Government of Malawi
Ministry of Health

Training Course on

INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION

Module 4. Feeding

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Contents

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Preface

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

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

Guides
Facilitator Guide
Clinical Instructor Guide
Course Director Guide

Modules
Module 1—Introduction
Module 2—Principles of Care
Module 3—Initial Management
Module 4—Feeding
Module 5—Daily Care
Module 6—Monitoring, Problem Solving and Reporting
Module 7—Involving Mothers in Care

Acronyms and Abbreviations

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

ReSoMal	Rehydration Solution for Malnutrition
RUTF	Ready-to-Use Therapeutic Food
SAM	Severe Acute Malnutrition
SFP	Supplementary Feeding Programme
TB	Tuberculosis
WFH	Weight-for-Height
WFL	Weight-for-Length
WFP	World Food Programme
WHO	World Health Organisation
µg	Microgram(s)

Introduction

Feeding is obviously a critical part of managing severe acute malnutrition (SAM). As explained in **Module 2, Principles of Care**, feeding must be started cautiously, however, in frequent, small amounts. If feeding begins too aggressively, or if feeds have 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' therapeutic food is gradually integrated. Ready-to-use therapeutic food (RUTF) or formula F-100 are used to rebuild wasted tissues. RUTF or F-100 contains more calories and protein: 100 kcal and 2.9 g protein per 100 ml. Safe expressed breast milk, infant milk formula (this can be given as an option to F-100 Diluted or when there is stock-out of F-100) or F-100 Diluted are used for infants less than 6 months of age.

The contents of F-75, RUTF, F-100 and F-100 Diluted 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 explains and allows you to practise the following skills:

- Preparing F-75, F-100, F-100 Diluted and learning about RUTF
- Planning feeding for a child 6 months or older who is:
  - Taking F-75 during stabilisation
  - Adjusting to RUTF or F-100 during transition
  - Taking RUTF or F-100 during rehabilitation
- Planning feeding for an infant less than 6 months with SAM who is:
  - Breastfed
  - Non-breastfed
- Measuring and giving feeds to children
- Recording intake and output for a 24-hour period
- Planning feeding for the Nutrition Rehabilitation Unit (NRU)

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

1.0 Preparing Therapeutic Milk and Learning about RUTF

1.1 F-75, F-100 and F-100 Diluted

Specifications of F-75, F-100 and F-100 Diluted were given in **Module 2, Principles of Care, Annex D**. In the next exercise, you will prepare F-75, F-100 and F-100 Diluted using the commercial packages or the local recipes used in the Inpatient Care that you will visit during this course.

Note that the F-75 commercial formula (280 mOsm/L) and the recipe based on cereal flour have a lower osmolarity and may be better tolerated by some children with diarrhoea than the recipe without cereal flour (415 mOsm/L).

Preparation of therapeutic milk from the old commercial F-75 and F-100 sachets

When preparing therapeutic milk from the old commercial sachets, follow the instructions on the package, and follow these procedures:

1. Decide the type of milk and total amounts that need to be prepared. This will be based on the number of children who are on F-75 or F-100
2. Boil water to treat it.
3. Cool the water. The water should be cooled because adding boiling water to the powdered ingredients may create lumps.
4. Add water to the powder.
5. Whisk the mix vigorously.
6. Give feeding based on child's body weight.

Type of Therapeutic Milk	Added water	Total amount
F-75	500 ml	600 ml
F-100	500 ml	600 ml
F-100 for preparing F-100 Diluted[1]	675 ml	775 ml

Preparation of therapeutic milk from the new commercial F-75 and F-100 tins

When preparing therapeutic milk from the new commercial tin packages, follow the instructions on the package, and follow these procedures:

1. Decide the type of milk and total amounts that need to be prepared. This will be based on the number of children who are on F-75 or F-100
2. Boil water to treat it.
3. Ensure that the water temperature is not below 70°C **(i.e. cooled for not less than 3 - 5 minutes after boiling)**
4. Add water to the powder.
5. Whisk the mix vigorously.
6. Cool the prepared milk to feeding temperature before administering.
7. Give the feed based on child's body weight.

[1] Small amounts of F-100 Diluted can be prepared by adding 35 ml boiled cooled water to 100 ml F-100.

Type of Therapeutic Milk		Added water	Total amount
F-75	1 Scoop (white)	25 ml	28 ml
	1 Tin	2200 ml	2480 ml
F-100	1 Scoop (blue)	25 ml	29 ml
	1 Tin	2200 ml	2158 ml
F-100 for preparing F-100 Diluted[2]	1 Scoop (blue)	34 ml	39 ml
	1 Tin	2970 ml	2913 ml

Preparation of therapeutic milk from local ingredients

Recipes and instructions on how to prepare therapeutic milk from local ingredients are given in **Table 1 and Annex A.**

The top three recipes given for F-75 include cereal flour and require cooking. The bottom three recipes for F-75 can be used if there is no cereal flour or no cooking facilities.

Tips for correct preparation (all 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 of the boiled water you will use for the milk preparation and add the rinsing to the blender or jug.
- Be sure that the scale is set at zero before weighing.
- Wash hands before measuring ingredients.
- If using scoops for measurement, level ingredients with a knife to ensure consistent measurement. Be aware that equal weights of milk powder and sugar do not occupy the same volume; milk powder is a bigger 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.
- If 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 litres, use ½ scoop to make 1 litre. Carefully measure to determine the exact amount in ½ scoop.
- 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 percent too dilute.

[2] Small amounts of F-100 Diluted can be prepared by adding 35 ml boiled cooled water to 100 ml F-100.

Table 1: Therapeutic Milk Recipes

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 Combined mineral and vitamin mix (CMV)* *Water to make 1,000 ml*	25 g 70 g 35 g 30 g ½ level scoop *1,000 ml***
If you have dried whole milk	Dried whole milk Sugar Cereal flour Vegetable oil CMV* *Water to make 1,000 ml*	35 g 70 g 35 g 20 g ½ level scoop *1,000 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* *Water to make 1,000 ml*	300 ml 70 g 35 g 20 g ½ level scoop *1,000 ml***

If you do not have cereal flour or there are no cooking facilities, use one of the following recipes for F-75.			No cooking is required for F-100.
Alternatives	**Ingredients**	**Amount for F-75**	**Amount for F-100**
If you have dried skimmed milk	Dried skimmed milk Sugar Vegetable oil CMV* *Water to make 1,000 ml*	25 g 100 g 30 g ½ level scoop *1,000 ml***	80 g 50 g 60 g ½ level scoop *1,000 ml***
If you have dried whole milk	Dried whole milk Sugar Vegetable oil CMV* *Water to make 1,000 ml*	35 g 100 g 20 g ½ level scoop *1,000 ml***	110 g 50 g 30 g ½ level scoop *1,000 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* *Water to make 1,000 ml*	300 ml 100 g 20 g ½ level scoop *1,000 ml***	880 ml 75 g 20 g ½ level scoop *1,000 ml***

* The contents of CMV are listed in **Module 2, Principles of Care, Annex D.**

** Important note about adding water: Add just the amount of water needed to make 1,000 ml of formula. (This amount will vary from recipe to recipe, depending on the other ingredients.) If you have cereal flour and cooking facilities, use one of the top three recipes for F-75.

Directions for making cooked F-75 with cereal flour (top 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 in the table on the next page. Cereal flour may be maize meal, rice flour, or whatever is the staple cereal in the area.

It is important to use cooled, boiled water even for recipes that involve cooking. The cooking is only 4 minutes of gentle boiling, and this may not be enough to kill all pathogens in the water. The water should be cooled because adding boiling water to the powdered ingredients may create lumps.

If using a hand whisk/spoon:

1. Mix the flour, milk or milk powder, sugar, oil, and mineral mix 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 measuring jug after cooking and add enough boiled water to make 1,000 ml. Whisk again.

Directions for no-cooking recipes (bottom recipes)

If using a hand whisk/spoon:

1. Mix the required amounts of milk powder and sugar in a 1-litre measuring jug; then 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.)
2. Add mineral mix, and slowly add boiled, cooled water up to 1,000 ml, stirring all the time.
3. Whisk vigorously.

Note: 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.

Storage and packaging

The therapeutic milk packages have a shelf life of 24 months from the manufacturing date and should be stored in a cool and dry place. It comes in packages of about 100 g for a 500 ml milk preparation. Other producers may have a similar product with different packaging and shelf life.

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, because it allows children to be treated at home rather than at the hospital.

The RUTF *(Chiponde)* used in Malawi has similar nutritional quality as F-100 and has been shown to be physiologically similar to commercial forms of F-100.

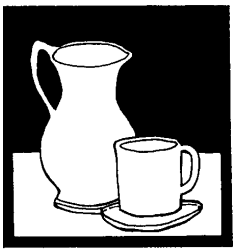
The lipid-based paste is a ready-to-eat therapeutic food presented in individual packets or pots. It is a groundnut paste composed of vegetable fat, peanut butter, skimmed milk powder, lactoserum, maltodextrin, sugar and mineral and vitamin complex.

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 who can say or show they are thirsty.

Storage and packaging

The lipid-based ready-to-eat therapeutic has a shelf life of 24 months from the manufacturing date and should be stored in a cool and dry place. It often comes in a 92 g packet that contains 500 kcal. Other producers may have a similar product with different packaging and shelf life.

You learned more about the RUTF specifications in **Module 2 Principles of Care, Annex D**.



1.3 Exercise A

In this exercise, your group will prepare the commercial F-75, F-100 and Infant Formula according to the instructions on the package or the therapeutic milk 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 F-75, F-100, and F-100 Diluted. You will have a chance to taste each formula.

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

- What aspects of preparing the therapeutic milk would be difficult in my hospital?
- How can I make sure that the therapeutic milks are prepared correctly?
- Are the necessary ingredients and equipment available?
- Do any new supplies or equipment need to be purchased, such as correctly sized scoops or hand whisks?

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 the Child with 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 because of missed feeds at night. Children must be awakened for these feeds.

After the first day, increase the volume per feed slowly 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 discussed in section 2.6. Continue breastfeeding between the feeds and on demand.

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. **Annex B** gives reference tables for therapeutic feeding with a child's limited weight range that will be used in the exercises. The reference tables in the Therapeutic Food Reference Tables Job Aid have a wider range of use and may also be used.

> Look at the F-75 Reference Tables in **Annex B**. One table is for children 6 months of age and older with SAM with no oedema, mild (+) or moderate (++) oedema. The other table is for children with severe (+++) oedema.

On the F-75 Reference 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 percent 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 second F-75 Reference Table.

Tips for using the F-75 Reference Tables

- Be sure that you use the correct reference table. One table is used for most children with severe wasting and 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 reference tables 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 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 therefore the weight) decreases. The volume per feed on the chart is already based on the child's estimated true weight.

- If the child has been identified and treated for dehydration or shock due to dehydration, use the weight after dehydration ended as starting weight to determine the amount of F-75.
- Continue and support breastfeeding between the feeds and on demand.

SHORT ANSWER EXERCISE

For each child listed below, use your F-75 Reference Tables to determine the amount of F-75 to give per feed. The starting weight and oedema classification are 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.

Check your own answers to this exercise by comparing them to the answers given on page 64 at the end of the module

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 Treatment Card 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. An example of a completed 24-Hour Intake Chart is provided on page 17.

Information about feeding is also recorded on the Daily Care Chart of the Treatment Card. Record the type of feed to be given (F-75, F-100, infant formula, F-100 Diluted or RUTF) 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 Daily Care Chart will provide a summary of feeds, as opposed to the detailed record of the 24-Hour Food Intake Chart.

Example of Daily Care Chart (excerpt)

DAILY CARE CHART

	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/F-100 and breastfed infant*	-	-	-						
Bilateral pitting oedema 0 + ++ +++	*+*	*+*	*0*						
Diarrhoea (Write number of loose stools)	*D*	*D*	*0*						
Vomiting (write the frequency)									
RESOMAL….mls									
FEED PLAN: Type of feed	*F-75*	*F-75*	*F-75*						
Number of daily feeds	*12*	*8*	*6*						
Amount to give per feed (ml) (packet)	*50*	*70*	*95+*						
Total amount taken (ml) (packet)	*570*	*560*	*560*						
NG tube Yes/No	*No*	*No*	*No*						
Breastfeeding Yes/No	*Yes*	*Yes*	*Yes*						

2.4 Feeding Orally or by Nasogastric Tube if Necessary

Oral feeding

It is best to feed a child with a cup. Encourage the child to finish the feed. 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. Mothers[3] may help with feeding after the child becomes stronger and more willing to eat. **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 each feed, estimate the amount that spilled in the saucer and replace the feed.

Feeding orally with cup and saucer.

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

Feeding children who have diarrhoea and vomiting

If a child has continuing diarrhoea after he or she has been rehydrated, offer Rehydration Solution for Malnutrition (ReSoMal) after each loose stool 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 (or 15–30 ml/kg per loose stool). 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.

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 (NG) feeding

An NG tube should be used if the child:

- Takes less than 80 percent of two consecutive feeds during stabilisation
- Has pneumonia (rapid respiration rate) and difficulty swallowing
- Has painful lesions/ulcers of the mouth
- Has a cleft palate or other physical deformity

[3] 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. For the sake of readability, however, 'mother' means 'mother/caregiver' throughout this module, 'she' means 'she or he' and 'her' means 'her or his'.

- Is very weak and shows difficulty remaining conscious

The use of the NG tube should not exceed 3 days and should only be used in the stabilisation phase. However, some children who are very ill (unconscious or children with cerebral palsy) may require an NG tube for longer. Generally, it is important to note that prolonged use of NG tube may interfere with oral feeding later on. It is important to assess the condition of the children to determine who requires prolonged NG tube feeding; even when this is so, it is important to give small feeds orally and gradually increase until the child is able to take all the feed orally in the shortest possible time.

Before Inserting the NG Tube

- Nasogastric feeding is usually received poorly by mothers, because it is considered invasive. Mothers should be counselled on:
    - How the tube will assist the child
    - Anticipated discomfort during insertion
    - Improved comfort after insertion
- Educate the mother on the path the NG tube will take (that is, an already existing connection from the nose, through the throat, and into the stomach). Allow the mother to express her fears, concerns and questions to help her accept and continue the feeding by NG tube.
- It may be helpful to show the mother examples of other children who have NG tubes in situ and to let the mothers of the children with NG tube to reassure the mother whose child is about to have one inserted.
- This is a clean procedure; health care workers should, therefore, wash their hands thoroughly with soap prior to putting on gloves in getting ready to insert the NG tube. The child's face and torso should also be washed with soap and rinsed.
    - Once correctly inserted, conduct a test to confirm that the NGT tube is in the stomach by:
    - Aspirating abdominal contents and testing on a litmus paper. A pH of less than 7 confirms stomach placement.
    - Pushing in air using the feeding syringe and listening to the abdomen for air sounds as you push in the air.

Feeding Using a Nasogastric Tube

- Emphasise the following messages with the caregiver: good hygiene practices, washing hands before feeds and keeping utensils clean and dry.
- Assist the primary caregiver with administering the first feed; demonstrate the correct feeding position, which is the fowlers/upright position.
- After attaching the feeding syringe to the NG tube, milk should be poured in and allowed to flow downward freely using gravity. In cases where the free flow of milk is not achieved, raise up the feeding syringe and NG tube apparatus to a higher position.
- The NG tube can also be squeezed for several seconds and then released to facilitate the flow.
- **ONLY** when these attempts fail should a plunger be used in a slow, twisting motion. This will aid in pushing the milk downward with minimal air entry.
- Caregivers should be allowed to feed the child using the NG tube once given a demonstration on how to feed correctly using an NG tube.
- Feeding should be done when the child is calm to avoid backflow of gastric contents; if the child is still breastfeeding, allow the child to be breastfed.

- Change the tube if blocked. Do not plunge F-75 through the NG tube; let it drip in, or use gentle pressure.
- Abdominal distension can occur with oral or NG feeding, but it is more likely with NG feeding. If the child develops a hard, distended abdomen with very little bowel sound, give 2 ml of a 50 percent solution of magnesium sulphate via intramuscular (IM) injection.
- Remove the NG tube when the child either takes:
    - Eighty percent of the day's amount orally, or
    - Two consecutive feeds fully by mouth.

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

Child with nasogastric tube

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

An example of a completed 24-Hour Food Intake Chart is on page 17.

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 the 24-hour food intake 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:

1. Record the amount of feed offered.
2. After offering the feed orally, measure and record the amount left in the cup.
3. Subtract the amount left from the amount offered to determine the amount taken orally by the child.
4. If necessary, give the rest of the feed by NG tube and record this amount.
5. Estimate and record any amount vomited (and not replaced by more feed).
6. Ask whether the child had 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 NG tube, if any (Column d).
3. Total the estimated amount lost through vomit (Column e).
4. Add the totals taken orally and by NG tube. Then subtract any loss from vomiting. The result is the total volume taken over 24 hours. Record this at the bottom of the 24-Hour Food Intake Chart and on the Daily Care Chart.

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.

Example of a 24-HOUR FOOD INTAKE CHART

Complete one chart for every 24-hour period during stabilisation and transition.

Starting weight (kg): 4.2 Today's weight (kg): 4.2 Oedema: 0 + ++ +++ **DATE:** June 4, 2016

TYPE OF FEED (circle): F-75 F-100 Infant Formula or F-100-Diluted RUTF

FEEDS	**GIVE** 12 milk feeds of 45 ml, or 540 ml per day (X)					**GIVE** ____RUTF feeds of about _____packet, or _____ packets per day (Y)			
Time	**a.** Amount of milk offered (ml)	**b.** Amount of milk left in cup (ml)	**c.** Amount of milk taken orally (ml) (a–b)	**d.** Amount of milk taken by NG tube if needed (ml)	**e.** Estimated amount of milk vomited (ml)	**f.** Estimated amount of RUTF taken (proportion of packet)	**g.** Amount of milk offered to complete the RUTF feed (ml) (20 g RUTF or 2 teaspoons = 135 ml F-75 or 100 ml F-100)	**i.** Passed loose stools (Yes/No)	j. Comments (e.g if vomited feeds were replaced, etc)
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	—					
TOTALS			**C.** 320	**D.** 155	**E.** 20	**F.**	**G.**		
24-HOUR INTAKE	**Total daily amount of milk taken (H)= (C) + (D) – (E) =** _455_ ml **Estimated proportion of daily amount of milk taken (H/X):** _455/540 or 84 %					**Estimated proportion of daily amount of RUTF taken (F/Y): _____ %**			

SHORT ANSWER EXERCISE

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

1. At what times did Mateyu's feeding day begin and end?

2. How many times was Mateyu fed during the 24-hour period?

3. What amount of F-75 was Mateyu offered at each feed?

4. At 10:00 did Mateyu take enough (80 percent) of the F-75 orally?

5. At 12:00 did Mateyu 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 Mateyu fed from 20:00 to 2:00?

9. At 4:00 and 6:00 did Mateyu take enough F-75 orally?

10. What was the total volume of F-75 taken by Mateyu over the 24-hour period? Include the amount taken orally and by NG tube, and subtract the amount vomited.

11. Should Mateyu's NG tube be removed?

Check answers on your own by comparing your answers for this exercise to the answers beginning on page 64.

2.6 Adjusting the Child's 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 starting weight.) As the child stabilises, the child can take more at each feed, and feeds can be less frequent.

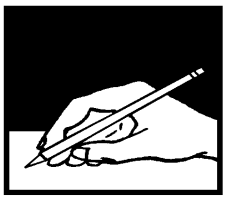
Each day, review the child's 24-Hour Intake Chart to determine whether the child is ready for larger, less frequent feeds, while maintaining the same daily amounts.

Criteria for increasing volume/decreasing frequency of feeds

- If vomiting, frequent diarrhoea or poor appetite, continue 2-hourly feeds.
- If little or no vomiting, modest or 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 percent column on the F-75 Reference 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 NG tube to complete the feed if the child does not take at least 80 percent orally.

Note: Feeding a child with SAM in the NRU is not the task of the nurse or 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 the monitoring of outcomes of all children in the ward. **Teamwork**, including sharing tasks and responsibilities, is essential for quality care.



2.7 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 – Dalitso

Dalitso was admitted to the NRU with diarrhoea and recent sunken eyes. He had no oedema. He was clinically well and alert, but had signs of dehydration. During the first two feeds of the day, Dalitso 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 **50 ml** each to finish the day's amount of 600 ml. He took all of his feeds very well, although his diarrhoea continued.

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

24-HOUR FOOD INTAKE CHART

Complete one chart for every 24-hour period during stabilisation and transition.

Starting weight (kg): 4.6* **Today's weight (kg):** Same Oedema: 0 + ++ +++ **DATE:** 4/12/2016 (day 1)

(*weight after rehydration)

TYPE OF FEED (circle): F-75 F-100 Infant Formula or F-100-Diluted RUTF

FEEDS	**GIVE** 12 minus two milk feeds of 50 ml, or _____ ml per day (X)					**GIVE** ____RUTF feeds of about _____packet, or _____ packets per day (Y)			
Time	**a.** Amount of milk offered (ml)	**b.** Amount of milk left in cup (ml)	**c.** Amount milk taken orally (ml) (a–b)	**d.** Amount of milk taken by NG tube if needed (ml)	**e.** Estimated amount of milk vomited (ml)	**f.** Estimated amount of RUTF taken (proportion of packet)	**g.** Amount of milk offered to complete the RUTF feed (ml) (20 g RUTF or 2 teaspoons = 135 ml F-75 or 100 ml F-100)	**i.** Passed loose stools (Yes/No)	j. Comments (e.g if vomited feeds were replaced, etc)
12:00	50	20	30						
14:00	50	0	50						
16:00	50	0	50					Yes (small)	
18:00	50	0	50						
20:00	50	0	50						
22:00	50	0	50						
24:00	50	0	50					Yes (small)	
2:00	50	0	50						
4:00	50	0	50						
6:00	50	0	50					Yes (small)	
TOTALS			C. 480	D. 0	E. 0	F. 0	G.	Total Yes: 3	
24-HOUR INTAKE	**Total daily amount of milk taken (H)= (C) + (D) – (E) =** 480 ml **Estimated proportion of daily amount of milk taken (H/X): _____ %**					**Estimated proportion of daily amount of RUTF taken (F/Y): _____ %**			

Case 1 – Dalitso, continued

1a. Since Dalitso only had 10 feeds rather than 12, his total food intake cannot be compared to the 80 percent column on the F-75 Reference Tables Job Aid. Instead, look at how much of each feed he took. Did Dalitso take at least 80 percent of each feed?

1b. Although Dalitso still has diarrhoea, it is only a small amount. According to the criteria on page 19 of this module, is Dalitso ready to change to 3-hourly feeds?

1c. Enter instructions for Dalitso'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 Dalitso will need to be fed on day 2:

1e. On day 2, Dalitso 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 Chart of the Treatment Card.

	Week 1							Week 2	
DAYS IN HOSPITAL	1	2	3	4	5	6	7	8	9
Date	4/12								
Daily weight (kg)	4.6								
Weight gain (g/kg) *Calculate when on RUTF/F-100 and breastfed infant*	-								
Bilateral pitting oedema 0 + ++ +++	0								
Diarrhoea (write number of loose stools)	2								
Vomiting (write the frequency)	0								
RESOMAL……mls									
FEED PLAN: Type of feed	F-75								
Number of daily feeds	12-2								
Amount to give per feed (ml)(packet)	50								
Total amount taken (ml)(packet)	480								
NG tube Yes /No	No								
Breastfeeding Yes/No	Yes								

Case 2 – Peter

Peter weighed 4.8 kg when he was admitted to inpatient care on day 1. He had no oedema. He was given 12 feeds of 55 ml F-75 on day 1. Peter 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, Peter was still reluctant to eat. At two feeds, he took less than 80 percent of the amount offered, but he took more at the next feeds, so an NG tube was never used.

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

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

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

2c. Enter instructions for Peter'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

Complete one chart for every 24-hour period during stabilisation and transition.

Starting weight (kg): 4.8 **Today's weight (kg):** 4.8 Oedema: 0 + ++ +++ **DATE:** 6/2/2016 (day 2)

TYPE OF FEED (circle): F-75 F-100 Infant Formula or F-100-Diluted RUTF

FEEDS	**GIVE** 8 milk feeds of 80 ml, or _____ ml per day (X)					**GIVE** ____RUTF feeds of about _____packet, or _____ packets per day (Y)			
Time	**a.** Amount of milk offered (ml)	**b.** Amount of milk left in cup (ml)	**c.** Amount milk taken orally (ml) (a–b)	**d.** Amount of milk taken by NG tube if needed (ml)	**e.** Estimated amount of milk vomited (ml)	**f.** Estimated amount of RUTF taken (proportion of packet)	**g.** Amount of milk offered to complete the RUTF feed (ml) (20 g RUTF or 2 teaspoons = 135 ml F-75 or 100 ml F-100)	**i.** Passed loose stools (Yes/No)	j. Comments (e.g if vomited feeds were replaced, etc)
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						
TOTALS			**C.** 570	**D.** 0	**E.** 40	**F.** 0	**G.**	Total Yes: 1	
24-HOUR INTAKE	**Total daily amount of milk taken (H)= (C) + (D) – (E) =** _ 530_ ml **Estimated proportion of daily amount of milk taken (H/X): _____ %**					**Estimated proportion of daily amount of RUTF taken (F/Y): _____ %**			

Case 3 – Rose

When Rose 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 NG tube was inserted. On days 1 and 2, she was given 55 ml of F-75 every 2 hours by NG tube. On day 3, her weight was down to 6.1 kg and her oedema was moderate (++). Rose's 24-Hour Feeding Chart for day 3 is shown below.

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

3b. Rose's NG tube was left in during the night, although it was not needed. On day 4, should the NG tube be removed?

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

3d. On day 4, Rose weighs 5.8 kg and her oedema is mild (+). Enter instructions for Rose'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

Complete one chart for every 24-hour period during stabilisation and transition.

Starting weight (kg): 6.4 **Today's weight (kg):** 6.1 Oedema: 0 + ++ +++ **DATE:** 8/2/2016 (day 3)

TYPE OF FEED (circle): F-75 F-100 Infant Formula or F-100-Diluted RUTF

FEEDS	**GIVE** 12 milk feeds of 55 ml, or _____ ml per day (X)					**GIVE** ____RUTF feeds of about _____packet, or _____ packets per day (Y)			
Time	**a.** Amount of milk offered (ml)	**b.** Amount of milk left in cup (ml)	**c.** Amount milk taken orally (ml) (a–b)	**d.** Amount of milk taken by NG tube if needed (ml)	**e.** Estimated amount of milk vomited (ml)	**f.** Estimated amount of RUTF taken (proportion of packet)	**g.** Amount of milk offered to complete the RUTF feed (ml) (20 g RUTF or 2 teaspoons = 135 ml F-75 or 100 ml F-100)	**i.** Passed loose stools (Yes/No)	j. Comments (e.g if vomited feeds were replaced, etc)
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		/				
TOTALS			**C.** 555	**D.** 105	**E.** 0	**F.** 0	**G.**	Total Yes: 3	
24-HOUR INTAKE	**Total daily amount of milk taken (H)= (C) + (D) – (E) =** _ 660 ml **Estimated proportion of daily amount of milk taken (H/X): _____ %**					**Estimated proportion of daily amount of RUTF taken (F/Y): _____ %**			

Case 4 – Sakina

When Sakina 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. Sakina'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).

Sakina had mouth sores and refused to eat, so an NG tube 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 NG tube was removed. Find Sakina's 24-Hour Food Intake Chart for day 3 below.

4a. According to Sakina'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 Sakina's refusal to feed? When should they have done this?

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

4d. Enter instructions for Sakina'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 – Sakina, continued

24-HOUR FOOD INTAKE CHART

Complete one chart for every 24-hour period during stabilisation and transition.

Starting weight (kg): 5.7 **Today's weight (kg):** 5.6 Oedema: 0 + ++ +++ **DATE:** 14/3/2016 (day 3)

TYPE OF FEED (circle): F-75 F-100 Infant Formula or F-100-Diluted RUTF

FEEDS	**GIVE** 12 milk feeds of 60 ml, or _____ ml per day (X)					**GIVE** ____RUTF feeds of about _____packet, or _____ packets per day (Y)			
Time	**a.** Amount of milk offered (ml)	**b.** Amount of milk left in cup (ml)	**c.** Amount milk taken orally (ml) (a–b)	**d.** Amount of milk taken by NG tube if needed (ml)	**e.** Estimated amount of milk vomited (ml)	**f.** Estimated amount of RUTF taken (proportion of packet)	**g.** Amount of milk offered to complete the RUTF feed (ml) (20 g RUTF or 2 teaspoons = 135 ml F-75 or 100 ml F-100)	**i.** Passed loose stools (Yes/No)	j. Comments (e.g if vomited feeds were replaced, etc)
8:00	60	10	50						
10:00	60	10	50						
12:00	60	10	50						
14:00	60	10	50						
16:00	60	20	40						
18:00	60	10	50						
20:00	60	40	20						
22:00	60	30	30						
24:00	60	40	20						
2:00	60	60	0						
4:00	60	60	0						
6:00	60	60	0						
TOTALS			C. 360	D. 0	E. 0	F. 0	G.	Total Yes: 0	
24-HOUR INTAKE	**Total daily amount of milk taken (H)= (C) + (D) – (E) = _ 360 ml** **Estimated proportion of daily amount of milk taken (H/X): _____ %**					**Estimated proportion of daily amount of RUTF taken (F/Y): _____ %**			

3.0 Feeding the Child in Transition with RUTF and F-75, or F-100

It may take up to 7 days, or even longer, for the child to stabilise on F-75. When the child has stabilised, one can begin to offer ready-to-use therapeutic food (RUTF) higher energy and protein 'catch-up' feed that rebuild wasted tissues. The RUTF will be given alternately with F-75.

If a program on management of SAM has been set up at the community and health centre levels so that children can receive continuity of care, the child will have to tolerate RUTF before being referred.

For this, perform a test to determine whether the child accepts the RUTF. Eventually, the child will be offered RUTF freely so that he can be prepared to be referred for outpatient care. It is extremely important to make the transition to free feeding on RUTF gradually, however, and monitor carefully. If transition is too rapid, 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
- Resolved or resolving medical complications

The child may also smile at this stage.

3.2 Introducing RUTF, and Complementing with F-75 or F-100 if Necessary

RUTF is gradually introduced and offered at each feed in prescribed amounts according to the child's body weight, approximating **150 kcal/kg/day**. The majority of children with SAM will be able to take the RUTF diet as soon as their appetite has returned after stabilisation. RUTF is offered at every feed, 6 times a day with plenty of drinking water. Breastfed children should be offered breast milk freely between the feeds. Health workers will closely monitor the 24-hour therapeutic food intake, however, and assist the child to complete the feeds and supervise that the child takes no other foods.

A small number of children with SAM will take longer to move from the milk diet to the RUTF diet. When the child does not eat RUTF well, the feed is complemented with F-75 to match the missed amount. The child should continue to be offered RUTF at each feed while his or her diet is complemented with F-75. Use F-75 to temporarily complete the RUTF feeds until the child eats the RUTF well: complete the RUTF based on **20 grams of RUTF equals about 135 ml F-75**[4].

The transition phase prepares the child for referral to 0utpatient care and may last up to 3 days until the child eats RUTF well (two full meals) and is ready for transfer to outpatient care.

If the child takes RUTF voluntarily and eats up to 75 percent of its daily prescribed amount, stop giving the complementary F-75. The child is ready for transfer to Outpatient Care as soon as he or she eats two full meals on RUTF only and the medical complications have resolved or under control (e.g., started on anti-TB treatment with noted good response, such as resolving fever and increasing in weight).

In the special circumstances of a medical problem that precludes consumption of RUTF, F-100 is offered and the child will have to remain in hospital for rehabilitation until full recovery (see the next session).

[4] This is an acceptable approximation. If tables are to be constructed, *135 ml of F-75 = 18.5 g of RUTF* and *10 g of RUTF = 54 ml of F-100* should be used for conversion and the resulting values rounded to the nearest 5 or 10 ml.

Feeding with RUTF

Advise the mother to:

- Wash her hands and child's 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.

In addition, explain the following key messages to the mother on how to use RUTF in inpatient care:

1. Sick children often do not like to eat. Give small regular amounts of RUTF and encourage the child to eat. Your child should have __ packets per day. If your child cannot yet eat the whole amount of RUTF per meal, then your child will be offered therapeutic milk to complete the feed, until your child eats a full RUTF meal.
2. Continue to breastfeed regularly (if applicable). Offer breast milk first before every RUTF feed.
3. Always give RUTF after breastfeeding but before the F-75 feeds.
4. Offer the child plenty of clean water to drink while he/she is eating RUTF. Children will need more water than normal.
5. Wash the child's hands and face with soap before feeding if possible.
6. Keep the RUTF packet clean and covered between feeds.
7. RUTF is a food and medicine for a person who is severely malnourished. It should not be shared.
8. RUTF should never be added to or mixed with porridge.
9. Never stop feeding when the child has diarrhoea and inform the health worker. After RUTF give extra clean water.

Feeding procedures with RUTF

- Give the RUTF to the mother to feed the child. The mother should be encouraged to give RUTF feeds according to the child's body weight at the same time as feeds were given during the stabilisation phase—about 150 kcal/kg/day.
- Children should be offered as much clean water to drink as they want during and after they have taken some of the RUTF.
- Observe the feeding. Some children initially refuse the RUTF. In this case, complete the missed amount of the feed with F-75 diet until the child eats 75 percent of the RUTF, then stop the complementary F-75. Breastfed children should be offered breast milk on demand before being fed RUTF.

Use the RUTF reference table for the amounts of RUTF to provide during transition, see reference tables.

3.3 In Special Cases when RUTF Cannot be Given, Give F-100 Slowly and Gradually

In special cases when RUTF cannot be given (e.g., no RUTF is available, medical condition does not allow, child refuses RUTF), F-100 should be given. The feeding technique for F-100 at the start is exactly the same as for F-75 in the stabilisation phase, 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: 130 ml/kg/day, which will provide **130 kcal/kg/day**. 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 the 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), about the same as **150 kcal/kg/day**. If the child is breastfeeding, encourage the mother to breastfeed between feeds of F-100 and on demand.

Use the F-75 Reference Table that gives amounts of F-75 of 130 ml/kg/day, for the amounts of volume of F-100 to give during transition, see reference tables in **Annex B.**

Example of feeding schedule during transition

You will remember Dalitso from the last exercise. On day 1, Dalitso's weight after rehydration was 4.6 kg, and he was started on 50 ml of F-75 every 2 hours. Dalitso continued to feed well over the next 2 days. On day 2, he took 3-hourly feeds of 75 ml of F-75. On day 3, he took 4-hourly feeds of 100 ml of F-75. He also smiled at his mother and the nurses.

On day 3, Dalitso weighs 4.6 kg and easily finished all of his 4-hourly feeds. Thus, on day 4, Dalitso is ready for transition. Dalitso's feeding schedule during transition will be as follows:

Offer RUTF according to Dalitso's weight (refer to RUTF table in Job aid- Therapeutic feeds), spread over 6 feeds per day:

Day 4: At 8am, offered RUTF approximating 1/3 of a packet (3 teaspoons) per feed, and with a total of 1¾ packets of 92 g RUTF per day. After 3-4 hours, Dalitso took less than 1/3 of the packet (approximately he took 2 teaspoons of RUTF). Therefore, 70mls of F-75, was given to Dalitso, to top up for the 1 teaspoon of RUTF he failed to finish (2 teaspoons or 20 g RUTF is approximating 135 ml of F-75). At 12pm, advised mother to give next feed (3 teaspoons of RUTF), and following review at next feeding schedule, Dalitso took 2½. teaspoons of RUTF. This is >75% of Dalitso's recommended feeds. Therefore, Dalitso did not receive additional F-75.

Day 5: Continue offering RUTF every 4 hours approximating 1/3 of a packet per feed, and with a total of 1¾ packets of 92 g RUTF per day (same as day 4). If Dalitso is still not able to finish the feeds, top up with F-75 of equal to the calories of the RUTF he failed to finish.

Day 6: Continue 4-hourly feeds with RUTF.

NOTE:

- It is easier to check the amount of RUTF left in the sachet to verify the amount the child has eaten, in order to calculate volume of F-75 needed to top up. Approximately 20g or 2 teaspoons of RUTF = 135mls of F-75. Therefore, half a packet of the 92 g RUTF (46 g) is equivalent to 310mls of RUTF.
- If a child fails RUTF appetite test, give F100; but continue to check appetite test with RUTF at the next feed until the child starts tolerating RUTF.

3.4 Monitoring Carefully during Transition

Every 4 hours, check the child's respiratory and pulse rate. If RUTF or F-100 is introduced gradually, problems are unlikely; however, increasing respiratory or pulse rate may signal heart failure. Call a physician for help.

More information on monitoring danger signs is discussed in **Module 5, Daily Care**, and summarized in **Annex A**.

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

Record the amount of RUTF (with F-75 completion of the feed) 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. Enter the feeding plan for the next day on a new 24-Hour Food Intake Chart.

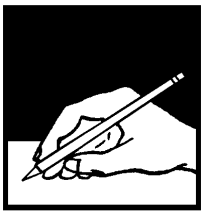
Child on RUTF:

DATE: 9/12/2016 **TYPE OF FEED:** RUTF **GIVE**: 6 **feeds, daily feed = 1.5 packets**

Child on F-100:

DATE: 9/12/2016 **TYPE OF FEED:** F-100 **GIVE**: 6 **feeds of** 105↑ **ml**

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.



3.6 Exercise C

Case 1 – Dalitso

The CCP excerpt below summarises Dalitso's progress through the first 2 days of transition (Days 4 and 5). Prior to feeding on F-100, RUTF appetite tests were conducted on days 4, 5, and 6; Dalitso failed the RUTF appetite tests. On days 4 and 5, however, he took every feed of 100 ml F-100. The column for day 6 shows what the nurse wrote on the CCP in the morning of Dalitso's third day of transition.

DAILY CARE

	Week 1							Week 2	
DAYS IN HOSPITAL	**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	0	0			
Diarrhoea (write number of loose stools)	D	D	0	0	0				
Vomiting (write the frequency)									
RESOMAL……mls									
FEED PLAN: Type feed	F-75	F-75	F-75	F-100	F-100	F-100			
Number of daily feeds	10	8	6	6	6	6			
Amount to give per feed (ml) (packet)	50	75	100	100	100	110↑			
Total amount taken (ml) (packet)	480	600	600	600	600				
NG Tube Yes/No	N	N	N	N	N	N			
Breastfeeding Yes/No	Y	Y	Y	Y	Y	Y			

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

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

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

1b. Dalitso leaves 10 ml of the F-100 offered at 4:00 a.m. He has had no vomiting or diarrhoea since the last feed. Complete the rest of Dalitso'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 Dalitso's CCP above.

24-HOUR FOOD INTAKE CHART

Complete one chart for every 24-hour period during stabilisation and transition.

Starting weight (kg): 4.6 **Today's weight (kg):** 4.75 Oedema: 0 + ++ +++ **DATE:** 9/12/2016 (day 6)

TYPE OF FEED (circle): F-75 F-100 Infant Formula or F-100-Diluted RUTF									
FEEDS	**GIVE** 6 milk feeds of 110↑ ml, or _____ ml per day (X)					**GIVE** ____RUTF feeds of about _____packet, or _____ packets per day (Y)			
Time	**a.** Amount of milk offered (ml)	**b.** Amount of milk left in cup (ml)	**c.** Amount milk taken orally (ml) (a–b)	**d.** Amount of milk taken by NG tube if needed (ml)	**e.** Estimated amount of milk vomited (ml)	**f.** Estimated amount of RUTF taken (proportion of packet)	**g.** Amount of milk offered to complete the RUTF feed (ml) (20 g RUTF or 2 teaspoons = 135 ml F-75 or 100 ml F-100)	**i.** Passed loose stools (Yes/No)	j. Comments (e.g if vomited feeds were replaced, etc)
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						
4:00									
TOTALS			C. 590	D. 0	E. 0	F. 0	G.		RUTF appetite test failed
24-HOUR INTAKE	**Total daily amount of milk taken (H)= (C) + (D) – (E) =** _ 590 _ ml **Estimated proportion of daily amount of milk taken (H/X): _____ %**					**Estimated proportion of daily amount of RUTF taken (F/Y): _____ %**			

Case 2 – Peter

You may remember that Peter 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, Peter 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 Peter began transition. The nurse conducted the RUTF appetite test, but Peter failed it (each time RUTF was offered, Peter refused to eat it). When he was offered F-100, he eagerly took six 4-hourly feeds of 110 ml. Peter's mother says that he wants more F-100 at each feed. She asks if she can give Peter more.

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

2b. What should the nurse explain to Peter's mother?

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

Case 3 – Rose

You may remember that Rose was admitted with severe oedema (+++) and had to be fed by NG tube for several days because she refused to eat. Rose was referred from a district where outpatient care for the management of SAM without medical complications has not yet been introduced. In agreement with Rose's mother, the hospital management decided to manage the child in inpatient care until full recovery.

By day 6 Rose 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 Rose'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 Rose was given six 4-hourly feeds of 105 ml. She eagerly took all of the F-75 offered.

On day 7 Rose's oedema appears to be gone and she weighs 5.2 kg. During the acceptance test to RUTF, she ate more than 30 g of RUTF with no problem.

3a. Is Rose ready for transition? Why or why not?

3b. Enter instructions for Rose's feeding plan for day 7 on the following excerpt from the 24-Hour Food Intake Chart.

DATE: 12/02/16 (day 7) **TYPE OF FEED:** ____ **GIVE**: ___ **feeds, daily feed =** ____

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

DATE: 13/02/16 (day 8) **TYPE OF FEED:** ____ **GIVE**: ___ **feeds, daily feed =** ____

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

DATE: 14/02/16 (day 9) **TYPE OF FEED:** ____ **GIVE**: ___ **feeds, daily feed =** ____

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 1–3 days, if the child takes two full meals of the daily RUTF diet, then he or she can be transferred to outpatient care to continue treatment. In outpatient care, children are monitored weekly in a health facility and continue taking the RUTF at home. RUTF will be prescribed according to the child's body weight based on a **150–220 kcal/kg/day diet.**

Note: The management of SAM in outpatient care is covered in a separate training.

If the child cannot be referred to outpatient care but RUTF is available, the hospital or health facility with inpatient care could treat the child as outpatients in their Outpatient Department (OPD). If the child lives far from the hospital or cannot come weekly to the OPD of the hospital, other solutions based on the local contexts may be sought.

There will be times that the child cannot be transferred to outpatient care and remains in hospital until full recovery. RUTF or F-100 will be prescribed according to the child's body weight based on a **150–220 kcal/kg/day diet.**

Reasons for children to remain in hospital for rehabilitation until full recovery on RUTF or F-100 include:

- Hospital and/or peripheral primary health care facilities have no access to RUTF.
- Child remains in hospital because of another medical condition or special circumstances.
- Child is unable to eat RUTF.
- Mother refuses the child to continue treatment as outpatient despite being adequately counselled (child will be offered RUTF as soon as appetite returns and if available).
- Child is unlikely to access outpatient care, such as in border areas.

Annex B provides RUTF and F-100 Reference Tables that show the **150–220 kcal/kg/day** range of intakes suitable for rehabilitation of children of different weights up to 20 kg. The Therapeutic Foods Reference Tables Job Aid provides expanded tables. If the child's weight is between the weights given on the F-100 Reference Table, use the range of the lower weight.

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

After transition, a child enters the 'rehabilitation' phase and can feed freely on F-100 within the range of **150 ml/kg/day or 150 kcal/kg/day** (minimum) and **220 ml/kg/day or 220 kcal/kg/day** (maximum). Most children will consume at least 150 ml; any amount less than this shows that the child is not being fed freely or is unwell. Breastfeeding is continued between the feeds and on demand.

Encourage the child to eat as much as he or she wants at each feed within the range shown on the F-100 Reference 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 Reference 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 plus a 3.2 kg child.

Examples

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

Lonely weighs 4.5 kg. Using the range for the next lower weight, 4.4 kg, Lonely'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 kg × 150 = 1,800
	1,800 ÷ 6 = 300 ml per feed
Maximum:	12 kg × 220 = 2,640
	2,640 ÷ 6 = 440 ml per feed

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

Minimum:	250 ml + 50 ml = 300 ml per feed
Maximum:	365 ml + 75 ml = 440 ml per feed

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

4.2 Determining whether F-100 Intake is Acceptable

Record each feed on the 24-Hour Food Intake Chart. To determine whether daily intake is acceptable, compare the volume taken to the range given on the F-100 Reference 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, during rehabilitation if the child is gaining weight rapidly, he or she is doing well. During rehabilitation, if the child has diarrhoea but is still gaining weight, there is no need for concern, and no change is needed in the diet.

After 1 week in rehabilitation, 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; however, the monitoring of the response to treatment will continue (e.g., weight gain, clinical condition).

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 (10 mls). 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'*.

4.4 Exercise D

Case 1 – Dalitso

You may remember that Dalitso began transition on day 4. After failing the appetite test, on days 4 and 5 he was given 90 ml F-100 per feed. On day 6 he increased to 135 ml by the last feed of the day. On day 7 Dalitso began free feeding on F-100. Dalitso's 24-Hour Food Intake Chart for day 7 is on the next page.

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

1b. On day 8, Dalitso's weight is 5.0 kg. What is the range of volumes of F-100 that is appropriate for Dalitso 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, Dalitso reached the maximum volume per feed and still wanted more. The nurse gave him no more than the maximum allowed. On day 9 Dalitso'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

Complete one chart for every 24-hour period during stabilisation and transition.

Starting weight (kg): 4.6 **Today's weight (kg):** 4.9 Oedema: 0 + ++ +++ **DATE:** 10/12/2016 (day 7)

TYPE OF FEED (circle): F-75 (F-100) Infant Formula or F-100-Diluted RUTF									
FEEDS	**GIVE** 6 milk feeds of 140↑ ml, or _____ ml per day (X)					**GIVE** ____RUTF feeds of about _____packet, or _____ packets per day (Y)			
Time	**a.** Amount of milk offered (ml)	**b.** Amount of milk left in cup (ml)	**c.** Amount milk taken orally (ml) (a–b)	**d.** Amount of milk taken by NG tube if needed (ml)	**e.** Estimated amount of milk vomited (ml)	**f.** Estimated amount of RUTF taken (proportion of packet)	**g.** Amount of milk offered to complete the RUTF feed (ml) (20 g RUTF or 2 teaspoons = 135 ml F-75 or 100 ml F-100)	**i.** Passed loose stools (Yes/No)	j. Comments (e.g if vomited feeds were replaced, etc)
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						
TOTALS			C. 900	D. 0	E. 0	F. 0	G.		RUTF appetite test failed
24-HOUR INTAKE	**Total daily amount of milk taken (H)= (C) + (D) – (E) =** _ 900_ ml **Estimated proportion of daily amount of milk taken (H/X): _____ %**					**Estimated proportion of daily amount of RUTF taken (F/Y): _____ %**			

Case 2 – Peter

Day 7 was Peter's third day of transition. The nurse had consistently conducted the RUTF appetite test on days 5, 6 and 7, and Peter refused to take the RUTF but eagerly took the F-100. On day 7, Peter 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 Peter on day 9?

_____ – _____ ml

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

Following is an excerpt from Peter's CCP. On the fourth row Peter's weight gain per day is shown in g per 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.

DAILY CARE

	Week 1							Week 2		
DAYS IN HOSPITAL	**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 (Write number of loose stools)	*0*	*D*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Vomiting (Write frequency)	*0*	*V*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
RESOMAL….mls										
FEED PLAN: Type feed	*F-75*	*F-75*	*F-75*	*F-75*	**F-100*	**F-100*	**F-100*	**F-100*	*F-100*	*F-100*
Number of daily feeds	*12*	*8*	*8*	*6*	*6*	*6*	*6*	*6*	*6*	*6*
Amount to give per feed (ml) (packet)	*55*	*80*	*80*	*105*	*105*	*105*	*120*	*120*	*150*	
Total amount taken (ml) (packet)	*600*	*560*	*640*	*630*	*630*	*630*	*720*	*840*	*900*	
NG Tube Yes/No	*N*	*N*	*N*	*N*	*N*	*N*	*N*	*N*	*N*	
Breastfeeding Yes/No	*y*	*y*	*Y*	*y*	*y*	*y*	*y*	*y*	*y*	

** RUTF appetite test conducted before each feed*

2b. Look at Peter's 24-Hour Food Intake Chart on the next page. Notice that Peter 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 Peter'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**

24-HOUR FOOD INTAKE CHART

Complete one chart for every 24-hour period during stabilisation and transition.

Starting weight (kg): 4.8 **Today's weight (kg):** 5.05 Oedema: 0 + ++ +++ **DATE:** 13/2/2016 (day 9)

TYPE OF FEED (circle): F-75 F-100 Infant Formula or F-100-Diluted RUTF

FEEDS	**GIVE** 6 milk feeds of 160↑ ml, or _____ ml per day (X)					**GIVE** ____RUTF feeds of about _____packet, or _____ packets per day (Y)			
Time	**a.** Amount of milk offered (ml)	**b.** Amount of milk left in cup (ml)	**c.** Amount milk taken orally (ml) (a–b)	**d.** Amount of milk taken by NG tube if needed (ml)	**e.** Estimated amount of milk vomited (ml)	**f.** Estimated amount of RUTF taken (proportion of packet)	**g.** Amount of milk offered to complete the RUTF feed (ml) (20 g RUTF or 2 teaspoons = 135 ml F-75 or 100 ml F-100)	**i.** Passed loose stools (Yes/No)	j. Comments (e.g if vomited feeds were replaced, etc)
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						
TOTALS			**C.** 900	**D.** 0	**E.** 0	**F.** 0	**G.**	Total Yes: 0	RUTF appetite test failed
24-HOUR INTAKE	**Total daily amount of milk taken (H)= (C) + (D) – (E) =** _ 900_ ml **Estimated proportion of daily amount of milk taken (H/X): _____ %**					**Estimated proportion of daily amount of RUTF taken (F/Y): _____ %**			

Case 3 – Rose

Day 9 was Rose's third day of transition on F-100. On day 9 she started at 115 ml feeds of F-100. She took all of her feeds well and progressed to 145 ml by the 4:00 feed.

On day 10 Rose weighed 5.2 kg and began feeding freely on F-100. Her 24-Hour Food Intake Chart for day 10 is on the next page. Calculate the column totals and the total volume taken over 24 hours.

3a. What was the total volume of F-100 taken by Rose over 24 hours on day 10?

3b. What is the appropriate daily range of volumes for Rose's weight? Was the amount taken within the appropriate range?

3c. Looking back at Rose's Monitoring Record for day 9, the head nurse noticed that Rose's temperature had increased just before the 16:00 feed. What does this suggest about the cause of Rose's eating less?

3d. Which of the following should the head nurse do? (Check the appropriate answer.)

____ Alert the physician that Rose has a problem and needs to be checked carefully
____ Plan feeding for day 11 to start at 145 ml F-100 again
____ Both of the above

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

CHILD NAME: Rose HOSPITAL NUMBER 453

24-HOUR FOOD INTAKE CHART

Complete one chart for every 24-hour period during stabilisation and transition.

Starting weight (kg): 6.4 **Today's weight (kg):** 5.2 Oedema: 0 + (++) +++ **DATE:** 15/2/2016 (day 10)

TYPE OF FEED (circle): F-75 (F-100) Infant Formula or F-100-Diluted RUTF

FEEDS	**GIVE** 6 milk feeds of 145↑ ml, or _____ ml per day (X)					**GIVE** ____RUTF feeds of about _____packet, or _____ packets per day (Y)			
Time	**a.** Amount of milk offered (ml)	**b.** Amount of milk left in cup (ml)	**c.** Amount milk taken orally (ml) (a–b)	**d.** Amount of milk taken by NG tube if needed (ml)	**e.** Estimated amount of milk vomited (ml)	**f.** Estimated amount of RUTF taken (proportion of packet)	**g.** Amount of milk offered to complete the RUTF feed (ml) (20 g RUTF or 2 teaspoons = 135 ml F-75 or 100 ml F-100)	**i.** Passed loose stools (Yes/No)	j. Comments (e.g if vomited feeds were replaced, etc)
8:00	145	10	135						
12:00	145	45	100						
16:00	145	50	95						
20:00	145	60	85						
24:00	145	70	75						
4:00	145	65	80						
TOTALS			**C.**	**D.**	**E.**	**F.**	**G.**		
24-HOUR INTAKE	**Total daily amount of milk taken (H)= (C) + (D) – (E) =** __ ml **Estimated proportion of daily amount of milk taken (H/X): _____ %**					**Estimated proportion of daily amount of RUTF taken (F/Y): _____ %**			

5.0 Nutritional Recovery of Infants less than 6 Months

5.1 Nutritional Treatment for Breastfed Infants

Feeding approaches should prioritise establishing, or re-establishing effective exclusive breastfeeding. If an infant is not breastfed, support should be given to the mother to re-lactate.

When exclusive breastfeeding does not provide enough breast milk for the infant to gain weight, re-lactation should be supported and stimulated by supplemental suckling with a milk supplement. **Annex E** gives an overview of breastfeeding assessment and support that is used in IYCF in outpatient and inpatient care.

Infants less than 6 months with SAM without oedema should be supplemented with F-100 Diluted. Infants with oedema should be supplemented with formula or F-75 until the oedema has resolved. Undiluted F-100 should never be given to infants less than 6 months old with SAM because of high renal solute load and risk of hypernaetremic dehydration. The following should be encouraged.

If the infant is able to suckle or is suckling weakly

- Breastfeed on demand. Offer breast milk at least every 3 hours for at least 20 minutes and on demand (whenever the infant cries or wants more). As a principle, the infant should be breastfed as often as possible.
- A half hour to an hour after a breastfeeding session, give maintenance amounts of F-100 Diluted at **130 ml/kg/day,** distributed across 12 or 8 feeds per day (every 2–3 hours), providing **100 kcal/kg/day** by supplemental suckling.
- Two-hourly feeds are best for at least the first days and to stimulate breast milk production.
- Give F-75 with bilateral pitting oedema until the oedema is resolved.
- Close monitoring and recording of feeding and vital signs are crucial, and are similar as described in the older child.

If the infant is NOT able to suckle

- If the mother is willing, encourage her to start expressing her milk. Show her how to hand express the breast milk at least 8 to 12 times a day (every 2–3 hours). This will stimulate her breasts to make more milk. Measure (estimate) the expressed milk and feed it to the infant by NG tube. Complete the breast milk feed with a F-100 Diluted or F-75 (if the infant has bilateral pitting oedema) up to the full amount as shown on the F-100 Diluted and F-75 reference table (see Annex C).
- Build the mother's confidence by praising her for the patience and persistence and for whatever amount of breast milk she expresses.
- Encourage the mother to continue to offer the breast as much as possible: every 2–3 hours for at least 20 minutes, and on demand.
- As soon as the infant gains strength, feed by supplemental suckling (and proceed as above).

Regulation of amount of milk supplement (F-100 Diluted)

- The progress of the infant's weight is monitored daily with a scale graduated to within 10–20 g.
- The quantity of F-100 Diluted or F-75 is not increased during the stay. If the infant loses weight or has a static weight over 3 consecutive days, continues to be hungry and is taking all the milk, however, progressively add **5 ml** extra to each feed.
- If the infant starts to gain weight, gradually decrease the F-100 Diluted or F-75 **by one-third of the maintenance intake** so that the infant is stimulated to take more breast milk.
- If after gradual decrease of the F-100 Diluted or F-75 weight gain of the infant is sufficient and maintained for 2–3 days, stop the F-100 Diluted or F-75.
- If after gradual decrease of the F-100 Diluted or F-75 the weight gain of the infant is not maintained, increase again the amount of F-100 Diluted or F-75 to 80 percent of the maintenance amount for 2–3 days, then gradually decrease the amount again if the infant starts gaining weight again.

The reference tables for amounts of F-100 Diluted or F-75 in case of bilateral pitting oedema until the oedema is resolved for breastfed infants is provided in Annex C.

Supplemental suckling

This technique entails the infant suckling at the breast while also taking the milk supplement (F-100 or F-75) from a cup through a fine tube that runs alongside the nipple. The infant is nourished by the milk supplement while suckling stimulates the breast to produce more milk.

While the mother holds a cup with the milk supplement, the end of a NG tube (size nº 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 cleaned: flush through with clean water using a syringe, then spin (twirl) rapidly to remove the water in the lumen of the tube by centrifugal force. If possible, leave the tube exposed to direct sunlight. Replace the tube every few days.

Breastfeeding support

- Support the mother to breastfeed every 3 hours for at least 20 minutes, and on demand.
- Encourage the mother to give her infant Kangaroo care (discussed in **Module 3, Initial Management**). Skin-to-skin contact may help increase the amount of milk she can produce.
- A summary of breastfeeding support is provided in **Annex E**.

Monitoring re-lactation

Breast milk production may start in a few days or a few weeks and is difficult to predict. Some women produce a full supply in just a few days, especially if their infants were still breastfeeding sometimes when they started re-lactation. If an infant had stopped breastfeeding completely, it may take a few weeks, or more, before much breast milk comes.

If a mother has never breastfed her infant, she may never produce enough breast milk to establish exclusive breastfeeding. Some breastfeeding is better than no breastfeeding, however. All women need encouragement to be patient; they must know that their milk may take a short or a long time to 'come in'.

Signs that breast milk is being produced may include the following:

- **Breast changes:** The breasts feel fuller or firmer, or may leak milk or milk can be expressed.
- **Less milk supplement (F-100 Diluted or F-75) consumed:** The infant (who breastfeeds first at each feed) takes less milk supplement while continuing to gain weight. This is not reliable over a short time, because the amount taken varies from day to day. Over a longer time (e.g., 5 days), there should be a clear trend.
- **Infant does not take second breast:** This may be a sign to reduce the amount of supplement offered, so that infant will again want to suckle both breasts at each feed.
- **Stool changes:** The infant's stools become softer, more like the stools of a breastfed infant.

Criteria for discharge from hospital and progress to outpatient care

- Medical complication has resolved
- No bilateral pitting oedema for 2 consecutive weeks
- Infant is clinically well and alert
- Breastfeeding infant—weight gain on exclusive breastfeeding is satisfactory (e.g., infant is gaining 5 g/kg/day at least for 3 successive days)
- Mother and infant are linked to community-based infant and young child feeding (IYCF) support.

Good weight gain for a breastfed infant is when the infant has gained a minimum of 20 g per day on breastfeeding alone for 3 consecutive days, regardless the total body weight or weight-for-height (WFH) z-score. Use the Growth Charts to determine whether weight gain was adequate.

Any stay in hospital should be as short as possible to avoid cross infections and defaulting or early discharge against the clinician's advice.

If possible, practise feeding by cup, NG tube and supplemental suckling during the clinical session.

5.2 Nutritional Treatment for Infants without Prospect of Breastfeeding

If there is no realistic prospect of being breastfed, infants with SAM should be given appropriate replacement feeding. Infants with SAM without oedema should be fed using infant formula or F-100 Diluted. Infants with oedema should be fed with F-75 until the oedema has resolved and should then switch to infant formula or F-100 Diluted.

Feeding during stabilisation

- Give infant formula or F-100 Diluted (or F-75 in case of oedema) at **130 ml/kg/day**, distributed across 12 or 8 feeds per day (every 2–3 hours), providing **100 kcal/kg/day.**
- Two-hourly feeds are best for at least the first day. Then, when the infant has little or no vomiting and modest diarrhoea, change to 3-hourly feeds. After a day on three-hourly feeds, and no vomiting and no diarrhoea, change the infant to 4-hourly feeds.
- Feed by cup and saucer or by NG tube (drip, using gravity not pumping) when the infant is not taking sufficient milk by mouth. The use of a NG tube should not exceed 3 days and should be used only in the stabilisation phase.
- Close monitoring and recording of feeding and vital signs are crucial, and are similar as described in the older child.

The reference tables for replacement feeding for infants without prospect of breastfeeding are provided separately.

Once there is a return of appetite and oedema starts resolving the infant can enter a transition period before the rehabilitation phase.

Feeding during transition

- Give infant formula or F-100 Diluted given at **150-170 ml/kg/day**, or increased by one-third over the amount given in the stabilisation phase, providing **110–130 kcal/kg/day**.
- Mothers are prepared for discharging the infant on a breast milk substitute, and receive nutrition counselling.
- Close monitoring and recording of feeding and vital signs are crucial, and are similar as described in the older child.

Criteria for discharge from hospital and progress to outpatient care

- Medical complication has resolved, *and*
- Oedema has resolved, *and*
- Good weight gain on breast milk substitute, or gaining weight of at least 20 g per day for 3 consecutive days, *and*
- Infant is clinically well and alert, *and*
- Health worker is confident that the mother prepares infant formula well and gives it correctly, *and*
- Access to adequate infant formula is secured, *and*
- Mother and infant are linked with community-based IYCF support.

Any stay in hospital should be as short as possible to avoid cross infections and defaulting or early discharge against the clinician's advice. Mothers should receive relevant support to enable them to safely prepare and use feeds, including at home when discharged.

Feeding during rehabilitation in case the infant remains in hospital

- Give infant formula milk or F-100 Diluted providing **200 ml/kg/day,** or twice the volume given in the stabilisation phase, providing **150 kcal/kg/day.**
- Mothers are prepared for discharging the infant on infant formula, and receive nutrition counselling.

Whenever a breast milk substitute is given as part of management of SAM in infants, it should not confuse or compromise the wider public health message concerning exclusive breastfeeding for infants less than 6 months.

5.3 Individual Monitoring of the Infant

The importance of close monitoring during each day of the treatment must be emphasised, and staff may need training to understand that this is a priority. The following parameters should be monitored daily and recorded on the treatment card:

Monitoring weight gain

- Infants should be weighed daily on appropriate infant scales, ideally accurate to at least 20g.
- It is important to check that scales are being used correctly (e.g., zeroed, if necessary, after each measurement).
- Infants should be weighed entirely nude; weight of clothes can make a big difference to the small changes in the weights seen in such small infants.
- Weight gain needs to be calculated as grams per kilo body weight per day. However, a useful rule of thumb for minimum acceptable weight gain in young infants is 20 g per day. Weight Gain Charts or Weight Velocity Charts may be used for more accurate monitoring.

Monitoring urine frequency

- Ask how often the infant passes urine. Frequent urination (six or more wet nappies daily for less than 6 months) with pale, dilute urine, is a useful day-to-day sign of adequate fluid intake in the exclusively milk-fed infant.

Monitoring infant's level of activity

- Ask about the infant's level of activity. An infant is probably getting enough to eat if she or he:
    - Wakes spontaneously every 2 to 3 hours demanding a feed
    - Feeds vigorously
    - Is lively and interacts socially in a way appropriate to his/her age

An infant who is not getting enough to eat may be very quiet and undemanding because he or she lacks the energy to insist on being fed.

5.4 Taking Care of the Mother (or Caregiver)

Feeding mothers

A mother of an infant with SAM needs to be fed so she can care for her child well. She needs high-quality food through 3 daily meals as well as snacks. Adequate fluid intake is also key (an extra litre per day compared to her usual intake) to ensure the milk production.

Listening to mothers

Mothers in emergency situations or with very ill infants are often traumatised and depressed, and they may not interact with or respond to their infants. At this stage, technical messages about infant feeding are not useful. It is helpful to get mothers to talk about their experiences and their feelings and doing so can help to resolve their problems. Then they may be able to respond better to their babies again.

- Listen to a mother throughout this process, learn her difficulties and help her to talk about them, including any that affect her ability to breastfeed and to care for her infant.
- Encourage women to listen to each other in support groups.
- Usually the best help comes from other women, of the same culture and social standing, who have had a malnourished infant who responded well to treatment. The regimen in the NRU must not be too strict.

Keeping mothers and infants together

Separating mothers from their infants endangers breastfeeding, care and warmth for the infant, feeding and care of other children and increases mothers' anxieties. So keep mothers and infants together. The treatment of these infants is different from that of other children, and it is easier to look after them together. The arrangement also helps to provide the mothers with privacy. If the mother has other children, keep them with the mother, too, if possible. Keeping mothers and infants together does not cause cross infection.

Mothers and infants can be kept together more easily if they have beds or mats to sleep on together, instead of putting the infants in separate baby cots.

Mothers and their infants are considered and treated together. Take as much care of the mother as of the infant. Provide food, treatment, psychosocial support and other care as needed. Engage mothers in the care of their infants.

5.4 Exercise E

In this exercise, in group you will discuss two cases:

1. Alinafe is a breastfed infant with a length of 51 cm and weighs 2.7 kg. Alinafe lost weight in the previous 2 days, and looks unwell. Her mother is very worried and complains of breastfeeding difficulties despite the support she received on infant feeding from health workers in her community. Alinafe's WFH is < -3 z-score.
2. Thomu is an infant of 2 months old whose mother died during childbirth. Thomu has a length of 54 cm and weighs 3.2 kg. Thomu is taken care of in the orphanage. His carer informs us that Thomu suffers from frequent episodes of diarrhoea since his arrival in the orphanage. Yesterday after Thomu passed several loose stools the carer got worried because she noticed Thomu was not well and the look of his eyes had changed.

Discuss (and develop) a feeding plan for Alinafe and Thomu, and discuss issues of concern in the status of these children and how their issues can be addressed, based on your own professional context.

6.0 Planning Feeding in the NRU

Up to now, this module has focused on planning feeding for individual children. It is also important to plan feeding for the NRU as a whole, so that the staff know how much food to prepare, how much food to put in cups at each feed and so on. 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.

6.1 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
- Changing shifts

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

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. Cups are taken away after each feed (the milk amount that is not taken by the child is recorded on the 24-Hour Food Intake Chart). (In the absence of refrigeration, decide what to do for the leftover milk, such as immediately distribute leftover milk after every feed 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 given to mothers. Feeding the children should continue to be supervised and/or assisted.

🕗 *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 58. A blank Daily Feeds Chart is provided in **Annex D**. This chart is used in the kitchen so that staff know how much F-75, F-100 and F-100 Diluted to prepare and, in the case of RUTF, how much to give for the day. It also is a useful tool to plan and take out reserves from the store 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.

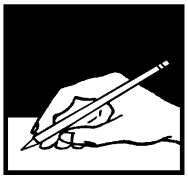
Example Ward Schedule

At Chinsapo Hospital there is good 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.

Example Ward Schedule

Activities by Feeding Schedule				
TIME	**2-hourly**	**3-hourly**	**4-hourly**	**Other Ward Activities/Comments**
Shift change 6:30–7:00; instructions given				
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		
Shift change 13:30–14:00; instructions given				
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			
Shift change 20:30–21:00; instructions given to night staff				
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	



6.1 Exercise F

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

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
- Changing shifts

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.

6.2 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. Infant formula or F-100 Diluted used in the nutritional recovery for infants less than 6 months (or expressed breast milk) are also recorded on the chart.
- 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, F-100, infant formula or F-100 Diluted 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, F-100, infant formula or F-100 Diluted 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, infant formula or F-100 Diluted and RUTF needed for the day for the ward.
- Round up the amount needed to the nearest half-litre (since the feeds are prepared in half-litre batches).
- You might find it helpful to prepare some extra feed in case there are new admissions, some is spilled and so on. Enter the amount to prepare in the appropriate space on the chart.

Example Daily Feeds Chart

Date: *14 March 2016*			Ward: *NRU*			
	F-75			F-100		
Name of Child	Number of feeds	Amount/ feed (ml)	Total (ml)	Number of feeds	Amount/ feed (ml)	Total (ml)
Chimwemwe	*12*	*55*	*660*			
Chikondi				*6*	*250*	*1,500*
Zikomo				*6*	*300*	*1,800*
Thoko				*6*	*180*	*1,080*
Mtendere	*8*	*115*	*920*			
Maziko				*6*	*200*	*1,200*
Mphatso	*8*	*100*	*800*			
Chiza	*6*	*200*	*1,200*			
Maria				*6*	*280*	*1,680*
Chisomo	*12*	*90*	*1,080*			
				Infant Formula or F-100 Diluted		
				Number of feeds	**Amount/ feed (ml)**	**Total (ml)**
Alinafe				*12*	*25*	*300*
Thomu				*12*	*40*	*480*
Dziko				*12*	*30*	*360*
	F-75 (total ml) needed for 24 hours		***4,660***	**F-100 (total ml) needed for 24 hours**		***7,260 ml***
	F-75 (total packets/tins*) needed for 24 hours		***7+1***	**F-100 (packets/tins*) needed for 24 hours**		***12+1***
	Infant Formula or F-100 for F-100 Diluted preparation (total ml) needed for 24 hours					***1,140 ml***
	Infant Formula or F-100 for F-100 Diluted preparation (packets/tins*) needed for 24 hours					***2***

** Commonly, commercial therapeutic milk sachets of about 100 g will provide 600 ml of F-75 or F-100 or 775 ml of F-100 Diluted. The new commercial therapeutic milk tin of 400g will provide 2480 ml of F75, 2158 ml of F-100 and 2913 ml of F-100 Diluted.*

	RUTF	
Name of Child	Number of feeds	Packets per day
Chitsanzo	***6***	***3.0***
Fatsani	***6***	***2.5***
Tawonga	***6***	***2.0***
Juleka	***6***	***1.5***
	RUTF (total packets) needed for 24 hours**	***9.0 or 10.0***

***Adjust to number of packets or tins that were fully consumed on the previous day.*

6.3 Exercise G

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

1. Piyasi is the eighth 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 Piyasi's feeding plan to the Daily Feeds Chart.

> **DATE:** 17/05/16 **TYPE OF FEED:** F-75 **GIVE**: 6 **feeds of** 130 **ml**

2. Vera is the ninth 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:** 17/05/16 **TYPE OF FEED:** F-100 **GIVE**: 6 **feeds of** 160 **ml**

3. Sami is the eleventh child in the ward. Sami's feeding plan is below. Sami ate eagerly all RUTF yesterday. Add Sami's feeding plan to the Daily Feeds Chart.

> **DATE:** 17/05/16 **TYPE OF FEED:** RUTF **GIVE**: 6 **feeds of** almost 1/2 packet; total in a day: 3 packets

4. Zimatha is the last child in the ward. Zimatha's feeding plan is below.

> **DATE:** 17/05/16 **TYPE OF FEED:** F-100 D **GIVE**: 12 **feeds of** 35 **ml**

5. 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.

Use in Exercise G

Daily Feeds Chart

Date:			Ward: NRU			
	F-75			F-100		
Name of Child	Number of feeds	Amount/ feed (ml)	Total (ml)	Number of feeds	Amount/ feed (ml)	Total (ml)
Ngina				*6*	*250*	*1,500*
Chawezi	*12*	*50*	*600*			
Wanga				*6*	*180*	*1,080*
Asante	*12*	*65*	*780*			
				Infant Formula or F-100 Diluted		
				Number of feeds	Amount/ feed (ml)	Total (ml)
Nthambi				*12*	*30*	*360*
Nyenyezi				*12*	*45*	*540*
	F-75 (total ml) needed for 24 hours			F-100 (total ml) needed for 24 hours		
	F-75 (total packets/tins) needed for 24 hours			F-100 (packets/tins) needed for 24 hours		
	Infant Formula or F-100 for F-100 Diluted preparation (total ml) needed for 24 hours					
	Infant Formula or F-100 for F-100 Diluted preparation (packets/tins) needed for 24 hours					

	RUTF	
Name of Child	Number of feeds	Packets per day
Langa	*6*	*2.5*
	RUTF (total packets) needed for 24 hours	

6.3 Planning Staff Assignments Related to Feeding Children

The major tasks involved in feeding are:

- Preparing F-75, F-100 and infant formula or F-100 Diluted
- Measuring out F-75, F-100, and infant formula or F-100 Diluted feeds in amounts prescribed for each child. Mothers with children on RUTF receive the daily amount of RUTF all 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 a feeding schedule for an individual child for the next day
- Preparing the Daily Feeds Chart

Each of these tasks is extremely important. Each task needs different skills. For example, preparing feeds needs the ability to follow a recipe and measure carefully. Feeding children takes 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.

6.4 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.

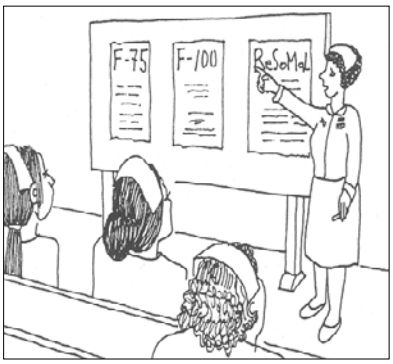
Example

Think about a time when you learned 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 parts 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 and infant formula or F-100 Diluted. The F-75, F-100, infant formula or F-100 Diluted and RUTF Reference 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 while being supervised until they can do it correctly. They must also practise reading a Daily Feeds Chart and measuring correct 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 the NRU. 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 do it

6.5 Exercise H

In this exercise, you will discuss ways in which information, examples and practice can be given 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 give **information** cheaply, quickly and realistically?

4. How could you give **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 that would prevent them from doing the task? If so, what problems, and how could they be overcome?

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

Answers to Exercises

Answers to short answer exercise, page 11

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 18

1. Mateyu's feeding day began at 8:00 and ended at 6:00 the next morning.
2. 12 times.
3. Mateyu 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 NG tube. The staff realised that he had not taken enough by mouth for three successive feeds. (***Note*:** They could have started the NG tube after two poor feeds.)
8. He was fed as much as he would take orally; then he was given the rest by NG tube.
9. Yes, he took about 88 percent.
10. 455 ml (320 ml taken orally + 145 ml taken by NG tube – 10 ml vomited).
11. No, the NG tube should not be removed. Mateyu took almost all of the last two feeds by mouth, but he is still leaving a little bit (more than 20 percent). When he takes two consecutive feeds completely by mouth, or eats 80 percent of the feed, the tube should be removed.

Annex A: Therapeutic Milk Recipes

Recipes for F-75 and F-100 are given in the table below. The top three recipes given for F-75 include cereal flour and require cooking. The bottom three recipes for F-75 can be used if there is no cereal flour or no cooking facilities.

Tips for correct preparation (all 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 of the boiled water you will use for the milk preparation and add the rinsing to the blender or jug.
- Be sure that the scale is set at 0 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 is a bigger 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.
- If using 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 litres, use ½ scoop to make 1 litre. Carefully measure to determine the exact amount in ½ scoop.
- 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 percent too diluted.

Directions for making cooked F-75 with cereal flour (top 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 in the table on page 67. Cereal flour may be maize meal, rice flour or whatever is the staple cereal in the area.

It is important to use cooled, boiled water even for recipes that involve cooking. The cooking is only 4 minutes of gentle boiling, and this may not be enough to kill all pathogens in the water. The water should be cooled because adding boiling water to the powdered ingredients may create lumps.

If using a hand whisk/spoon

1. Mix the flour, milk or milk powder, sugar, oil, and mineral mix 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 measuring jug after cooking and add enough boiled water to make 1,000 ml. Whisk again.

Directions for no-cooking recipes (bottom recipes)

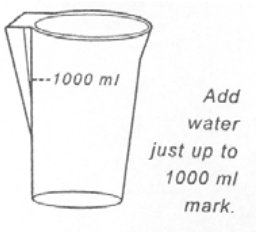
If using a hand whisk/spoon:

1. Mix the required amounts of milk powder and sugar in a 1-litre measuring jug; then 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.)

2. Add mineral mix, and slowly add boiled, cooled water up to 1,000 ml, stirring all the time.

3. Whisk vigorously.

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



Therapeutic Milk Recipes

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 Combined mineral and vitamin mix (CMV)* *Water to make 1,000 ml*	25 g 70 g 35 g 30 g ½ level scoop *1,000 ml***
If you have dried whole milk	Dried whole milk Sugar Cereal flour Vegetable oil CMV* *Water to make 1,000 ml*	35 g 70 g 35 g 20 g ½ level scoop *1,000 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* *Water to make 1,000 ml*	300 ml 70 g 35 g 20 g ½ level scoop *1,000 ml***

If you do not have cereal flour or there are no cooking facilities, use one of the following recipes for F-75,			No cooking is required for F-100,
Alternatives	**Ingredients**	**Amount for F-75**	**Amount for F-100**
If you have dried skimmed milk	Dried skimmed milk Sugar Vegetable oil CMV* *Water to make 1,000 ml*	25 g 100 g 30 g ½ level scoop *1,000 ml***	80 g 50 g 60 g ½ level scoop *1,000 ml***
If you have dried whole milk	Dried whole milk Sugar Vegetable oil CMV* *Water to make 1,000 ml*	35 g 100 g 20 g ½ level scoop *1,000 ml***	110 g 50 g 30 g ½ level scoop *1,000 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* *Water to make 1,000 ml*	300 ml 100 g 20 g ½ level scoop *1,000 ml***	880 ml 75 g 20 g ½ level scoop *1,000 ml***

* * The contents of CMV are listed in **Module 2, Principles of Care, Annex D** ** Important note about adding water: Add just the amount of water needed to make 1,000 ml of formula. (This amount will vary from recipe to recipe, depending on the other ingredients.) If you have cereal flour and cooking facilities, use one of the top three recipes for F-75.

Annex B: Therapeutic Milk Reference Tables

Stabilisation Phase Reference Tables for F-75 for Children With Severe Wasting (Marasmus)

Weight of child (kg)	Volume of F-75 per feed (ml)[a]			Daily total (130 ml/kg)	80% of daily total[a] (minimum)
	Every 2 hours[b] (12 feeds)	Every 3 hours[c] (8 feeds)	Every 4 hours (6 feeds)		
2.0	20	35	45	130	260
2.2	25	35	50	130	286
2.4	25	40	50	130	312
2.6	30	40	55	130	338
2.8	30	45	60	130	364
3.0	35	50	65	130	390
3.2	35	50	70	130	416
3.4	35	55	75	130	442
3.6	40	60	80	130	468
3.8	40	60	80	130	494
4.0	45	65	85	130	520
4.2	45	70	90	130	546
4.4	50	70	95	130	572
4.6	50	75	100	130	598
4.8	50	80	105	130	624
5.0	55	80	110	130	650
5.2	55	85	115	130	676
5.4	60	90	115	130	702
5.6	60	90	120	130	728
5.8	65	95	125	130	754
6.0	65	100	130	130	780
6.2	65	100	135	130	806
6.4	70	105	140	130	832
6.6	70	105	145	130	858
6.8	75	110	145	130	884
7.0	75	115	150	130	910
7.2	80	115	155	130	936
7.4	80	120	160	130	962
7.6	80	125	165	130	988
7.8	85	125	170	130	1014
8.0	85	130	175	130	1040
8.2	90	135	180	130	1066
8.4	90	135	180	130	1092
8.6	95	140	185	130	1118
8.8	95	145	190	130	1144
9.0	100	145	195	130	1170
9.2	100	150	200	130	1196
9.4	100	155	205	130	1222
9.6	105	155	210	130	1248
9.8	105	160	210	130	1274
10.0	110	165	215	130	1300
10.2	110	165	220	130	1326
10.4	115	170	225	130	1352
10.6	115	170	230	130	1378
10.8	115	175	235	130	1404
11.0	120	180	240	130	1430
11.2	120	180	245	130	1456
11.4	125	185	245	130	1482
11.6	125	190	250	130	1508

Weight of child (kg)	Volume of F-75 per feed (ml)[a]			Daily total (130 ml/kg)	80% of daily total[a] (minimum)
	Every 2 hours[b] (12 feeds)	Every 3 hours[c] (8 feeds)	Every 4 hours (6 feeds)		
11.8	130	190	255	130	1534
12.0	130	195	260	130	1560
12.2	130	200	265	130	1586
12.4	135	200	270	130	1612
12.6	135	205	275	130	1638
12.8	140	210	275	130	1664
13.0	140	210	280	130	1690
13.2	145	215	285	130	1716
13.4	145	220	290	130	1742
13.6	145	220	295	130	1768
13.8	150	225	300	130	1794
14.0	150	230	305	130	1820
14.2	155	230	310	130	1846
14.4	155	235	310	130	1872
14.6	160	235	315	130	1898
14.8	160	240	320	130	1924
15.0	165	245	325	130	1950
15.2	165	245	330	130	1976
15.4	165	250	335	130	2002
15.6	170	255	340	130	2028
15.8	170	255	340	130	2054
16.0	175	260	345	130	2080
16.2	175	265	350	130	2106
16.4	180	265	355	130	2132
16.6	180	270	360	130	2158
16.8	180	275	365	130	2184
17.0	185	275	370	130	2210
17.2	185	280	375	130	2236
17.4	190	285	375	130	2262
17.6	190	285	380	130	2288
17.8	195	290	385	130	2314
18.0	195	295	390	130	2340
18.2	195	295	395	130	2366
18.4	200	300	400	130	2392
18.6	200	300	405	130	2418
18.8	205	305	405	130	2444
19.0	205	310	410	130	2470
19.2	210	310	415	130	2496
19.4	210	315	420	130	2522
19.6	210	320	425	130	2548
19.8	215	320	430	130	2574
20.0	215	325	435	130	2600

[a] Volumes in these columns are rounded to the nearest 5 ml.

[b] Give 2-hourly feeds for at least the first day. When there is little or no vomiting, moderate diarrhoea (< 5 watery stools per day), and the child finishes most feeds, change to 3-hourly feeds.

[c] After a day on 3-hourly feeds, if there is no vomiting, less diarrhoea, and the child finishes most feeds, change to 4-hourly feeds.

Stabilisation Phase Reference Tables for F-75 for Children with Severe Bilateral Pitting Oedema (Kwashiorkor) (+++)

Weight with +++ oedema (kg)	Volume of F-75 per feed (ml)[a]			Daily total (100 ml/kg)	80% of daily total (minimum)
	Every 2 hours[b] (12 feeds)	Every 3 hours[c] (8 feeds)	Every 4 hours (6 feeds)		
3.0	25	40	50	100	300
3.2	25	40	55	100	320
3.4	30	45	55	100	340
3.6	30	45	60	100	360
3.8	30	50	65	100	380
4.0	35	50	65	100	400
4.2	35	55	70	100	420
4.4	35	55	75	100	440
4.6	40	60	75	100	460
4.8	40	60	80	100	480
5.0	40	65	85	100	500
5.2	45	65	85	100	520
5.4	45	70	90	100	540
5.6	45	70	95	100	560
5.8	50	75	95	100	580
6.0	50	75	100	100	600
6.2	50	80	105	100	620
6.4	55	80	105	100	640
6.6	55	85	110	100	660
6.8	55	85	115	100	680
7.0	60	90	115	100	700
7.2	60	90	120	100	720
7.4	60	95	125	100	740
7.6	65	95	125	100	760
7.8	65	100	130	100	780
8.0	65	100	135	100	800
8.2	70	105	135	100	820
8.4	70	105	140	100	840
8.6	70	110	145	100	860
8.8	75	110	145	100	880
9.0	75	115	150	100	900
9.2	75	115	155	100	920
9.4	80	120	155	100	940
9.6	80	120	160	100	960
9.8	80	125	165	100	980
10.0	85	125	165	100	1000
10.2	85	130	170	100	1020
10.4	85	130	175	100	1040
10.6	90	135	175	100	1060
10.8	90	135	180	100	1080
11.0	90	140	185	100	1100
11.2	95	140	185	100	1120
11.4	95	145	190	100	1140
11.6	95	145	195	100	1160
11.8	100	150	195	100	1180
12.0	100	150	200	100	1200
12.2	100	155	205	100	1220
12.4	105	155	205	100	1240
12.6	105	160	210	100	1260
12.8	105	160	215	100	1280
13.0	110	165	215	100	1300
13.2	110	165	220	100	1320

Weight with +++ oedema (kg)	Volume of F-75 per feed (ml)[a]			Daily total (100 ml/kg)	80% of daily total (minimum)
	Every 2 hours[b] (12 feeds)	Every 3 hours[c] (8 feeds)	Every 4 hours (6 feeds)		
13.4	110	170	225	100	1340
13.6	115	170	225	100	1360
13.8	115	175	230	100	1380
14.0	115	175	235	100	1400
14.2	120	180	235	100	1420
14.4	120	180	240	100	1440
14.6	120	185	245	100	1460
14.8	125	185	245	100	1480
15.0	125	190	250	100	1500
15.2	125	190	255	100	1520
15.4	130	195	255	100	1540
15.6	130	195	260	100	1560
15.8	130	200	265	100	1580
16.0	135	200	265	100	1600
16.2	135	205	270	100	1620
16.4	135	205	275	100	1640
16.6	140	210	275	100	1660
16.8	140	210	280	100	1680
17.0	140	215	285	100	1700
17.2	145	215	285	100	1720
17.4	145	215	290	100	1740
17.6	145	220	295	100	1760
17.8	150	225	295	100	1780
18.0	150	225	300	100	1800
18.2	150	230	305	100	1820
18.4	155	230	305	100	1840
18.6	155	235	310	100	1860
18.8	155	235	315	100	1880
19.0	160	240	315	100	1900
19.2	160	240	320	100	1920
19.4	160	240	325	100	1940
19.6	165	245	325	100	1960
19.8	165	250	330	100	1980
20.0	165	250	335	100	2000

[a] Volumes in these columns are rounded to the nearest 5 ml.

[b] Give 2-hourly feeds for at least the first day. When there is little or no vomiting, moderate diarrhoea (< 5 watery stools per day), and the child finishes most feeds, change to 3-hourly feeds.

[c] After a day on 3-hourly feeds, if there is no vomiting, less diarrhoea, and the child finishes most feeds, change to 4-hourly feeds.

Reference Table for Quantity of F-100 to Give to an Individual Child per Feed

Weight of child (kg)	Range of volumes per 3-hourly feed of F-100 (8 feeds daily) *		Range of volumes per 4-hourly feed of F-100 (6 feeds daily) *		Range of daily volumes of F-100	
	Minimum ml	Maximum ml	Minimum ml	Maximum ml	Minimum (150 ml/kg/day)	Maximum (220 ml/kg/day)
2.0	40	55	50	75	300	440
2.2	40	60	55	80	330	484
2.4	45	65	60	90	360	528
2.6	50	70	65	95	390	572
2.8	55	75	70	105	420	616
3.0	55	85	75	110	450	660
3.2	60	90	80	115	480	704
3.4	65	95	85	125	510	748
3.6	70	100	90	130	540	792
3.8	70	105	95	140	570	836
4.0	75	110	100	145	600	880
4.2	80	115	105	155	630	924
4.4	85	120	110	160	660	968
4.6	85	125	115	170	690	1012
4.8	90	130	120	175	720	1056
5.0	95	140	125	185	750	1100
5.2	100	145	130	190	780	1144
5.4	100	150	135	200	810	1188
5.6	105	155	140	205	840	1232
5.8	110	160	145	215	870	1276
6.0	115	165	150	220	900	1320
6.2	115	170	155	225	930	1364
6.4	120	175	160	235	960	1408
6.6	125	180	165	240	990	1452
6.8	130	185	170	250	1020	1496
7.0	130	195	175	255	1050	1540
7.2	135	200	180	265	1080	1584
7.4	140	205	185	270	1110	1628
7.6	145	210	190	280	1140	1672
7.8	145	215	195	285	1170	1716
8.0	150	220	200	295	1200	1760
8.2	155	225	205	300	1230	1804
8.4	160	230	210	310	1260	1848
8.6	160	235	215	315	1290	1892
8.8	165	240	220	325	1320	1936
9.0	170	250	225	330	1350	1980
9.2	175	255	230	335	1380	2024
9.4	175	260	235	345	1410	2068
9.6	180	265	240	350	1440	2112
9.8	185	270	245	360	1470	2156
10.0	190	275	250	365	1500	2200
10.2	190	280	255	375	1530	2244
10.4	195	285	260	380	1560	2288
10.6	200	290	265	390	1590	2332
10.8	205	295	270	395	1620	2376
11.0	205	305	275	405	1650	2420
11.2	210	310	280	410	1680	2464
11.4	215	315	285	420	1710	2508
11.6	220	320	290	425	1740	2552
11.8	220	325	295	435	1770	2596
12.0	225	330	300	440	1800	2640

12.2	230	335	305	445	1830	2684
12.4	235	340	310	455	1860	2728
12.6	235	345	315	460	1890	2772
12.8	240	350	320	470	1920	2816
13.0	245	360	325	475	1950	2860
13.2	250	365	330	485	1980	2904
13.4	250	370	335	490	2010	2948
13.6	255	375	340	500	2040	2992
13.8	260	380	345	505	2070	3036
14.0	265	385	350	515	2100	3080
14.2	265	390	355	520	2130	3124
14.4	270	395	360	530	2160	3168
14.6	275	400	365	535	2190	3212
14.8	280	405	370	545	2220	3256
15.0	280	415	375	550	2250	3300
15.2	285	420	380	555	2280	3344
15.4	290	425	385	565	2310	3388
15.6	295	430	390	570	2340	3432
15.8	295	435	395	580	2370	3476
16.0	300	440	400	585	2400	3520
16.2	305	445	405	595	2430	3564
16.4	310	450	410	600	2460	3608
16.6	310	455	415	610	2490	3652
16.8	315	460	420	615	2520	3696
17.0	320	470	425	625	2550	3740
17.2	325	475	430	630	2580	3784
17.4	325	480	435	640	2610	3828
17.6	330	485	440	645	2640	3872
17.8	335	490	445	655	2670	3916
18.0	340	495	450	660	2700	3960
18.2	340	500	455	665	2730	4004
18.4	345	505	460	675	2760	4048
18.6	350	510	465	680	2790	4092
18.8	355	515	470	690	2820	4136
19.0	355	525	475	695	2850	4180
19.2	360	530	480	705	2880	4224
19.4	365	535	485	710	2910	4268
19.6	370	540	490	720	2940	4312
19.8	370	545	495	725	2970	4356
20.0	375	550	500	735	3000	4400

* Volumes per feed are rounded to the nearest 5 ml.

Reference Table for Amounts of RUTF to Give Children per Day or Week, Based on 92 g Packets Containing 500 Kcal

Weight of Child (kg)	Packets per Day	Packets per Week
3.5–3.9	1.5	10
4.0–4.4	1.5	11
4.5–4.9	1.75	12
5.0–5.9	2	14
6.0–6.9	2.5	17
7.0–7.9	3	20
8.0–8.9	3.25	23
9.0–9.9	3.75	26
10.0–11.9	4	28
≥ 12.0	5	35

RUTF Key Messages

- RUTF is a food and medicine for very thin children only. It should not be shared. Sick children often do not like to eat. Give small, regular meals of RUTF and encourage the child to eat often (if possible five to six meals per day). Your child should have ___ packets per day.
- RUTF is the only food sick/thin children need to recover during their time in outpatient care (however, breastfeeding should continue).
- For young children, continue to breastfeed regularly.
- Always offer the child plenty of clean water to drink or breast milk while he or she is eating RUTF.
- Wash the child's hands and face with soap before feeding if possible.
- Keep food clean and covered.
- Sick children get cold quickly. Always keep the child covered and warm.
- When a child has diarrhoea, never stop feeding. Continue to feed RUTF and (if applicable) breast milk.

Mean Nutritional Value of RUTF

	For 100 g	Per 92 g sachet
Energy	545 kcal	500 kcal
Protein	13.6 g	12.5 g
Fat	35.7 g	32.86 g
Calcium	300 mg	276 mg
Phosphorus	300 mg	276 mg
Potassium	1,111 mg	1,022 mg
Magnesium	92 mg	84.6 mg
Zinc	14 mg	12.9 mg
Copper	1.8 mg	1.6 mg
Iron	11.5 mg	10.6 mg
Iodine	100 µg	92 µg
Selenium	30 µg	27.6 µg
Sodium	< 290 mg	< 267 mg
Vitamin A	910 µg	840 µg
Vitamin D	16 µg	15 µg
Vitamin E	20 mg	18.4 mg
Vitamin C	53 mg	49 mg
Vitamin B1	0.6 mg	0.55 mg
Vitamin B2	1.8 mg	1.66 mg
Vitamin B6	0.6 mg	0.55 mg
Vitamin B12	1.8 µg	1.7 µg
Vitamin K	21 µg	19.3 µg
Biotin	65 µg	60 µg
Folic acid	210 µg	193 µg
Pantothenic acid	3.1 mg	2.85 mg
Niacin	5.3 mg	4.88 mg

Annex C: Reference Tables for Infants < 6 Months

Reference Table for Maintenance Amounts of F-100 Diluted to Give to an Individual Infant per Feed

Body weight (kg)	F-100 Diluted per feed (assumes 8 feeds per day, given 3-hourly)
≥ 1.2	25 ml per feed
1.3–1.5	30
1.6–1.7	35
1.8–2.1	40
2.2–2.4	45
2.5–2.7	50
2.8–2.9	55
3.0–3.4	60
3.5–3.9	65
4.0–4.4	70

Reference Table for Amounts of F-100 Diluted (Wasting) or F-75 (Bilateral Pitting Oedema) to Give to Non-breastfed Infants in the Stabilisation Phase

Body weight (kg)	F-100 Diluted or F-75 (ml per feed), 8 feeds per day, no breastfeeding (3-hourly feeds)
≤ 1.5	30
1.6–1.8	35
1.9–2.1	40
2.2–2.4	45
2.5–2.7	50
2.8–2.9	55
3.0–3.4	60
3.5–3.9	65
4.0–4.4	70

Reference Table for Amounts of F-100 Diluted to Give to Non-breastfed Infants 0–6 Months or Older Infants Weighing Less Than 3.0 Kg in the Transition Phase

Body weight (kg)	F-100 Diluted (ml per feed), 8 feeds per day, no breastfeeding (3-hourly feeds)
≤ 1.5	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

Reference Table for Amounts of F-100 Diluted to Give to Non-breastfed Infants 0–6 Months or Older Infants Weighing Less Than 3.0 Kg in the Rehabilitation Phase

Body weight (kg)	F-100 Diluted (ml per feed), 6 to 8 feeds per day, no breastfeeding
≤ 1.5	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

Preparation of F-100 Diluted

Red scoop of F-100	Water (ml)	
1	24	
2	28	
3	72	
4	96	
5	120	
6	144	
7	168	
8	192	
9	216	
10	240	
Sachets of F-100	**Water (ml)**	**Volume of F-100 Diluted**
1 sachet	670	700
2 sachets	1,350	1,500

Annex D: Daily Feeds Chart

Date:				Ward:		
Name of Child	F-75 Number of feeds	F-75 Amount/ feed (ml)	F-75 Total (ml)	F-100 Number of feeds	F-100 Amount/ feed (ml)	F-100 Total (ml)
				Infant Formula or F-100 Diluted		
				Number of feeds	Amount/ feed (ml)	Total (ml)
	F-75 (total ml) needed for 24 hours			F-100 (total ml) needed for 24 hours		
	F-75 (total packets/tins*) needed for 24 hours			F-100 (packets/tins*) needed for 24 hours		
	Infant Formula or F-100 for F-100 Diluted preparation (total ml) needed for 24 hours					
	Infant Formula or F-100 for F-100 Diluted preparation (packets/tins*) needed for 24 hours					

** Commonly, commercial therapeutic milk sachets of about 100 g will provide 600 ml of F-75 or F-100 or 775 ml of F-100 Diluted. The new commercial therapeutic milk tin of 400g will provide 2480 ml of F75, 2158 ml of F-100 and 2913 ml of F-100 Diluted.*

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

***Adjust to number of packets that were fully consumed on the previous day.*

Annex E: Breastfeeding Assessment, Support and Monitoring

Breastfeeding Assessment

The complete general assessment must be done by a health worker (doctor, midwives, nurses or other).

Ask questions:	Answers:
How old is the infant (or check card)?	_____ months
Was the infant thin at birth < 1,250 kg? Do you know the weight at birth?	Yes No _____ kg
Was the infant born too early? Do you know how many weeks early?	Yes No _____ weeks
Is the infant a twin?	Yes No
Is the infant sick know?	Yes No
Is the infant often sick or do you have health worries now?	Specify:
Did you come by yourself to the clinic, for what reason?	Specify:
Are you breastfeeding the infant?	Yes No
How many times do you breastfeed?	Per day _____ Per night _____
Do you give other food and beverages?	Yes No
Which food? (porridge thin or thick, soft, other)	Specify
How do you give the other foods? (spoon, finger, other)	Specify:
How many times per day do you give other beverages?	Specify:
Which beverages?	Specify:
How are the beverages given? (bottles, cup, other)	Specify:
How many times per day you give other beverages?	Specify:
Ask for the opinion of the mother: Why did you decide on this type of feeding?	Specify:
Ask the mother whether she is feeling physically / emotionally? Are you worried for the infant or yourself?	Specify:
Does you wish to have more milk or to re-start lactation?	Specify:

Breastfeeding Session Observation

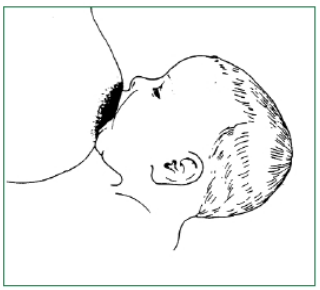
If all answers are positive, it means that the breastfeeding is efficient. If one or more answers are negative, counselling must be given to change practices to increase milk production and make breastfeeding more efficient. The health worker needs to assess the infant and decide whether nutritional support is necessary. In that case, the treatment should be done in the paediatric ward.

Observe:	Answers:
Attachment and position	Y/N Areola, most visible part on top Y/N Mouth largely open Y/N Bottom lip turns outside Y/N Chin near or touching the breast Y/N No pain in breast
Infant sucks well	Y/N Infant takes long and slow mouthful of milk and sometimes takes a break Y/N You can hear and see the infant swallowing
Mother is confident	Y/N The mother appreciates the moment, she is relaxed, she does not change the position of the infant or her breast Y/N It is visible that the mother has a positive relationship with her baby (she is touching the baby, they look at each other, they cuddle gently together)
How the breastfeeding session is ended	Y/N The infant is separating from the breast himself (the mother does not separate him) Y/N The infant looks relaxed, full and happy and is not interested in the breast anymore Y/N The mother keeps the breast accessible for the infant or proposes the other breast

Basic Breastfeeding Support

Good attachment

- Baby's mouth is wide open
- Chin is touching the breast
- Bottom lip turns outside
- Baby sucks, stops, sucks again, etc., slowly and deeply



Good position

- Baby's belly is turned toward the mother
- The head and the mouth are facing the breast
- Ear-shoulder-hip are in straight line

Regular and frequent breastfeeding

- Monitor signs of demand other than the cry of the baby like mouth suction.
- Breastfeed at least 8–12 times per 24 hours: day and night upon demand.
- Let the baby breastfeed until he/she stops by himself.
- Give the other breast in the same breastfeeding session.
- Frequent contact skin to skin with the baby helps to ease breastfeeding.
- BREASTS ARE NEVER 'EMPTY'. When the baby stops by himself, he/she drank between 60 percent–70 percent of the milk available in the breast.

Support

- By family and community
- By doctors, nurses, midwives and other health workers
- Community mobilisation must be strengthened with quality counselling to ensure successful breastfeeding.