Chart. Also enter the total amount taken during the day on the Inpatient Management Record. Enter the feeding plan for the next day on a new 24-Hour Food Intake Chart. On the third day, when feeds should increase by 10 ml (as long as the child is taking all that is offered), mark an arrow by the starting amount per feed, for example, 105 ml ↑ in F-100 intake.

Child on F-100:

DATE: <u>9/12/01</u>	TYPE OF FEED: <u>F-100</u>	GIVE: <u>6</u> feeds of <u>105↑</u> ml
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Child on RUTF:

DATE: <u>9/12/01</u>	TYPE OF FEED: <u>RUTF</u>	GIVE: <u>6</u> feeds, daily feed = 1.5 packets
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Exercise C

Case 1 – Delroy

The following Inpatient Management Record excerpt summarises Delroy's progress through the first 2 days of transition (days 4 and 5). Delroy failed the RUTF appetite test on days 1, 4, 5 and 6. On days 4 and 5, he took all of every feed of 100 ml F-100. The column for day 6 shows what the nurse wrote on the Inpatient Management Record in the morning of Delroy's third day of transition.

DAYS IN HOSPITAL	Week 1							Week 2	
	1	2	3	4	5	6	7	8	9
Date	4/12	5/12	6/12	7/12	8/12	9/12			
Daily weight (kg)	4.6	4.6	4.6	4.6	4.65	4.75			
Weight gain (g/kg)	Calculate when on RUTF or F-100					10.8*	21.5*		
Bilateral pitting oedema	0	+	++	+++	0	0	0	0	
Diarrhoea (D) or Vomit (V)	D	D	0	0	0				
FEED PLAN:	Type of feed	F-75	F-75	F-75	F-100	F-100	F-100		
# daily feeds	10	8	6	6	6	6			
Volume to give per feed	60	75	100	100	100	100	110↑		
Total volume taken (ml)	580	600	600	600	600	600			
NGT	Y	N	N	N	N	N	N		
Breastfeeding	Y	N	Y	Y	Y	Y	Y		
Appetite test with RUTF	F failed	P passed	F	/	/	F	F	F	

*These figures show Delroy's weight gain in grams per kg body weight. You will learn how to calculate and interpret this gain later, in **Module 6, Monitoring, Problem Solving and Reporting**.

On day 6, Delroy was offered increasing amounts of F-100. His 24-Hour Food Intake Chart for day 6, through the 24:00 feed, is shown here. Study Delroy's chart and answer the questions on the next page.

24-HOUR FOOD INTAKE CHART Complete one chart for every 24-hour period.						
Name: <u>Delroy</u>	Admission weight (kg): <u>4.6</u>	Today's weight (kg): <u>4.75</u>	Oedema: <u>0 + ++ +++</u>			
DATE: <u>9/12/01 (day 6)</u>	TYPE OF FEED: <u>F-100</u>	GIVE: <u>6</u> feeds of <u>110↑</u> ml				
Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a - b)	d. Amount taken by NGT, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)
8:00	110	0	110	/	/	/
12:00	120	10	110	/	/	/
16:00	120	0	120	/	/	/
20:00	130	10	120	/	/	/
24:00	130	0	130	/	/	/
Column totals						Total yes:
If child is ready for transition, test appetite.					Appetite test:	Failed Passed
Total volume taken over 24 hours = amount taken orally (c) + amount taken by NGT (d) – amount vomited (e) = _____ ml						

Case 1 – Delroy, continued

- 1a. How much F-100 should Delroy be offered at the 4:00 feed? Enter this amount in the ‘Amount Offered’ column of Delroy’s chart.

- 1b. Delroy leaves 10 ml of the F-100 offered at 4:00. He has had no vomiting or diarrhoea since the last feed. Complete the rest of Delroy’s 24-Hour Food Intake Chart for day 6, including the totals.

- 1c. Complete the rest of the column for day 6 on the excerpt of Delroy’s Inpatient Management Record on page 26.

Case 2 – Pedro

You may remember that Pedro was a reluctant eater on days 1 and 2. On day 3, his appetite increased, and he took eight 3-hourly feeds of 80 ml F-75. He took all of the F-75 offered at each feed. On day 4, Pedro took six 4-hourly feeds of 110 ml F-75. He ate greedily and still wanted more at the end of each feed.

On day 5, Pedro began transition. The RUTF appetite test was tried but Pedro refused to eat the RUTF. When he was offered F-100, he eagerly took six 4-hourly feeds of 110 ml. Pedro’s mother says that he wants more F-100 at each feed. She asks if she can give Pedro more.

- 2a. Should Pedro be given larger feeds of F-100 on day 6?

- 2b. What should the nurse explain to Pedro’s mother?

- 2c. On day 7, what feed should the nurse offer Pedro?

Case 3 – Rositha

You may remember that Rositha was admitted with severe oedema and had to be fed by NGT for several days because she refused to eat.

By day 6, Rositha was feeding much better, and she had lost most of her oedema. Her weight had decreased from 6.4 kg to 5.4 kg because of loss of oedema fluid. Since Rositha’s starting amount of F-75 was taken from the chart for severely oedematous children, the staff continues to use that chart and her starting weight to determine the amount of F-75 to give. On day 6, Rositha was given six 4-hourly feeds of 105 ml. She eagerly took all of the F-75 offered.

On day 7, Rositha's oedema appears to be gone and she weighs 5.2 kg. Rositha was offered the RUTF appetite test and she ate more than one-third of the packet.

- 3a. Is Rositha ready for transition? Why or why not?
- 3b. Enter instructions for Rositha's feeding plan for day 7 on the following excerpt from the 24-Hour Food Intake Chart:

DATE: <u>12/02/01 (day 7)</u>	TYPE OF FEED: _____	GIVE: _____ feeds, daily feed = _____
--------------------------------------	----------------------------	--

- 3c. Rositha takes her feeds on day 7 well and shows no danger signs. Enter instructions for Rositha's feeding plan for day 8:

DATE: <u>13/02/01 (day 8)</u>	TYPE OF FEED: _____	GIVE: _____ feeds, daily feed = _____
--------------------------------------	----------------------------	--

- 3d. Rositha takes her feeds on day 8 well and shows no danger signs. Enter instructions for Rositha's feeding plan for day 9:

DATE: <u>14/02/01 (day 9)</u>	TYPE OF FEED: _____	GIVE: _____ feeds, daily feed = _____
--------------------------------------	----------------------------	--

- 3e. On day 10, Rositha is referred to Outpatient Care, with a buffer stock of RUTF for 7 days. How many packets will she receive?

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

4.0 Feeding on RUTF or Freely with F-100 during Rehabilitation

After transition, which takes about 3 days, if the child takes more than 75% of the amount of the daily RUTF diet, then he or she can be referred to Outpatient Care to continue treatment. In Outpatient Care, children are monitored weekly in a health facility and continue their treatment at home.

If there are situations where the child cannot be referred to Outpatient Care but RUTF is available, the hospital or health facility with Inpatient Care will treat the child as outpatient.

Note: The management of SAM in Outpatient Care is covered in a separate training.

A few special cases will remain in Inpatient Care for rehabilitation until full recovery on the RUTF or F-100 diet. These special cases include:

- Children that remain inpatients because of another medical condition
- Children that are unable to eat RUTF
- Mothers that refuse the child continued treatment in Outpatient Care despite being adequately counselled (child will be offered RUTF as soon as appetite returns)
- Situations in which there is no access to RUTF

For use in rehabilitation, the F-75 and F-100 Look-Up Tables (see the Therapeutic Milk Job Aid) show the 150–220 kcal/kg/day range of intakes suitable for rehabilitation of children of different weights up to 10 kg.

4.1 Encouraging Children to Eat Freely on F-100 at Each Feed

After transition, a child enters the ‘rehabilitation’ phase and can feed freely on F-100 to an upper limit of 220 kcal/kg/day (this is equal to 220 ml/kg/day). Most children will consume at least 150 kcal/kg/day; any amount less than this indicates that the child is not being fed freely or is unwell.

During the rehabilitation phase, encourage the child to eat as much as he or she wants at each feed, within the range shown on the F-100 Look-Up Table. Continue to feed every 4 hours within this range. Sit with the child and actively encourage eating. Never leave the child alone to feed. If the child’s weight is between two weights given on the F-100 Look-Up Table, use the range for the next lower weight.

If you need to calculate the acceptable range yourself (for example, if the child weighs more than 10 kg), multiply the child’s weight by 150 (minimum) and 220 (maximum); then divide each result by 6 (for 6 feeds per day). This will tell you how many ml to give per feed. An easier method may be to add together the feed volumes for an appropriate combination of children’s weights from the card. For example, if a child weighs 13.2 kg, add the volumes shown for a 10.0 kg child and a 3.2 kg child.

Examples

Maria weighs 6.2 kg. According to the F-100 Look-Up Table, her feeds of F-100 may be in the range of 155–230 ml.

Lo weighs 4.5 kg. Using the range for the next lower weight, 4.4 kg, Lo’s feeds should be in the range of 110–160 ml.

Delia weighs 12.0 kg. Calculate the acceptable range of volumes of F-100 for her as follows:

Minimum: $12 \text{ kg} \times 150 = 1,800$
 $1,800 \div 6 = 300 \text{ ml per feed}$

Maximum: $12 \text{ kg} \times 220 = 2,640$
 $2,640 \div 6 = 440 \text{ ml per feed}$

Alternative method for Delia: Add volumes for a 10.0 kg child and a 2.0 kg child:

Minimum: $250 \text{ ml} + 50 \text{ ml} = 300 \text{ ml per feed}$
Maximum: $365 \text{ ml} + 75 \text{ ml} = 440 \text{ ml per feed}$

Due to rounding of the figures on the F-100 Look-Up Table, the volumes may be slightly different using the alternative method.

4.2 Recording Intake/Output; Determining if Intake of F-100 Is Acceptable

Record each feed on the 24-Hour Food Intake Chart. To determine if daily intake is acceptable, compare the volume taken to the range given on the F-100 Look-Up Table. If the child is not taking the minimum amount, there may be a problem, such as an infection, or the child may need more encouragement to eat. In general, if the child is gaining weight rapidly, he or she is doing well. If the child has diarrhoea but is still gaining weight, there is no need for concern, and no change is needed in the diet.

By week 3 or 4, if the child is doing well, there is no need to continue using the 24-Hour Food Intake Chart. If the child is gaining weight rapidly, you may assume that he or she is doing well. Monitoring for danger signs is no longer needed.

4.3 Adjusting Feeding Plan of F-100 as Necessary

During rehabilitation, a child is expected to gain weight rapidly, and the amount of F-100 given should be increased as the child's weight increases. The more energy that is packed in, the faster the child will grow. To plan feeds for the next day:

- Use the child's **current** weight to determine the appropriate range of F-100 each day.
- Choose a starting amount within the range. Base the starting amount on the amount taken in feeds during the previous day. If the child finished most feeds, offer a bit more. If the child did not finish most feeds, offer the same amount as the day before.
- Do not exceed the maximum in the range for the child's current weight.

If the amount of F-100 offered may be increased during the day, write a note to this effect on the 24-Hour Food Intake Chart. For example, write '*Increase by 10 ml until some left – not to exceed 175 ml*'. Or use an arrow to show that an increase is permitted, for example, '*155 ↑, not to exceed 175*'. If the child is starting the day with the maximum amount allowed, write on the chart: '*Do not increase*'.



Exercise D

Case 1 – Delroy

You may remember that Delroy began transition on day 4. On days 4 and 5, he was given 100 ml F-100 per feed. On day 6, that amount was increased to 140 ml by the last feed of the day. Delroy is an exceptional case who cannot take RUTF, and continue his feeds on F-100. On day 7, Delroy began free feeding on F-100. Delroy's 24-Hour Food Intake Chart for day 7 is on the [following page](#).

- 1a. What volume of F-100 was Delroy offered at his last feed on day 7?

- 1b. On day 8, Delroy's weight is 5.0 kg. What is the range of volumes of F-100 that is appropriate for Delroy for each 4-hourly feed?

- 1c. What should be the starting amount of F-100 given on day 8?

- 1d. What instructions should be written on the 24-Hour Food Intake Chart concerning the amount of F-100 to offer at subsequent feeds on day 8?

- 1e. On day 8, Delroy reached the maximum volume per feed and still wanted more. The nurse gave him no more than the maximum allowed. On day 9, Delroy's weight is up to 5.2 kg. What should be the starting amount of F-100 on day 9? Should this amount be increased during the day?

24-HOUR FOOD INTAKE CHART <i>Complete one chart for every 24-hour period.</i>						
Name: <u>Delroy</u> Admission weight (kg): <u>4.6</u> Today's weight (kg): <u>4.9</u> Oedema: <u>0 + ++ +++</u>						
DATE: <u>10/12/01 (day 7)</u> TYPE OF FEED: <u>F-100</u> GIVE: <u>6</u> feeds of <u>140↑</u> ml. Do not exceed <u>175</u> ml per feed						
Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a - b)	d. Amount taken by NGT, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)
8:00	140	10	130	/	/	/
12:00	140	0	140	/	/	/
16:00	150	0	150	/	/	/
20:00	160	10	150	/	/	/
24:00	160	0	160	/	/	/
4:00	170	0	170	/	/	/
Column totals		900			Total yes: 0	
If child is ready for transition, test appetite.						
Appetite test:				Failed	Passed	
Total volume taken over 24 hours = amount taken orally (c) + amount taken by NGT (d) - amount vomited (e) = <u>900</u> ml						

Case 2 – Pedro

Day 7 was Pedro's third day of transition. The nurse had consistently conducted the RUTF appetite test on days 5, 6 and 7, and Pedro refused to take the RUTF but eagerly took the F-100. On day 7, Pedro started leaving food at 130 ml of F-100. On day 8, he began feeding on 130 ml and gradually increased to 160 ml, when he started leaving food again. On day 9, his weight was 5.05 kg. His 24-Hour Food Intake Chart for day 9 is on the next page.

- 2a. What is an appropriate range of daily volumes of F-100 for Pedro on day 9?

_____ – _____ ml

Did Pedro take a total volume of F-100 in this range?

Following is an excerpt from Pedro's Inpatient Management Record. On the fourth row, Pedro's weight gain per day is shown in g/kg of his body weight. A weight gain of 10 or more g/kg/day is considered good. A gain of 5 up to 10 g/kg/day is considered moderate. Less than 5 g/kg/day is poor. You will learn to calculate daily weight gain and to keep a graph of weights in later modules.

DAYS IN HOSPITAL	Week 1							Week 2		
	1	2	3	4	5	6	7	8	9	10
Date	5/12	6/12	7/12	8/12	9/12	10/12	11/12	12/12	13/12	14/12
Daily weight (kg)	4.8	4.75	4.75	4.8	4.8	4.85	4.9	5.0	5.05	5.15
Weight gain (g/kg)	Calculate when on RUTF or F-100				0	10.4	10.3	20.4	10	9.9
Bilateral pitting oedema 0 + ++ +++	0	0	0	0	0	0	0	0	0	
Diarrhoea (D) or Vomit (V)	0	D V	0	0	0	0	0	0	0	
FEED PLAN:	Type of feed	F-75	F-75	F-75	F-75	*F-100	*F-100	*F-100	F-100	F-100
	# daily feeds	12	8	8	6	6	6	6	6	6
	Volume to give per feed	55	80	80	105	105	120	120	150	
	Total volume taken (ml)	600	560	640	630	630	720	840	900	
NGT	Y	N	N	N	N	N	N	N	N	
Breastfeeding	Y	N	y	y	y	y	y	y	y	
Appetite test with RUTF	F failed P passed	F	F	F	F	F	F	F	F	

* RUTF appetite test conducted before each feed.

- 2b. Look at Pedro's 24-Hour Food Intake Chart (next page). Notice that Pedro ate the same amount per feed on day 9 without increasing. Is there any apparent reason for concern? Why or why not?

- 2c. Enter instructions for Pedro's feeding plan for day 10 on the following excerpt from the 24-Hour Food Intake Chart: **DATE: TYPE OF FEED: GIVE: feeds of ml**

Case 2 – Pedro, continued

24-HOUR FOOD INTAKE CHART <i>Complete one chart for every 24-hour period.</i>						
Name: <u>Pedro</u> Admission weight (kg): <u>4.8</u> Today's weight (kg): <u>5.05</u> Oedema: <u>0</u> + ++ +++						
DATE: <u>13/12/01 (day 9)</u> TYPE OF FEED: <u>F-100</u> GIVE: <u>6</u> feeds of <u>160↑ ml</u> . <i>Do not exceed 185 ml.</i>						
Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a – b)	d. Amount taken by NGT, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)
8:00	160	10	150			
12:00	160	10	150			
16:00	160	10	150			
20:00	160	10	150			
24:00	160	10	150			
4:00	160	10	150			
Column totals		900	0	0	Total yes: 0	
If child is ready for transition, test appetite.			Appetite test:		Failed	Passed
Total volume taken over 24 hours = amount taken orally (c) + amount taken by NGT (d) – amount vomited (e) = <u>900</u> ml						

Case 3 – Rositha

Day 9 was Rositha's third day of transition. On day 9, she ate RUTF at all her meals. She took all of her feeds well, and ate more than 75% of the daily amount of RUTF. Rositha weighed 5.2 kg.

- 3a. What was the total amount of RUTF taken by Rositha over 24 hours on day 9?
- 3b. Looking back at Rositha's Monitoring Record for day 9, the head nurse noticed that Rositha's temperature had increased before the 16:00 feed. What does this suggest about the cause of Rositha's eating less?
- 3c. Which of the following should the head nurse do? (Check the appropriate answer)
- Alert the physician that Rositha has a problem and needs to be checked carefully
 - Plan feeding for day 10 with RUTF
 - Both of the above

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

5.0 Planning Feeding for Inpatient Care

Up to now, this module has focused on planning feeding for individual children. It is also important to plan feeding for Inpatient Care as a whole, so that the staff knows how much food to prepare, how much food to put in cups at each feed, etc. Feeds are prepared for every feed session; feeds are not kept for next meals unless there is a reliable refrigerator.

Note: Prepared milk should be used instantly and leftover milk should be disposed of immediately if there is no reliable refrigeration.

5.1 Determining a Schedule for Feeding and Related Activities

The ward schedule should include times for the following activities:

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

Once these activities are scheduled, you will see where time for organised play and educational activities can most conveniently fit in.

In general, monitoring activities (such as measuring temperature, pulse and respiration) should take place every 4 hours on an individual basis, before a child feeds. There is no need to include these activities on the written schedule for the ward. Individual treatments and drugs are also to be given on an individual basis.

Time for Preparing Feeds

Based on storage capabilities, the length of time feed will stay fresh and the availability of kitchen staff, decide whether feeds should be prepared every 12 hours, or, if refrigeration is poor or there are very many children, it is necessary to make feeds for every feed. Leftover milk should be discarded after feeds. [In the absence of refrigeration, give recommendations for the leftover milk, e.g., distribute leftover milk after every feed immediately to the other children in the hospital.]

RUTF does not require any preparation. Therefore, children on RUTF are given their full ration for the day in the morning and instructions on how to feed the child are provided to mothers.

Time for Review and Planning

Select a time of day to review each child's past 24-Hour Food Intake Chart, plan feeding for each child (if this has not already been done during physician rounds) and compile feeding plans for each child onto a feeding chart for the entire ward. An example of a completed Daily Feeds Chart is shown on [page 39](#). A blank Daily Feeds Chart is provided in the Daily Feeds Chart Job Aid. This chart is used in the kitchen so that staff know how much F-75 and F-100 to prepare and, in the case of RUTF, how much to give for the day.

Feeding Times

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

Plan times for 2-hourly, 3-hourly and 4-hourly feeds. At almost every hour, some children will have feeds. Ensure that no feeds occur at times of shift changes. For example, if shift changes are on the hour, plan for feeds to occur on the half-hour.

Keep in mind that a few children, for example, those with hypoglycaemia or continued vomiting, may be on a special half-hourly or hourly feeding schedule. Those children will need special attention to ensure that the more frequent feeds are provided outside the normal schedule.

Weighing and Bathing

Daily weighing will need to occur at about the same time each day, preferably 1 hour before or after a feed.

Since the children are undressed for weighing, this is also a good time for bathing. Generally children on 2-hourly feeding schedules are new to the ward and are likely to be too ill to be bathed. Children on 3-hourly and 4-hourly schedules may be bathed when they are weighed if this is convenient.

Shift Changes

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

Sample Ward Schedule

At City Hospital there is good refrigeration. [Adapt the sample if there is no refrigeration.] There are usually 10–15 children in Inpatient Care. There is adequate staff to prepare feeds twice daily, so it is decided to prepare feeds every 12 hours.

There are three nursing shifts per day. Each shift overlaps with the previous one by 30 minutes, so there is time to communicate instructions. The ‘feeding day’ starts at 10:00, after the senior nurse has had time to review charts from the day before and plan for the day. Beginning with the morning shift change, the schedule for the ward is as follows.

TIME	Activities by Feeding Schedule			Other Ward Activities/Comments
	2-hourly	3-hourly	4-hourly	
<i>Shift change 6:30 – 7:00; instructions given</i>				
7:00	Weigh	Feed	Weigh, bathe	
8:00	Feed	Weigh, bathe		Senior Nurse reviews each child's past 24-Hour Food Intake Chart and weight; plans feeding for the day; completes Daily Feeds Chart
9:00				Prepare feeds for next 12 hours
10:00	Feed	Feed	Feed	Start of new 'feeding day'
11:00				Organised play, parent education
12:00	Feed			
13:00		Feed		
<i>Shift change 13:30 – 14:00; instructions given</i>				
14:00	Feed		Feed	
15:00				Organised play, parent education
16:00	Feed	Feed		
17:00				Organised play, parent education
18:00	Feed		Feed	
19:00		Feed		
20:00	Feed			
<i>Shift change 20:30 – 21:00; instructions given to night staff</i>				
21:00				Prepare feeds for next 12 hours
22:00	Feed	Feed	Feed	
23:00				
24:00	Feed			
1:00		Feed		
2:00	Feed		Feed	
3:00				
4:00	Feed	Feed		
5:00				
6:00	Feed		Feed	



Exercise E

In this exercise, you will draft a schedule for your own ward, using your own information on shift changes, frequency of making feeds, etc.

If there are other staff members from your hospital attending this training course, it is suggested that you work together on this exercise.

Draft your ideas on a blank piece of paper first. Then use the blank schedule on the [next page](#) (or develop your own format). Be sure to include times for:

- Preparing feeds (as often as necessary)
- Reviewing charts and planning feeding for the day
- Feeding
- Weighing
- Bathing
- Shift changes

Consider the following questions and be prepared to discuss them.

- Is there a need to adjust shifts, kitchen hours or other aspects of your hospital's schedule to accommodate feeds?

- When are there times in the schedule to include opportunities for play or for educating parents about feeding their children?

When you have finished making a schedule for your ward,
tell a facilitator that you are ready for a group discussion.

Sample Schedule Format for Use in Exercise E

5.2 Preparing a Daily Feeds Chart

An example of a Daily Feeds Chart is on the [next page](#). To prepare a Daily Feeds Chart:

- Enter the name of each child in the ward in the first column.
 - Note that children on F-75 will have information recorded in the left-hand section of the chart, and children on F-100 will have information recorded in the right-hand section.
- Looking at each child's individual 24-Hour Food Intake Chart for the coming day, transfer:
- The number of feeds planned for the child for the day
 - The amount of F-75 or F-100 needed per feed, and the amount of RUTF needed per day. (*Note:* If a child may be increasing the size of F-100 feeds during the day, enter the amount of the largest feed that you expect him to take; to ensure that there is enough food, it is better to estimate high)
- Determine the total amount of F-75 and F-100 needed for each child by multiplying the number of feeds by the amount per feed.
 - Add the individual totals to determine the total amount of F-75, F-100 and RUTF needed for the day for the ward.
 - Round up the amount needed to the nearest litre (since the feeds are prepared in litre batches).
 - You might find it helpful to prepare some extra feed in case there are new admissions, some is spilled, etc. Enter the amount to prepare in the appropriate space on the chart.

Sample Daily Feeds Chart

RUTF		
Name of Child	Number of feeds	Packets per day
Koffi	6	3.0
Efua	6	2.5
Carla	6	2.0
Juliana	6	1.5
	RUTF total (packets) for 24 hours	9.0 or 10.0*

*depending on number of packets that were fully consumed in the previous day.



Exercise F

In this exercise, you will finish completing a Daily Feeds Chart and determine how much F-75 and F-100 to prepare for the ward. Use the partially completed Daily Feeds Chart on the next page.

1. Prakesh is the tenth child in the ward. It is his fourth day in the ward and he is still on F-75. His feeding plan for the day is below. Add Prakesh's feeding plan to the Daily Feeds Chart.

DATE: <u>17/05/01</u>	TYPE OF FEED: <u>F-75</u>	GIVE: <u>6</u> feeds of <u>130</u> ml
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2. Vera is the eleventh child in the ward. She is starting her second day of transition, so her planned amount of F-100 should not be increased during the day. Vera's feeding plan for the day is below. Add her feeding plan to the Daily Feeds Chart.

DATE: <u>17/05/01</u>	TYPE OF FEED: <u>F-100</u>	GIVE: <u>6</u> feeds of <u>160</u> ml
-----------------------	----------------------------	---------------------------------------

3. Sami is the last child in the ward. Sami's feeding plan is below. Sami ate eagerly yesterday, and he is likely to reach his maximum amount today. Add Sami's feeding plan to the Daily Feeds Chart.

DATE: <u>17/05/01</u>	TYPE OF FEED: <u>RUTF</u>	GIVE: <u>6</u> feeds of <u>almost 1/2 packet, total in a day: 2.5 packets</u> ml
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4. Feeds are prepared every 2 hours at this hospital. Complete the bottom part of the Daily Feeds Chart to determine how much of the ingredients to take from the store for the feeding in a day.

When you have finished this exercise, please discuss your answers with a facilitator.
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Use in Exercise F

Daily Feeds Chart

Date: 14/03/01

Ward: Severe Acute Malnutrition

Name of Child	RUTF	
	Number of feeds	packets per day
	RUTF total (packets) for 24 hours	

5.3 Planning Staff Assignments Related to Feeding Children

The major tasks involved in feeding are:

- Preparing F-75 and F-100
- Measuring out F-75 and F-100 feeds in amounts prescribed for each child. Mother with children on RUTF receive the daily amount of RUTF at once and are advised on the amount of RUTF the child should eat per feed.
- Feeding children
- Recording feeds (and vomiting and diarrhoea) on intake chart
- Planning feeding schedule for an individual child for the next day
- Preparing the Daily Feeds Chart

Each of these tasks is extremely important. Each task requires different skills. For example, preparing feeds requires the ability to follow a recipe and measure carefully. Feeding children requires patience and the ability to encourage a child in a loving way.

Appropriate staff, with the necessary skills or the ability to learn them, must be assigned to each of these tasks.

5.4 Preparing Staff to Do Assigned Feeding Tasks

If staff do not know how to do the tasks that you plan to assign them, you will need to provide some training. Training need not be lengthy or formal; it may be done through staff meetings or on the job. Good training includes information, examples and practice.

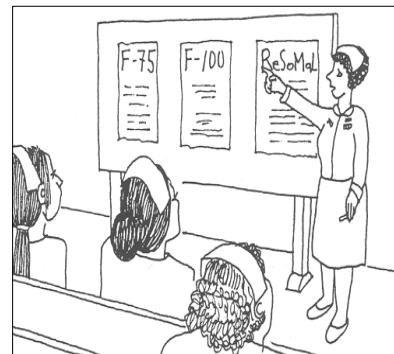
Example

Think about a time when you learnt a new skill, such as riding a bicycle, tying your shoe or cooking rice. If you had a good teacher, that person probably:

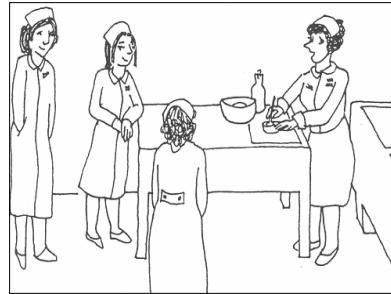
- First **told** you how (**information**)
- Then **showed** you how (**example**)
- Then helped you **practise** until you could do it yourself

These simple components of good teaching can be used in training staff to do feeding tasks or other tasks on the ward.

Information. Staff must be told (and preferably informed in a written job description) what tasks are expected of them. They must also be given instructions about how to do the tasks. Instructions may be in the form of a ‘job aid’, such as a poster on the wall with recipes for F-75 and F-100. The F-75, F-100 and RUTF Look-Up Tables and RUTF key messages used in this course are examples of job aids. Information may also be given orally, for example, in a staff meeting about how to complete patient records.



Examples. Staff must be shown how to do the tasks. For example, they might watch a demonstration of preparing feeds or feeding a very weak child. They might look at a correctly completed 24-Hour Food Intake Chart.



Practice. Practice is the most important element of training. To learn a task, staff must do the task themselves, receiving careful supervision and feedback as needed to improve performance. For example, staff must actually prepare feeds with supervision until they can do it correctly. They must also practise reading a Daily Feeds Chart and measuring appropriate amounts of feed. Staff who will feed children need to practise holding them and encouraging them to eat.



Of course, training will not solve every problem in Inpatient Care. For example, staff may not want to do a task because it is unpleasant, or they may be unable to do a task because they lack the time or equipment. Training will not solve these problems, and other solutions will need to be considered. Training is appropriate when staff:

- Do not know **what** to do *or*
- Do not know **how** to it



Exercise G

In this exercise, you will discuss various ways in which information, examples and practice can be provided for feeding-related tasks.

First answer the questions below. Be prepared to discuss your answers with the group.

1. List one feeding-related task that staff in your hospital does not know how to do correctly.

2. Which staff members are (or will be) responsible for this task? Do they know they are responsible for it? If not, how can you inform them of their responsibility?

3. In training staff to do this task, how could you provide **information** cheaply, quickly and realistically?

4. How could you provide **examples** cheaply, quickly and realistically?

5. How could you provide **practice** cheaply, quickly and realistically?

6. If you were to train staff to do this task, would there be any remaining problems interfering with doing the task? If so, what problems, and how could they be overcome?

Tell a facilitator when you are ready for the group discussion.

6.0 Management of SAM in Infants under 6 Months³

6.1 Breastfed Infants under 6 Months with a (Potential) Lactating Mother (or Caregiver for Wet Nursing)

Admission Criteria

Infants under 6 months being breastfed should be admitted to Inpatient Care if the infant:

- Has a presence of bilateral pitting oedema
- Has visible wasting
- Is at high risk of SAM because of inadequate feeding of either the infant or the lactating mother

Infants under 6 months with acute malnutrition and their lactating mothers (or caregivers for wet nursing) are both treated and taken care of. In food-insecure environments or emergency situations, they are at high risk of SAM, so it is important to include the following criteria:

- Infant unable to suckle effectively (e.g., too weak)
- Infant not satisfactorily gaining weight at home despite breastfeeding counselling
- Lactating mother with insufficient breast milk
- Malnourished lactating mother
- Absent lactating mother

Medical Treatment

No presumptive antibiotic treatment is given. Antibiotics or medicines are given if there are signs of infection that need treatment.

Infants 2–6 months (and weight of 2 kg or more)

- Refer to the existing national treatment protocols (or Integrated Management of Neonatal and Childhood Illness [IMNCI] protocols) for the treatment of the specific infection
AND/OR
- Give first-line antibiotics as prescribed for children 6–59 months with SAM and medical complications: amoxicillin-clavulanic acid, 15–30 mg/kg, orally, 3 times per day, for 5–10 days in association with gentamicin, 7.5 mg/kg, IV or IM, 1 time per day, for 5–10 days.
OR
- Give ceftriaxone, 100 mg/kg/day, IV or IM, 1 time per day.

Infants under 2 months (or weight less than 2 kg)

- Refer to the national protocols (or IMNCI protocols) for the treatment of the specific infection
AND/OR
- Give ceftriaxone, 50 mg/kg, IM, 1 time per day for 5–10 days.

Note: Do not use chloramphenicol in young infants under 2 months, and use with caution in infants 2–6 months.

³ Based on promising practices and guidelines from various sources (Prudhon, C., *Assessment and Treatment of Malnutrition in Emergency Situations*; Golden, M. and Grellety, Y., *Guidelines on the Management of SAM*).

For guidance on the management of medical complications in the presence of SAM, see **Module 3, Initial Management**.

Folic Acid. Give 2.5 mg (tablet crushed) in a single dose.

Ferrous Sulphate. Give F-100-Diluted (if no oedema), as F-100 has already been enriched with ferrous sulphate and it is easier and safer to use F-100-Diluted than to calculate and add ferrous sulphate to very small amounts of feeds.

Note: To prevent hypernatraemia in hot climates, sips of water or 10% sugar-water solution are given in addition to the milk diet until the infant's thirst is satisfied (see the Hypernatraemic Dehydration in Children under 5 in Inpatient Care Job Aid).

Dietary Treatment

The main objective of the management of SAM in infants under 6 months is to **restore exclusive breastfeeding**. Therefore, stimulate and support breastfeeding and supplement the infant's breastfeeding with therapeutic milk while stimulating production of breast milk.

- Breastfeed on demand or offer breastfeeding every 3 hours for at least 20 minutes (more if the infant cries or demands more). The infant should be breastfed as frequently as possible.
- Between a half-hour and an hour after a normal breastfeeding session, give maintenance amounts of therapeutic milk.
- Give **F-100-Diluted for infants under 6 months with severe wasting**. F-100-Diluted provides 75 kcal/100 ml but has a lower osmolarity than F-75 with a better carbohydrate-to-lipid ratio and thus is better adapted to immature organ functions⁴.
- Give **F-75 for infants under 6 months with bilateral pitting oedema** and change to F-100-Diluted when the oedema is resolved.

Quantities of F-100-Diluted (or F-75) to Give

- F-100-Diluted is given at **130 ml/kg/day**, distributed across eight feeds per day, providing **100 kcal/kg/day**.
- Use Table 2 to determine the amounts of F-100-Diluted to give to infants using the supplementary suckling technique (for an explanation of the supplementary suckling technique, see below under 'Feeding Technique').
- The quantity of F-100-Diluted is not increased as the infant starts to gain weight.

Regulation of Amount of F-100-Diluted (or F-75) Given

- The progress of the infant is monitored by the daily weight.
- If the infant loses weight or has a static weight over 3 consecutive days but continues to be hungry and is taking all the F-100-Diluted, add 5 ml extra to each feed.
- Maintenance amounts of F-100-Diluted are given using the supplementary suckling technique.
- The infant should be weighed daily with a scale graduated to within 10 g.
- In general, supplementation is not increased during the stay in the health facility.

⁴ F-100-Diluted has a lower osmolarity than some readily available infant formulas and thus has a lower risk of causing diarrhoea. Studies have shown that F-100-Diluted and some infant formulas give similar results in terms of mortality and weight gain.

- If the volume of F-100-Diluted being taken results in weight loss, either the maintenance requirement is higher than calculated or there is significant malabsorption.
- If the infant grows regularly with the same quantity of F-100-Diluted, it means the quantity of breast milk is increasing.
- If, after some days, the infant does not finish all the supplemental feed, but continues to gain weight, it means the intake from breast milk is increasing and the infant is taking adequate quantities to meet his/her requirements.
- If the infant starts gaining weight, gradually **decrease** the amount of F-100-Diluted by one-third of the maintenance intake so that the infant is stimulated to take more breast milk.
 - If the **weight gain of 20 g per day is maintained for 2–3 days** (after gradual decrease of F-100-Diluted), **stop** F-100-Diluted completely.
 - If the weight gain is not maintained, **re-increase** the amount of F-100-Diluted given to 75% of the maintenance amount for 2–3 days, then gradually decrease the amount again if the infant starts gaining weight.
- Once the infant is **gaining weight at 20 g per day on breastfeeding**, and this rate of weight gain is maintained for 2–3 days, then the infant is ready for discharge. If the mother is agreeable, it is advisable to keep the infant in the health facility for an additional 3–5 days on breast milk alone to make sure that he/she continues to gain weight. However, if the mother wishes to go home as soon as the infant is taking the breast milk with increased demand, the infant can be discharged.
- An infant under 6 months gaining weight at 20 g per day on breast milk alone is ready for discharge, no matter what his/her current weight or weight-for-length is.

Table 2. Look-Up Table for Amounts of F-100-Diluted (Severe Wasting) or F-75 (Bilateral Pitting Oedema until the Oedema Is Resolved) for Breastfed Infants

Infant's Weight (kg)	F-100-Diluted (or F-75 in case of oedema) (ml per feed if 12 feeds per day)	F-100-Diluted (or F-75 in case of oedema) (ml per feed if 8 feeds per day)
< 1.3	20	25
1.3 – 1.5	25	30
1.6 – 1.8	30	35
1.9 – 2.1	30	40
2.2 – 2.4	35	45
2.5 – 2.7	40	50
2.8 – 2.9	40	55
3.0 – 3.4	45	60
3.5 – 3.9	50	65
4.0 – 4.4	50	70

Feed Preparation

- For a large number of infants:
 - Add one packet of F-100 to 2.7 L of water instead of 2 L. This is referred to as F-100-Diluted, which provides about 75 kcal/100 ml.

- For a small number of infants:
 - Add 35 ml of water to 100 ml of F-100 already prepared, which will yield 135 ml of F-100-Diluted. Do not make smaller quantities.
 - If you need more than 135 ml, use 200 ml of F-100 and add 70 ml of water to make 270 ml of F-100-Diluted and discard any excess milk after use.
 - If F-100 is not readily available, these infants can be fed with the same quantities of commercial infant formula diluted according to the instructions on the tin. If there is a range of milk formulas to choose from, use a formula designed for **premature infants**. However, infant formula is not designed to promote rapid catch-up growth. Unmodified powdered whole milk should not be used.

Feeding Procedures

- Ensure good breastfeeding through good attachment and effective suckling. Avoid distractions and let the infant suckle the breast at his/her own speed.
- Build the mother's confidence to help milk flow.
- Encourage more frequent and longer breastfeeding sessions to increase milk production and remove any interference that might disrupt breastfeeding.
- Use the supplementary suckling technique to provide maintenance amounts of F-100-Diluted, or feed by cup and saucer or NGT by drip (using gravity not pumping).
- Feed with an NGT **only** when the infant is not taking sufficient milk by mouth.
- The use of an NGT **should not exceed 3 days**.
- Discard any excess milk after use.

Feeding Technique

Use the supplementary suckling technique to re-establish or commence breastfeeding and also to provide maintenance amounts of F-100-Diluted to severely malnourished infants. This technique entails the infant suckling at the breast while also taking F-100-Diluted from a cup through a fine tube that runs alongside the nipple. The infant is nourished by the supplementary F-100-Diluted while suckling stimulates the breast to produce more milk (see **Figure 1**).

The steps required to use the supplementary suckling technique are simple. The mother holds a cup with the F-100-Diluted. The end of an NGT (size n°8) is put in the cup and the tip of the tube is placed on the breast, at the nipple. The infant is offered the breast with the right attachment. The cup is placed 5–10 cm below the level of the nipple for easy suckling. When the infant suckles more strongly, the cup can be lowered to up to 30 cm.

After feeding is completed, the tube is flushed through with clean water using a syringe. It is then spun (twirled) rapidly to remove the water in the lumen of the tube by centrifugal force. If convenient, the tube is then left exposed to direct sunlight.

Figure 1. Supplementary Suckling Technique



Individual Monitoring

The following parameters should be monitored **daily** and entered on the individual Inpatient Management Record:

- Weight
- Degree of bilateral pitting oedema (0 to +++)
- Body temperature (twice per day)
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration, liver size, eyes, ears and skin condition
- Length or height (taken after 21 days when a new Inpatient Management Record is used)
- Any other record, e.g., absent, vomits or refuses a feed, whether the infant is fed by NGT or given IV infusion or transfusion

As soon as the infant is 6 months of age and greater than 4 kg, the infant falls into the management criteria for the age group 6–59 months. If the infant still has SAM (meets the admission criteria), introduce RUTF and refer to Outpatient Care.

Supportive Care for Mothers

Supportive Care for Breastfeeding Mothers. Supportive care for breastfeeding mothers should be provided, especially in very stressful situations. Focus needs to be directed at creating conditions that will facilitate and increase breastfeeding, such as establishing safe ‘breastfeeding corners’ for mothers and infants, one-to-one counselling and mother-to-mother support. Traumatised and depressed women might have difficulty responding to their infants and might require mental and emotional support, which should also support an increase in breastfeeding. It is important to assess the nutritional status of the mother (using MUAC and evidence of bilateral pitting oedema).

Explain to the mother the different steps of treatment that her infant will go through. Efforts should be made to strengthen the mother’s confidence and discourage self-criticism for perceived inability to provide adequate breast milk. Always alert the mother about the risk of pregnancy during breastfeeding amenorrhoea.

Adequate Nutrition and Supplementation for Breastfeeding Mothers. Breastfeeding women need about 450 kcal per day of extra energy. Essential micronutrients in breast milk are derived from the mother’s food or micronutrient supplement. Therefore, it is important that the mother’s nutrient and energy needs are met. The mother should consume at least

2,500 kcal per day. It is suggested that the health facility provide nutritious food for the mother. The mother should also receive vitamin A (200,000 IU, unless there is a risk of pregnancy) if the infant is under 2 months. Dehydration may interfere with breast milk production. It is therefore important to ensure that the mother drinks at least 2 L of water per day.

Psychosocial Care of the Mother. Psychosocial care is an essential component of the care of the mother and the infant with SAM, as the mother may have many problems of a physical or psychological origin. These problems could affect her care of her infant or lead to defaulting. Table 3 demonstrates some of the mother's potential difficulties.

The mother should receive a thorough explanation of her infant's problem and how to manage it. She should be guided through a breastfeeding session and the supplementary suckling technique. The mother should also be counselled on social problems and receive a medical check if necessary. Advice on hygiene and the correct way to breastfeed should be provided to the mother in a supportive, participatory way through individual counselling or group discussions to relieve her stress and fears.

Table 3. Possible Difficulties Encountered by Lactating Mothers of Infants with SAM

Difficulties	Action Points
Nutrition and fluid intake	Provide enough fluid and balanced food; screen the mother for malnutrition
Physical and mental health	Provide medical advice whenever requested
Physical difficulties related to breastfeeding	Treat sore nipples, cracked nipples and mastitis with breastfeeding counselling
Misinformation and misconceptions	Establish good communication with the mother

Discharge Criteria

Infants under 6 months being breastfed should be discharged when they:

- Successful re-lactate with effective suckling = minimum 20 g weight gain per day on breast milk alone for 5 days
- Have no bilateral pitting oedema for 2 weeks (oedema cases)
- Are clinically well and alert and with no other medical problem

Upon discharge, confirm that the mother has been adequately counselled and has received the required amounts of micronutrient supplements during the stay at the health facility and for use at home.

Note: If a breastfed infant in treatment still has signs of SAM at the age of 6 months and has a weight greater than 4 kg, he or she moves to the 6–59 months age group and continues treatment accordingly (see the Admission and Discharge Criteria for the Management of Severe Acute Malnutrition in Children under 5 Job Aid).

Follow-Up after Discharge

Follow-up for discharged infants is very important. In areas where services are available, the mother should be included in a supplementary feeding programme (SFP) and receive high-quality food with the right balance of nutrients to improve the quantity and quality of breast milk. It is also important to monitor the infant's progress and support breastfeeding and the introduction of complementary food at the appropriate age of 6 months.

6.2 Infants under 6 Months without the Prospect of Breastfeeding

The aim of the treatment of infants under 6 months with SAM **with** a mother with a potential of breastfeeding is to decrease F-100-Diluted gradually until they are gaining sufficient weight on breast milk alone. The aim of the treatment of infants under 6 months with SAM **without** the prospect of being breastfed is to receive F-100-Diluted or infant formula until they are old enough to take semisolid complementary food in addition to adapted cow milk. (See CMAM Manual, Annex 12, Use of Home-Modified Cow Milk for Replacement Feeding in Case of No Access to Infant Formula.)

Admission Criteria

Infants under 6 months without the prospect of breastfeeding (neither lactating mother nor wet nurse) should be admitted to Inpatient Care if the infant has:

- Has a presence of bilateral pitting oedema
- Has visible wasting

I. Stabilisation Phase

Medical Treatment

No presumptive antibiotic treatment is given. Antibiotics or medicines are given if there are signs of infection that need treatment.

Infants 2–6 months (and weight of 2 kg or more)

- Refer to the existing national treatment protocols (or IMNCI protocols) for the treatment of the specific infection **AND/OR**
- Give first-line antibiotics as prescribed for children 6–59 months with SAM and medical complications: amoxicillin-clavulanic acid, 15–30 mg/kg, orally, 3 times per day for 5–10 days in association with gentamicin, 7.5 mg/kg, IV or IM, 1 time per day for 5–10 days. **OR**
- Give ceftriaxone, 100 mg/kg/day, IV or IM, 1 time per day.

Infants under 2 months (or weight less than 2 kg)

- Refer to the national protocols (or IMNCI protocols) for the treatment of the specific infection **AND/OR**
- Give ceftriaxone, 50 mg/kg, IM, 1 time per day for 5–10 days.

Note: Do not use chloramphenicol in young infants under 2 months, and use with caution in infants 2–6 months.

For guidance on the management of medical complications in the presence of SAM, see **Module 3, Initial Management**.

Folic Acid. Give 2.5 mg (tablet crushed) in a single dose.

Ferrous Sulphate. Give F-100-Diluted, as F-100 has already been enriched with ferrous sulphate, and it is easier and safer to use F-100-Diluted than to calculate and add ferrous sulphate to very small amounts of feeds. F-100 with one-third water makes the F-100-Diluted (see the section on feed preparation on page 51).

Note: To prevent hypernatraemia in hot climates, sips of water or 10% sugar-water solution are given in addition to the milk diet until the infant's thirst is satisfied (see the Hypernatraemic Dehydration in Children under 5 in Inpatient Care Job Aid).

Dietary Treatment

- Infants under 6 months without the prospect of breastfeeding with wasting should be given **F-100-Diluted** in the stabilisation phase with cup and saucer. Never provide F-100 full strength (or RUTF).
- **Infants under 6 months without the prospect of breastfeeding with bilateral pitting oedema should always be given F-75** until the oedema has resolved. Then provide F-100-Diluted.

Quantities of F-100-Diluted (or F-75) to Give

- F-100-Diluted is given at **130 ml/kg/day**, distributed across eight feeds per day, providing **100 kcal/kg/day**.
- Use Table 4 to determine the amounts of F-100-Diluted or F-75 to give for non-breastfed infants under 6 months in the stabilisation phase.
- The quantity of F-100-Diluted is not increased as the infant starts to gain weight.

Table 4. Stabilisation Phase Look-Up Table for Amounts of F-100-Diluted (Severe Wasting) or F-75 (Bilateral Pitting Oedema) for Infants (under 6 Months) with No Prospect of Being Breastfed

Infant's Weight (kg)	F-100-Diluted (or F-75 in case of oedema) (ml per feed if 12 feeds per day)	F-100-Diluted (or F-75 in case of oedema) (ml per feed if 8 feeds per day)
< 1.3	20	25
1.3 – 1.5	25	30
1.6 – 1.8	30	35
1.9 – 2.1	30	40
2.2 – 2.4	35	45
2.5 – 2.7	40	50
2.8 – 2.9	40	55
3.0 – 3.4	45	60
3.5 – 3.9	50	65
4.0 – 4.4	50	70

Feed Preparation

- For a large number of infants:
 - Add one packet of F-100 to 2.7 L of water instead of 2 L. This is referred to as F-100-Diluted.
- For a small number of infants:
 - Add 35 ml of water to 100 ml of F-100 already prepared, which will yield 135 ml of F-100-Diluted. Do not make smaller quantities.
 - If you need more than 135 ml, use 200 ml of F-100 and add 70 ml of water to make 270 ml of F-100-Diluted and discard any excess milk after use.
 - If F-100 is not readily available, these infants can be fed with the same quantities of commercial infant formula diluted according to the instructions on the tin. If

there is a range of milk formulas to choose from, use a formula designed for **premature infants**. However, infant formula is not designed to promote rapid catch-up growth. Unmodified powdered whole milk should not be used.

Feeding Procedures

- Feed by cup and saucer or NGT by drip (using gravity not pumping).
- Feed with an NGT **only** when the infant is not taking sufficient milk by mouth.
- The use of an NGT **should not exceed 3 days** and should be used **only** in the stabilisation phase.
- Discard any excess milk after use.

Feeding Technique

The feeding technique for non-breastfed infants under 6 months with SAM is the same as that for F-75 (see CMAM Manual, Section 4.3.2). It is important to ensure the infant has adequate intake, which is recorded on the 24-Hour Food Intake Chart of the Inpatient Management Record.

Individual Monitoring

The following parameters should be monitored **daily** and entered on the individual Inpatient Management Record:

- Weight
- Degree of bilateral pitting oedema (0 to +++)
- Body temperature (twice per day)
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration, liver size, eyes, ears and skin condition
- Length or height (taken after 21 days when a new Inpatient Management Record is used)
- Any other record, e.g., absent, vomits or refuses a feed, whether the infant is fed by NGT or is given IV infusion or transfusion

Criteria to Progress from the Stabilisation Phase to the Transition Phase

The criteria to progress from the stabilisation phase to the transition phase are **both**:

- Return of appetite
- Oedema starts resolving, which is normally judged by an appropriate and proportionate weight loss as the oedema starts to subside.

II. Transition Phase

Medical Treatment

Medicines and supplements: See treatment as outlined in the stabilization phase ([page 55](#)).

Dietary Treatment

- Only F-100-Diluted should be used.
- The volume of the F-100-Diluted feeds is **increased by one-third** over what was given in the stabilisation phase. F-100-Diluted is given at **150–170 ml/kg/day**, providing **110–130 kcal/kg/day**.
- Use Table 5 to determine the amounts of F-100-Diluted to give to non-breastfed infants in the transition phase.

Table 5. Transition Phase Look-Up Table for Amounts of F-100-Diluted for Infants (under 6 Months) with No Prospects of Being Breastfed

Infant's Weight (kg)	F-100-Diluted (ml per feed if 8 feeds per day)
< 1.6	45
1.6 – 1.8	53
1.9 – 2.1	60
2.2 – 2.4	68
2.5 – 2.7	75
2.8 – 2.9	83
3.0 – 3.4	90
3.5 – 3.9	96
4.0 – 4.4	105

Individual Monitoring

Continue surveillance as outlined in the stabilisation phase ([page 56](#)).

Criteria to Progress from the Transition Phase to the Rehabilitation Phase

- A good appetite: taking at least 90% of the F-100-Diluted prescribed for the transition phase **AND**
- Complete loss of bilateral pitting oedema **OR**
- Minimum stay of 2 days in the transition phase for wasted **AND**
- No other medical problem

III. Rehabilitation Phase**Dietary Treatment**

- Only F-100-Diluted should be used.
- The volume of the F-100-Diluted feeds is **twice** the volume given in the stabilisation phase.
- F-100-Diluted is given at **200 ml/kg/day**, providing **150 kcal/kg/day**.
- Use Table 6 to determine the amounts of F-100-Diluted to give to non-breastfed infants in the rehabilitation phase.

Table 6. Rehabilitation Phase Look-Up Table for Amounts of F-100-Diluted for Infants (under 6 Months) with No Prospects of Being Breastfed

Infant's Weight (kg)	F-100-Diluted (ml per feed if 6–8 feeds per day)
< 1.6	60
1.6 – 1.8	70
1.9 – 2.1	80
2.2 – 2.4	90
2.5 – 2.7	100
2.8 – 2.9	110
3.0 – 3.4	120
3.5 – 3.9	130
4.0 – 4.4	140

Individual Monitoring

Continue surveillance as outlined in the stabilization phase ([page 56](#)).

Discharge Criteria

Non-breastfed infants under 6 months should be discharged when they:

- Have 15% weight gain maintained (of admission weight or weight free of oedema) (for wasted cases)
- Have no bilateral pitting oedema for 2 consecutive weeks (oedema cases)
- Are clinically well and alert

Note: If a non-breastfed infant in treatment still has signs of SAM at the age of 6 months and has a weight greater than 4 kg, he or she moves to the 6–59 months age group and continues treatment accordingly (see the Admission and Discharge Criteria for the Management of Severe Acute Malnutrition in Children under 5 Job Aid).

Other Considerations at Discharge

- Infant can be switched to infant formula or home-modified cow milk. (See Annex 12 of the CMAM Manual.)
- Mother has been adequately counselled.

Follow-Up after Discharge

Continuity of care after discharge is important. Follow-up with these infants is needed to supervise the quality of recovery and progress and to advise the mothers. It is also important to support introduction of complementary food at the appropriate age of 6 months.

6.3 Infant and Young Child Feeding Support

Annex 16 of the CMAM Manual on [pages 123–125](#) summarises health and nutrition education messages that can be used for individual and group counselling for improving and supporting infant and young child feeding (IYCF) practices. It lists key behaviours to promote breastfeeding, summarises the importance of breastfeeding for infants and young children and recommends IYCF practices on breastfeeding and complementary feeding⁵. It also provides an example of a country-adapted tool for recommended foods for infants and young children.

⁵ IFE Core Group. 2009. *Integration of IYCF Support into CMAM*, Facilitator's Guide and Handouts. Oxford, UK: ENN.

Answers to Exercises

Answers to Exercise A, page 6

Discussions on preparation of F-75 and F-100 in the context of your hospital:

- What aspects of preparing these recipes would be difficult in your hospital?
- How can you make sure that the recipes are prepared correctly?
- Are the necessary ingredients available?
- Do any new supplies need to be purchased, such as correctly sized scoops?

Answers to short answer exercise, page 9

Child 1: 110 ml F-75

Child 2: 90 ml F-75 (*When the weight is not on the feeding table, use the next lower weight. Use the regular feeding table for a child with mild oedema.*)

Child 3: 45 ml F-75 (*Use feeding table for children with severe oedema.*)

Child 4: 15 ml F-75 every half hour (*Divide 2-hourly amount for severely oedematous child by 4.*)

Child 5: 210 ml F-75 (*Use regular table since child has only moderate oedema.*)

Answers to short answer exercise, page 14

1. Matteu's feeding day began at 8:00 and ended at 6:00 the next morning.
2. 12 times.
3. Matteu was offered 45 ml each time.
4. No, 30 ml is only about 66% of 45 ml.
5. No.
6. He refused most of the feed and vomited the small amount that he took.
7. He was fed by NGT. The staff realised that he had not taken enough by mouth for three successive feeds. (*Note: They could have started the NGT after 2 poor feeds.*)
8. He was fed as much as he would take orally; then he was given the rest by NGT.
9. Yes, he took about 88%.
10. 455 ml (320 ml taken orally + 145 ml taken by NGT – 10 ml vomited).

11. No, the NGT should not be removed. Although he took almost all of the last two feeds by mouth, he is still leaving a little bit. When he takes two consecutive feeds completely by mouth, the tube should be removed.

Answers to Exercise B, page 16

Case 1—Delroy

- 1a. Yes, he took all of each feeding.
- 1b. Yes. He has had no vomiting, only modest diarrhoea and he finished all of his feeds, so he is ready to change to 3-hourly feeding.
- 1c.

DATE: <u>5/12/01</u>	TYPE OF FEED: <u>F-75</u>	GIVE: <u>8</u> feeds of <u>75</u> ml
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- 1d. 8:00, 11:00, 14:00, 17:00, 20:00, 23:00, 2:00, 5:00.

- 1e.

DAYS IN HOSPITAL	Week 1							Week 2	
	1	2	3	4	5	6	7	8	9
Date	4/12	5/12							
Daily weight (kg)	4.6	4.6							
Weight gain (g/kg)	<i>Calculate when on RUTF or F-100</i>								
Bilateral pitting oedema	0	+	++	+++	0	0			
Diarrhoea (D) or Vomit (V)	<i>D</i>	<i>D</i>							
FEED PLAN:	Type of feed	<i>F-75</i>	<i>F-75</i>						
	# daily feeds	<i>10</i>	<i>8</i>						
	Volume to give per feed	<i>60</i>	<i>75</i>						
	Total volume taken (ml)	<i>550</i>	<i>610</i>						
NGT	<i>Y</i>	<i>N</i>	<i>N</i>	<i>N</i>					
Breastfeeding	<i>Y</i>	<i>N</i>	<i>Y</i>	<i>Y</i>					
Appetite test with RUTF	<i>F failed</i>	<i>P passed</i>	<i>F</i>	<i>F</i>					

Case 2 – Pedro

- 2a. Pedro took 530 ml on day 2. The table shows that 80% of the expected daily total is 500 ml, so yes, Pedro took more than that.
- 2b. Because he vomited his last feed and is a reluctant eater, Pedro should stay on 3-hourly feeds.
- 2c.

DATE: <u>7/12/01</u>	TYPE OF FEED: <u>F-75</u>	GIVE: <u>8</u> feeds of <u>80</u> ml
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Case 3 – Rositha

- 3a. 16:00 on day 3.
- 3b. Yes, because she has taken more than two consecutive feeds completely by mouth.
- 3c. Rositha should change to 3-hourly feedings because she is finishing her feeds and has only moderate diarrhoea (that is, fewer than 5 loose stools per day).
- 3d.

DATE: <u>9/02/01</u>	TYPE OF FEED: <u>F-75</u>	GIVE: <u>8</u> feeds of <u>80</u> ml
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Note: When a child starts with severe oedema, continue using the F-75 table for severe oedema throughout the initial feeding days on F-75, even if the child's oedema goes away. The amount given at the beginning is the right amount for the child's 'true' weight. For example, the amounts given for Rositha's starting weight of 6.4 kg correspond approximately to those that would be given for a 'true' weight of 4.9 kg.

Case 4 – Suraiya

- 4a. 20:00.
- 4b. They should have put in an NGT at 22:00 or 24:00, when she fed poorly at a second or third consecutive feeding.
- 4c. Suraiya could have died during the night. Alert the physician. Put in an NGT to be used to complete feedings if she will not take food orally. Check for hypoglycaemia, which may have developed during the night.
- 4d.

DATE: <u>15/03/01</u>	TYPE OF FEED: <u>F-75</u>	GIVE: <u>12</u> feeds of <u>60</u> ml
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Suraiya will continue on the same plan as the day before, but will be fed by NGT as needed.

Answers to Exercise C, page 26

Case 1 – Delroy

- 1a. 140 ml. The amount is increased by 10 ml since Delroy completed the last feeding.
(140 ml should be entered in the column headed 'a. Amount Offered' for the 4:00 feeding.)
- 1b. For the 4:00 feeding, 10 ml was left, so the amount taken orally was 130 ml. These amounts should be entered in columns b and c:
 - b. Amount left in cup (ml): 10 ml
 - c. Amount taken orally (ml): 130 ml

At the bottom of the form, the following should be entered:

Total c. Amount taken orally: 820 ml

Total d. Amount taken by NGT: 0

Total e. Amount vomited: 0

Total yes: 0

Total volume taken over 24 hours: 820 ml

- 1c. On the Inpatient Management Record, in the column for day 6, should be added:

Diarrhoea/vomit: 0
Total volume taken (ml): 820

Case 2 – Pedro

- 2a. No, he must stay at the same amount for the first 2 days of transition.
- 2b. The nurse should explain that it is important to be cautious while Pedro's body adjusts to more food. It is good that Pedro is hungry; that is a sign of improvement. However, too much food too quickly would be dangerous. If Pedro passes the appetite test, he will gradually or swiftly (depending on the intake amount of RUTF) move to the RUTF diet only. Because Pedro shows an eager appetite, he will be soon pleased to take the more solid energy-dense food, as soon as he gets used to the taste and the consistency of the RUTF.
- 2c. On day 7 (the third day of transition), the nurse should repeat the RUTF appetite test. If Pedro does not pass the test, he should continue with F-100 in increments of 10 ml. Pedro's mother should be encouraged to breastfeed Pedro between feeds of F-100.

Case 3 – Rositha

3a. Yes, she is ready for transition. Rositha is eating eagerly, thus the RUTF appetite test is performed and she passed.

3b.

DATE: 12/02/01 (day 7) **TYPE OF FEED:** RUTF **GIVE:** 6 feeds, daily feed = 2.1 packets

3c.

DATE: 13/02/01 (day 8) **TYPE OF FEED:** RUTF **GIVE:** 6 feeds, daily feed = 2.1 packets

3d.

DATE: 14/02/01 (day 9) **TYPE OF FEED:** RUTF **GIVE:** 6 feeds, daily feed = 2.5 packets

3e. 18 packages

Answers to Exercise D, page 31

Case 1 – Delroy

1a. 170 ml.

1b. 125 ml–185 ml.

1c. 180 ml.

1d. Do not exceed 185 ml.

1e. 190 ml is the starting amount. It should not be increased on day 9, as 190 ml is the maximum amount for a child weighing 5.2 kg. (When his weight increases on subsequent days, he may have more.)

Case 2 – Pedro

2a. Since Pedro weighs 5.05 kg, his appropriate range of daily volume is 750–1,100 ml of F-100. He took 900 ml, which is in this range.

2b. There is no cause for concern since Pedro ate in his range and is gaining weight. His weight gain in g/kg has been good most days since he started F-100, and he had an excellent gain between days 7 and 8.

2c.

DATE: 14/12/01 **TYPE OF FEED:** F-100 **GIVE:** 6 feeds of 160↑ ml. Do not exceed 185 ml.

Case 3 – Rositha

- 3a. 2.1 packets.

3b. Rositha may have an infection causing her temperature to increase and causing her to eat less.

3c. ✓ Both of the above.

3d. Rositha is referred to Outpatient Care with 18 packets of RUTF, which is her amount of RUTF for 7 days (Rositha weighs 5.2 kg and needs to eat 2.5 packets of RUTF per day for seven days)

Answers to Exercise F, page 43

Daily Feeds Chart

	RUTF	
Name of Child	Number of feeds	Packets per day
Sami	6	2.5
RUTF total (packets) for 24 hours		3