

MODULE 6

MONITORING, PROBLEM SOLVING AND REPORTING



Government of Sudan

**Training Course on
Inpatient Management of
Severe Acute Malnutrition**

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

June 2011

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

Illustrations for modules: Susan Kress

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Acronyms and Abbreviations

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

Introduction

Monitoring and reporting (M&R) and problem solving focus on inpatient management of severe acute malnutrition (SAM) of children under 5, as they are the primary target group of community-based management of acute malnutrition (CMAM). Well-informed monitoring data identify in a timely manner aspects of the management of SAM that need improvement. Appropriate action can then be taken to improve individual care, organisation of care and overall quality of care.

Many types of problems may occur in Inpatient Care for the management of SAM with poor appetite and/or medical complications. There may be problems with an individual patient's progress or care, such as failure to gain weight or to respond to treatment for an infection. There may also be problems that affect the entire Inpatient Care, such as problems with staff performance, food preparation or Inpatient Care procedures or equipment. All of these problems require attention to prevent patient deaths.

This module teaches a process for monitoring, identifying and solving problems that may occur in Inpatient Care and reporting—all to support quality improvement (QI).

This process can be used in solving problems with case management of individual patients or problems that may affect the entire performance of Inpatient Care.

Learning Objectives

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

- Using a process to identify and solve problems on case management
- Monitoring and solving problems with an individual patient
- Monitoring overall weight gain in Inpatient Care
- Monitoring patient outcomes (such as recovery, death, defaulting, non-recovery, referral)
- Monitoring case management practices and procedures
- Solving problems
- M&R of performance on Inpatient Care and overall for CMAM

1.0 Using a Process to Identify and Solve Problems on Case Management

1.1 Identifying Problems

Identify problems by monitoring.

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

- A patient's appetite has not returned.
- A patient has failed to gain weight for several days while taking ready-to-use therapeutic food (RUTF) and/or F-100.
- A mother¹ wants to take her child home before the child has reached the discharge weight.
- A child seems to have an unrecognised infection.

By monitoring overall patient outcomes, case-fatality rate and performance indicators, you may identify such problems as:

- The case-fatality rate in Inpatient Care was 15% during the months of June through August.
- Mothers leave with their children before they are discharged.
- Children that stay in Inpatient Care until full recovery have poor weight gain.

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

- IV fluids are given routinely by certain physicians.
- Children are not fed every 2 hours through the night.
- Staff do not consistently wash their hands with soap.
- Combined mineral and vitamin mix (CMV) is not added to locally prepared therapeutic milk recipes.

When a problem is identified, describe it in as much detail as possible.

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



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



SHORT ANSWER EXERCISE

Read each pair of problem descriptions below. Check the problem description that is more detailed and therefore more useful.

1. ____ a. There has been an increase in the number of deaths on the ward.
____ b. Four deaths have occurred at night in the past month.

2. ____ a. Tran is not gaining weight.
____ b. After gaining 10 g/kg/day for 4 days, Tran has stayed the same weight for the last 3 days.

3. ____ a. Dr Perez prescribes a diuretic for severe oedema, but no other physicians do this.
____ b. Diuretics are sometimes prescribed for oedema.

4. ____ a. Weight gain of some children in Inpatient Care is poor.
____ b. Weight gain is poor for most children that are taking adapted home foods instead of F-100 or RUTF.

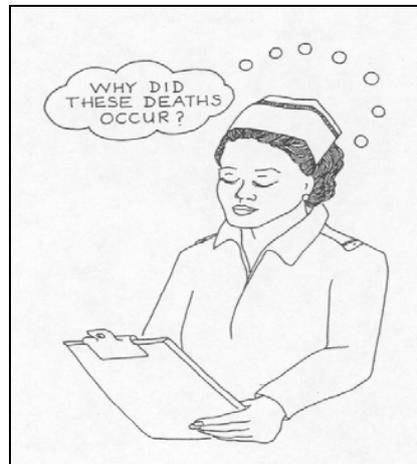
5. ____ a. For the last 3 days, Carla has been eating well in transition, but is not eating RUTF.
____ b. Carla's appetite has returned, is in transition and has not taken the RUTF appetite test.

Compare your answers to this exercise to answers given on page 78 at the end of the module.

1.2 Investigating Causes of Problems

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

Investigation of causes may involve doing laboratory tests for a patient, observing and asking questions of staff, reviewing patient records and/or monitoring food preparation and Inpatient Care procedures.



1.3 Determining Solutions

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

- Remove the cause of the problem (or reduce its effects)
- Be feasible (affordable, practical, realistic)
- Not create another problem

Example of Problem-Solving Process

Problem: Weight gain in Inpatient Care is not as good as it was several months ago. Instead of good weight gain for most children on RUTF and/or F-100 during rehabilitation phase (that



is, 10 g/kg/day or more), the typical weight gain is now less than 10 g/kg/day. The senior nurse decides to investigate by monitoring Inpatient Care procedures and food preparation. Below are some possible causes that she might find, along with an appropriate solution for each.

Possible Causes	Possible Solutions
The type of milk available for making feeds has changed, and the recipes have not been adjusted appropriately.	Adjust the feed recipes appropriately to use the milk that is available. Post the new recipes and teach them to staff.
Staff add too much water when locally preparing the F-100 recipe. They add 1,000 ml instead of just enough water to make 1,000 ml of formula.	Explain the recipe to staff. Be sure that 1,000 ml is clearly marked on mixing containers. Demonstrate how to add water up to the mark.
Measuring scoops have been lost, and staff are estimating amounts of ingredients for feeds.	Obtain new scoops.
There are more children in Inpatient Care, and staff numbers have not increased. Nurses cannot spend as much time feeding each child.	Invest time in teaching mothers to feed and care for the children.

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



1.4 Implementing Solutions

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

To Promote Good Communication when Solving Problems:

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

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



2.0 Monitoring and Solving Problems with an Individual Patient

2.1 Monitoring Individual Patient Progress and Care

Nursing staff should monitor certain signs (such as pulse rate, respiratory rate and temperature) repeatedly during the day, especially during initial treatment. If there are danger signs (such as increasing pulse and respiratory rate, or a sudden drop in temperature), the staff should immediately respond as described in **Module 3, Initial Management**, and **Module 5, Daily Care**. Otherwise, information is simply recorded on the Monitoring Record of the Inpatient Management Record, where it is reviewed by a clinician during rounds.

Clinicians should do a round of the Inpatient Care ward at least once every day. During rounds, a clinician should:

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

During transition and rehabilitation phases (for those who remain in Inpatient Care until full recovery), the clinician should calculate the child's weight gain in g/kg/day, after the child has taken RUTF and/or F-100, and judge whether weight gain is sufficient:

<p>Transition:</p> <p>Good weight gain: 5 g/kg/day. Excess weight gain is not a good sign.</p>
<p>Rehabilitation:</p> <p>Good weight gain: 10 g/kg/day or more</p> <p>Moderate weight gain: 5 up to 10 g/kg/day</p> <p>Poor weight gain: Less than 5 g/kg/day</p>

Note: Daily weight gain is not calculated for children in the stabilisation phase and who are on the F-75 diet, because weight gain is not indicated during this phase. Their condition is stabilising.

Note: Avoid the use of ‘discharge from Inpatient Care’ for children with SAM who after stabilisation leave the hospital and are referred to Outpatient Care and continue their treatment at home. When leaving Inpatient Care, they have not yet ended the treatment.

To Calculate Daily Weight Gain

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

Note: Do this even if the child has lost weight. If the child has lost weight, the result will be negative. Express the difference as grams (kg × 1,000). This is the total amount of weight gained during the day.

$$W2 - W1 = \text{___ kg} \quad \text{___ kg} \times 1,000 = \text{___ grams gained}$$

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

$$\text{Weight gain in grams} \div W1 = \text{___ g/kg/day}$$

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

Note: This calculation is not useful until the child is on F-100 or RUTF, as the child is not expected to gain weight on F-75. In fact, weight may be lost on F-75 due to decreasing oedema.

Remember that this calculation will be most useful if the child is weighed at about the same time each day.

Example

Karim began taking F-100 on day 4 in Inpatient Care. By day 6, he began to gain weight. On day 6, Karim weighed 7.32 kg. On day 7, he weighed 7.4 kg. His weight gain in g/kg/day can be calculated as follows:

a. $7.4 \text{ kg} - 7.32 \text{ kg} = 0.08 \text{ kg} \quad 0.08 \text{ kg} \times 1,000 = 80 \text{ grams gained}$

b. $80 \text{ grams} \div 7.32 = 10.9 \text{ g/kg/day}$

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



SHORT ANSWER EXERCISE

Calculate the daily weight gain for the children described below. Assume that the weights were taken at about the same time each day.

1. Mustapha weighed 7.25 kg on day 10. He weighed 7.30 kg on day 11. What was his weight gain in g/kg/day?
2. Kebba weighed 6.22 kg on day 8. She weighed 6.25 kg on day 9. What was her weight gain in g/kg/day?
3. Galo weighed 7.6 kg on day 9. He weighed 7.5 kg on day 10. What was his weight gain in g/kg/day? (*Note: Since Galo lost weight, the answer will be negative.*)

Compare your answers to this exercise to answers given on page 78 at the end of the module.

2.2 Identifying the Child Who Is Failing to Respond

A child is failing to respond if he or she:

- does not improve initially *or*
- gains weight but then levels off or deteriorates.

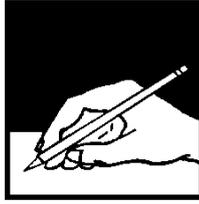
Some criteria for failure to respond are listed below as a guide.

Criteria	Approximate time after admission
Primary failure* to respond to treatment	
Failure to regain appetite	4–7 days
Failure to start to lose oedema	4–7 days
Oedema still present	10 days
Failure to enter rehabilitation phase or referral to Outpatient Care	10 days
Secondary failure** to respond to treatment	
Failure to gain at least 5 g/kg body weight/day after feeding on RUTF/F-100	During Inpatient Care rehabilitation phase: - For 2 successive days - For 3 successive days
Static weight after feeding on RUTF/F-100	

* Primary failure to respond means when the criterion has been noticed since admission.

** Secondary failure to respond means when the child has shown improvement and then later deteriorates as described by the criterion.

See also in the Government of Sudan Interim Manual: Community-Based Management of Severe Acute Malnutrition, Version 1.0 (November 2009) (the CMAM Manual), Annex 18, Failure to Respond to Treatment in Inpatient Care.



Exercise A

In this exercise, you will review information about two cases to determine if they are making progress or if they are failing to respond.

Case 1 – Ceri

Ceri was admitted to Inpatient Care 5 days ago with moderate oedema, a mid-upper arm circumference (MUAC) of 112 mm and a weight-for-height (WFH) z-score < -3 . Parts of her Inpatient Management Record and her 24-Hour Food Intake Chart for day 5 are provided on the next three pages. Ceri's pulse rate has remained at about 90 over the 5 days, and her breathing rate has remained at about 35.

Study the information about Ceri and answer the questions below.

1a. Is Ceri making progress? If so, describe her progress.

1b. Are there problems? If so, describe the problems.

Name: CERI M-F Age: 16 months Date of admission: 1 Feb 2011 Time: 8:30 Hospital ID number: 302 Page 1 of 6

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

SIGNS OF SAM Severe wasting? <input checked="" type="radio"/> Yes <input type="radio"/> No Bilateral Pitting Oedema? 0 + <input checked="" type="radio"/> ++ <input type="radio"/> +++		SIGNS OF SHOCK None Lethargic/unconscious Cold hands Slow capillary refill (> 3 seconds) Weak or fast pulse If lethargic or unconscious*, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids: Amount IV fluids per hour: 15 ml x _____ kg (child's wt) = _____ ml																																																																																																																									
Dermatitis? 0 <input checked="" type="radio"/> + <input type="radio"/> ++ <input type="radio"/> +++ (raw skin, fissures) Weight (kg): <u>6.6</u> Height/length (cm): <u>73</u> WFH z-score: <u>-3</u> MUAC (mm): <u>112</u>		<table border="1"> <tr> <td></td> <td>Start:</td> <td>Monitor every 10 minutes</td> <td>**2nd hr</td> <td>Monitor every 10 minutes</td> </tr> <tr> <td>Time</td> <td></td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Resp. rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Pulse rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> </table>			Start:	Monitor every 10 minutes	**2 nd hr	Monitor every 10 minutes	Time			**		Resp. rate			**		Pulse rate			**																																																																																																					
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TEMPERATURE: <u>36.0°C</u> (axillary) rectal If axillary < 35°C or rectal < 35.5°C actively warm child. Check temperature every 30 minutes.		* In case of suspected hypernatraemic dehydration, see Operational Guide or CMAM Manual Appendix, page 183. ** If respiratory and pulse rates are slower after 1 hour, repeat same amount IV fluids for second hour; then alternate ReSoMal and F-75 for up to 10 hours as in right section of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See 'Haemoglobin' section at left.) Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood.																																																																																																																									
BLOOD GLUCOSE (mmol/L): <u>4</u> If no test available, treat for hypoglycaemia. If < 3 mmol/L and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG): Yes No If < 3 mmol/L and lethargic, unconscious or convulsing, give sterile 10% glucose IV: 5 ml x _____ kg (child's weight) = _____ ml. Then give 50 ml bolus NG. Time glucose given: Oral NG IV		DIARRHOEA Watery diarrhoea? <input checked="" type="radio"/> Yes <input type="radio"/> No Blood in stool? <input checked="" type="radio"/> Yes <input type="radio"/> No Vomiting? <input checked="" type="radio"/> Yes <input type="radio"/> No Number of days with diarrhoea: _____																																																																																																																									
HAEMOGLOBIN (Hb) (g/dl): <u>9</u> or Packed Cell Vol (PCV): _____ Blood type: _____ If Hb < 4 g/dl (or Hb 4-6 g/dl AND respiratory distress), transfuse 10 ml/kg whole fresh blood (or 5-7 ml/kg packed cells) slowly over 3 hours. Amount: _____ Time started: _____ Ended: _____		If diarrhoea, circle signs present: Skin pinch goes back slowly Lethargic <input checked="" type="radio"/> Dry mouth/tongue <input checked="" type="radio"/> Thirsty <input checked="" type="radio"/> Restless/irritable <input checked="" type="radio"/> Sunken eyes <input checked="" type="radio"/> No tears <input checked="" type="radio"/>																																																																																																																									
EYE SIGNS None <input checked="" type="radio"/> Left <input checked="" type="radio"/> Right Bitot's spots Pus or inflammation <input checked="" type="radio"/> Corneal clouding <input checked="" type="radio"/> Corneal ulceration If ulceration, give vitamin A and atropine immediately. Record on Daily Care page. If no ulceration, give vitamin A preventive dose on week 4 or upon discharge.		If diarrhoea and/or vomiting, give ReSoMal orally*. Every 30 minutes for first 2 hours, monitor and give:** 5 ml x <u>6.6</u> kg (child's wt) = <u>33</u> ml ReSoMal For up to 10 hours, give ReSoMal and F-75 orally* in alternate hours. Monitor every hour. Amount of ReSoMal to offer**: 5 to 10 ml x <u>6.6</u> kg (child's wt) = <u>33</u> to <u>66</u> ml ReSoMal																																																																																																																									
ORAL DOSES VITAMIN A < 6 months* 50,000 IU *Treatment dose on days 1, 2, 15 6-12 months* ** 100,000 IU **Preventive dose on week 4 or upon discharge > 12 months* ** 200,000 IU		<table border="1"> <tr> <td>Time</td> <td>Start</td> <td>9:30</td> <td>10:00</td> <td>10:30</td> <td>11:00</td> <td>12:00</td> <td>13:00</td> <td>14:00</td> <td>15:00</td> <td>16:00</td> <td>17:00</td> <td>18:00</td> <td>19:00</td> <td>20:00</td> </tr> <tr> <td>Resp. rate</td> <td></td> <td>38</td> <td>36</td> <td>36</td> <td>35</td> </tr> <tr> <td>Pulse rate</td> <td></td> <td>110</td> <td>100</td> <td>100</td> <td>90</td> </tr> <tr> <td>Passed urine? Y/N</td> <td></td> <td></td> <td>N</td> </tr> <tr> <td>Number stools</td> <td></td> <td></td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Number vomits</td> <td></td> <td></td> <td>0</td> </tr> <tr> <td>Hydration signs</td> <td></td> </tr> <tr> <td>Amount taken (ml)</td> <td></td> <td></td> <td>33</td> <td>33</td> <td>33</td> <td>33</td> <td>45</td> <td>F-75</td> <td>45</td> <td>F-75</td> <td>40</td> <td>F-75</td> <td>35</td> <td>F-75</td> </tr> </table>		Time	Start	9:30	10:00	10:30	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	Resp. rate		38	36	36	35	35	35	35	35	35	35	35	35	35	Pulse rate		110	100	100	90	90	90	90	90	90	90	90	90	90	Passed urine? Y/N			N	N	N	N	N	N	N	N	N	N	N	N	Number stools			1	1	0	0	1	0	0	1	0	0	0	0	Number vomits			0	0	0	0	0	0	0	0	0	0	0	0	Hydration signs															Amount taken (ml)			33	33	33	33	45	F-75	45	F-75	40	F-75	35	F-75
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MEASLES Yes <input checked="" type="radio"/> No <input type="radio"/> Vaccination upon admission: Yes <input type="radio"/> No <input type="radio"/> (Record on Outcome page)		* Give ReSoMal orally (or, if child is unconscious or too ill to take the ReSoMal orally, give by NGT). ** Stop ReSoMal if signs of hydration: Passing urine, moist tongue, making saliva, not thirsty. Stop ReSoMal if any sign of over-hydration: Increasing pulse and resp. rates, engorging jugular veins, increasing oedema, puffing of eyelids.																																																																																																																									
FEEDING Begin feeding with F-75 as soon as possible. If child is rehydrated, reweigh before determining amount to feed. New weight: <u>6.6</u> kg. Amount for 2-hourly feedings: <u>15</u> ml F-75* Time first fed: <u>12:00</u> * If hypoglycaemic, feed 1/3 of this amount every half hour for first 2 hours; continue until blood glucose reaches 3 mmol/L. Record all feeds on 24-Hour Food Intake Chart page.																																																																																																																											
ANTIBIOTICS (Drug/Route) <u>AMOXICILLIN - CLAVULINIC ACID</u> <u>ORAL</u>		Dose/Frequency/Duration <u>15-30 mg/kg/day for 5 days</u> Time of 1 st Dose <u>9:00</u>																																																																																																																									
MALARIA TEST (Type/Date/Outcome):		Antimalarial: _____ Dose/Frequency/Duration _____ Time of 1 st Dose _____																																																																																																																									
HIV TEST (Type/Date/Outcome):		If + HIV test, give cotrimoxazole: _____																																																																																																																									

Name: CERI

M-F Age: 16 months

Date of admission: 1 Feb 2011

Time: 8:30

Hospital ID number: 302

DAILY CARE

	Week 1					Week 2					Week 3										
DAYS IN HOSPITAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Date	1/2	2/2	3/2	4/2	5/2																
Daily weight (kg)	6.6	6.4	6.5	6.5	6.5																
Weight gain (g/kg)	Calculate when on RUTF or F-100																				
Bilateral pitting oedema 0 + ++ +++	++	++	++	++	++																
Diarrhoea (D) or Vomit (V)	D	D	D	D	D																
FEED PLAN:																					
Type feed	F75	F75	F75	F75	F75																
# daily feeds	10	12	12	8	8																
Volume to give per feed	70	70	70	110	110																
Total volume taken (ml)	700	780	800	700	610																
NGT Y N	N	N	N	N	N																
Breastfeeding Y N	Y	Y	Y	Y	Y																
Appetite test with RUTF F failed P passed	-	-	-	-	-																
ANTIBIOTICS	List prescribed antibiotics in left column. Allow one row for each daily dose. Draw a box around days/times that each drug should be given. Sign when given.																				
Amoxicillin	9:00	PS	PS	PS	PS																
Clavulanic Acid	16:00	MC	MC	MC	MC																
	24:00	AD	AD	AD	AD																
ANTIMALARIAL (Note type of drug)																					
FOLIC ACID (Single dose)	9:00	5 mg																			
VITAMIN A (Treatment dose on Day 1, 2, 15; shade Days 3-14. Preventive dose after week 4 + oedema free)		PS	PS	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
ANTHELMINTHIC (Give on week 2 presumptive dose, unless severe infestation)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
IRON Give 3mg/kg/day, 2x daily, after 2 days on F-100. Do not give when on RUTF. Give after malaria treatment.																					
EYE INFECTIONS	9:00	PS	PS	PS	PS	PS															
Tetracycline ointment 2x daily or Chloramphenicol 1 drop 4x daily	15:00	PS	PS	PS	PS	PS															
	21:00	MC	MC	MC	MC	MC															
	3:00	MC	MC	MC	MC	MC															
Corneal clouding and corneal ulceration: As above, plus atropine 1 drop 3x daily	9:00	PS	PS	PS	PS	PS															
	15:00	PS	PS	PS	PS	PS															
	21:00	MC	MC	MC	MC	MC															
Dermatosis 0 + ++ +++		+	+	+	+	+															
Ear, mouth or throat problems																					
Bathing, 1% permanganate		SP	JP	-	RV																

Case 2 – Lennox

A boy, Lennox, was admitted to Inpatient Care 10 days ago with mild oedema (both feet), dysentery, a fever, a MUAC of 112 mm and a WFH z-score < -3 . Lennox was given amoxicillin-clavulanic acid for 5 days. After 5 days, his dysentery was gone, but he was still sickly and had fever. He also had a deep, persistent cough and some difficulty breathing. The physician suspected possible pneumonia and decided to add gentamicin, which has been given in addition for the next 5 days.

Study parts of Lennox’s Inpatient Management Record and his most recent 24-Hour Food Intake Chart, which are given on the next six pages. Then answer the questions below.

2a. What is Lennox’s weight gain in g/kg/day from day 10 to day 11?
(Enter this on his Inpatient Management Record.)

2b. Is Lennox making progress? If so, describe his progress.

2c. Are there problems? If so, describe the problems.

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

Name: LENNOY (M-F) Age: 2 YRS Date of admission: 2 Nov 2010 Time: 8:30 Hospital ID number: 561 Page 1 of 6

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

SIGNS OF SAM Severe wasting? <input checked="" type="radio"/> Yes <input type="radio"/> No Bilateral Pitting Oedema? 0 <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> ++ <input type="radio"/> +++ Dermatitis? 0 <input checked="" type="radio"/> <input type="radio"/> ++ <input type="radio"/> +++ (raw skin, fissures) Weight (kg): <u>7.9</u> Height / length (cm): <u>77</u> WFH z-score: <u>-3</u> MUAC (mm): <u>112</u>		SIGNS OF SHOCK <input checked="" type="radio"/> None <input type="radio"/> Lethargic/unconscious <input type="radio"/> Cold hands <input type="radio"/> Slow capillary refill (> 3 seconds) <input type="radio"/> Weak or fast pulse If lethargic or unconscious*, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids: Amount IV fluids per hour: 15 ml x _____ kg (child's wt) = _____ ml																																																																																																																	
TEMPERATURE: <u>39°C</u> axillary / <u>rectal</u> If axillary < 35°C or rectal < 35.5°C actively warm child. Check temperature every 30 minutes.		<table border="1"> <tr> <td></td> <td>Start:</td> <td>Monitor every 10 minutes</td> <td>**2nd hr</td> <td>Monitor every 10 minutes</td> </tr> <tr> <td>Time</td> <td></td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Resp. rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Pulse rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> </table>			Start:	Monitor every 10 minutes	**2 nd hr	Monitor every 10 minutes	Time			**		Resp. rate			**		Pulse rate			**																																																																																													
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Resp. rate			**																																																																																																																
Pulse rate			**																																																																																																																
BLOOD GLUCOSE (mmol/L): _____ If no test available, treat for hypoglycaemia. If < 3 mmol/L and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG): Yes No If < 3 mmol/L and lethargic, unconscious or convulsing, give sterile 10% glucose IV: 5 ml x _____ kg (child's weight) = _____ ml. Then give 50 ml bolus NG. Time glucose given: _____ Oral NG IV		* In case of suspected hypernatraemic dehydration, see Operational Guide or CMAM Manual Appendix, page 183. ** If respiratory and pulse rates are slower after 1 hour, repeat same amount IV fluids for second hour; then alternate ReSoMal and F-75 for up to 10 hours as in right section of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See 'Haemoglobin' section at left.) Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood.																																																																																																																	
HAEMOGLOBIN (Hb) (g/dl): _____ or Packed Cell Vol (PCV): _____ Blood type: _____ If Hb < 4 g/dl (or Hb 4-6 g/dl AND respiratory distress), transfuse 10 ml/kg whole fresh blood (or 5-7 ml/kg packed cells) slowly over 3 hours. Amount: _____ Time started: _____ Ended: _____		DIARRHOEA Watery diarrhoea? <input checked="" type="radio"/> Yes <input type="radio"/> No Blood in stool? <input checked="" type="radio"/> Yes <input type="radio"/> No Vomiting? Yes <input type="radio"/> No <input checked="" type="radio"/> Number of days with diarrhoea: _____ If diarrhoea, circle signs present: Skin pinch goes back slowly <input checked="" type="checkbox"/> Lethargic <input checked="" type="checkbox"/> Restless/irritable <input checked="" type="checkbox"/> Dry mouth/tongue <input checked="" type="checkbox"/> Sunken eyes <input checked="" type="checkbox"/> No tears <input checked="" type="checkbox"/>																																																																																																																	
EYE SIGNS <input checked="" type="radio"/> None <input type="radio"/> Left <input type="radio"/> Right Bitot's spots _____ Pus or Inflammation _____ Corneal clouding _____ Corneal ulceration _____ If ulceration, give vitamin A and atropine immediately. Record on Daily Care page. If no ulceration, give vitamin A preventive dose on week 4 or upon discharge.		If diarrhoea and/or vomiting, give ReSoMal orally*. Every 30 minutes for first 2 hours, monitor and give: 5 ml x <u>7.9</u> kg (child's wt) = <u>39.5</u> ml ReSoMal For up to 10 hours, give ReSoMal and F-75 orally* in alternate hours. Monitor every hour. Amount of ReSoMal to offer**: 5 to 10 ml x <u>7.9</u> kg (child's wt) = <u>39.5</u> to <u>79</u> ml ReSoMal																																																																																																																	
ORAL DOSES VITAMIN A < 6 months* _____ 50,000 IU *Treatment dose on days 1, 2, 15 6-12 months* ** _____ 100,000 IU **Preventive dose on week 4 or upon discharge > 12 months* ** _____ 200,000 IU		<table border="1"> <tr> <td>Time</td> <td>Start</td> <td>9:30</td> <td>10:30</td> <td>11:30</td> <td>12:30</td> <td>13:30</td> <td>14:30</td> <td>15:30</td> <td>16:30</td> <td>17:30</td> <td>18:30</td> <td>19:30</td> <td>20:00</td> </tr> <tr> <td>Resp. rate</td> <td></td> <td>30</td> </tr> <tr> <td>Pulse rate</td> <td></td> <td>95</td> </tr> <tr> <td>Passed urine? Y/N</td> <td></td> <td>N</td> <td>N</td> <td>N</td> <td>N</td> <td>N</td> <td>N</td> <td>Y</td> <td>N</td> <td>N</td> <td>N</td> <td>Y</td> <td>N</td> </tr> <tr> <td>Number stools</td> <td></td> <td>2</td> <td>1</td> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>Number vomits</td> <td></td> <td>0</td> </tr> <tr> <td>Hydration signs</td> <td></td> </tr> <tr> <td>Amount taken (ml)</td> <td></td> <td>39</td> <td>39</td> <td>39</td> <td>39</td> <td>76</td> <td>F-75</td> <td>79</td> <td>F-75</td> <td>79</td> <td>F-75</td> <td>79</td> <td>F-75</td> </tr> </table>		Time	Start	9:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30	17:30	18:30	19:30	20:00	Resp. rate		30	30	30	30	30	30	30	30	30	30	30	30	Pulse rate		95	95	95	95	95	95	95	95	95	95	95	95	Passed urine? Y/N		N	N	N	N	N	N	Y	N	N	N	Y	N	Number stools		2	1	0	1	1	0	1	0	0	0	1	0	Number vomits		0	0	0	0	0	0	0	0	0	0	0	0	Hydration signs														Amount taken (ml)		39	39	39	39	76	F-75	79	F-75	79	F-75	79	F-75
Time	Start	9:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30	17:30	18:30	19:30	20:00																																																																																																						
Resp. rate		30	30	30	30	30	30	30	30	30	30	30	30																																																																																																						
Pulse rate		95	95	95	95	95	95	95	95	95	95	95	95																																																																																																						
Passed urine? Y/N		N	N	N	N	N	N	Y	N	N	N	Y	N																																																																																																						
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Amount taken (ml)		39	39	39	39	76	F-75	79	F-75	79	F-75	79	F-75																																																																																																						
MEASLES Yes <input checked="" type="radio"/> No <input type="radio"/> Vaccination upon admission: Yes <input type="radio"/> No <input type="radio"/> (Record on Outcome page)		* Give ReSoMal orally (or, if child is unconscious or too ill to take the ReSoMal orally, give by NGT). ** Stop ReSoMal if signs of hydration: Passing urine, moist tongue, making saliva, not thirsty. Stop ReSoMal if any sign of over-hydration: Increasing pulse and resp. rates, engorging jugular veins, increasing oedema, puffing of eyelids.																																																																																																																	
FEEDING Begin feeding with F-75 as soon as possible. If child is rehydrated, reweigh before determining amount to feed. New weight: <u>8</u> kg. Amount for 2-hourly feedings: <u>90</u> ml F-75* Time first fed: <u>12:00</u> * If hypoglycaemic, feed 1/2 of this amount every half hour for first 2 hours; continue until blood glucose reaches 3 mmol/L. Record all feeds on 24-Hour Food Intake Chart page.		ANTIBIOTICS (Drug/Route) _____ Dose/Frequency/Duration _____ Time of 1 st Dose _____ <u>AMOXICILLIN CLAVULANIC ACID</u> <u>15-30 mg / day 3 times A day:</u> <u>9:00</u> <u>ORAL</u> <u>50 mg / dose</u>																																																																																																																	
MALARIA TEST (Type/Date/Outcome): _____ Antimalarial: _____ Dose/Frequency/Duration _____ Time of 1 st Dose _____		HIV TEST (Type/Date/Outcome): _____ If + HIV test, give cotrimoxazole: _____																																																																																																																	

Name: LENNOX

Sex: M F

Age: 2yrs

Date of admission: 2 Nov 2010

Time: 8:30

Hospital ID number: 561

WEIGHT CHART

Weight on admission: 7.9 kg

MUAC on admission: 112 mm

Height/length on admission: 77 cm

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

Desired weight at discharge based on 15% weight change:

9.1 kg

Desired weight at discharge based on weight for height -1 z-score:

9.0 kg

DESIRE DISCHARGE WEIGHT

Weight at referral to Outpatient Care:

kg

MUAC at referral to Outpatient Care:

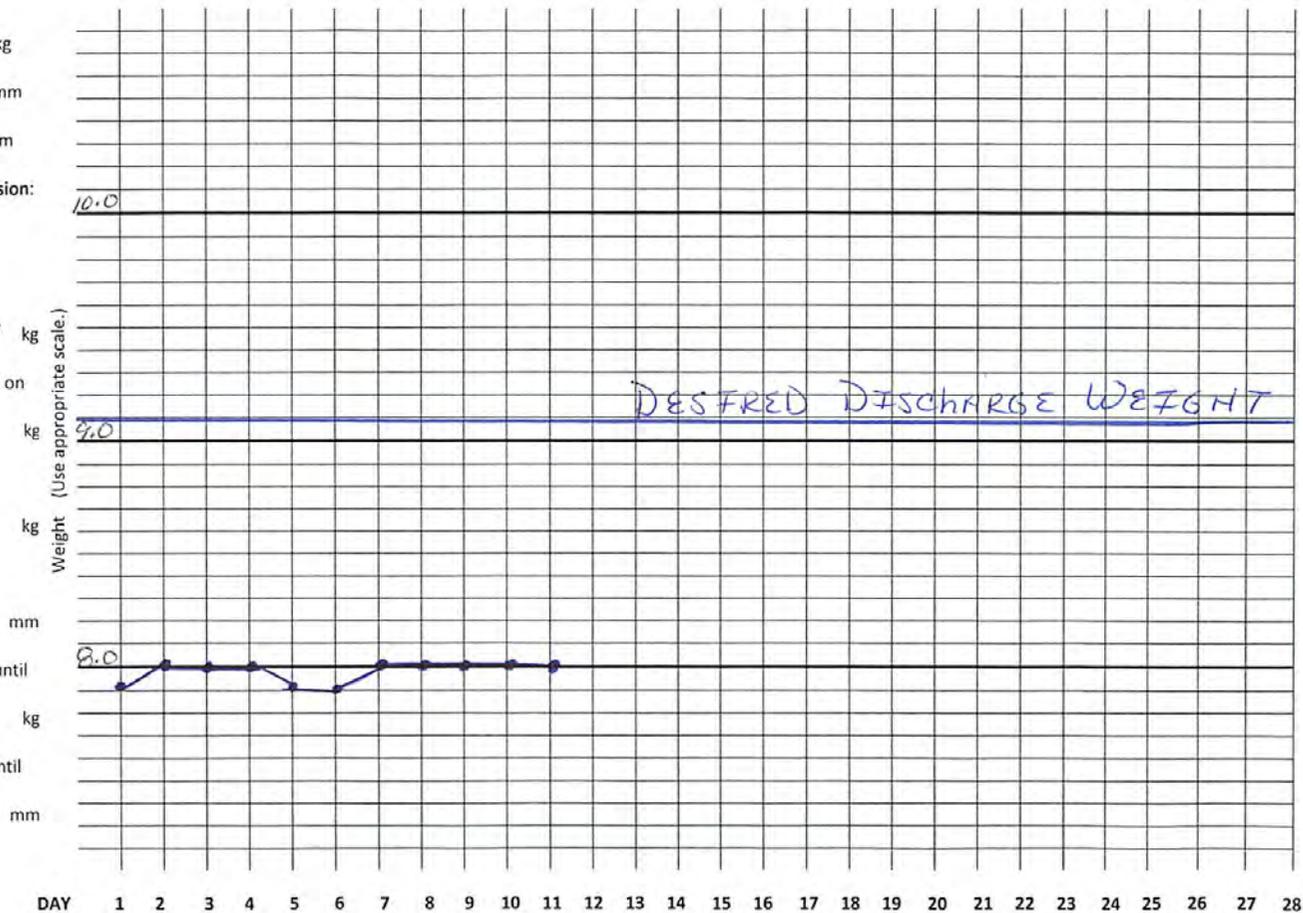
mm

Weight at discharge if treatment until full recovery in Inpatient Care:

kg

MUAC at discharge if treatment until full recovery in Inpatient Care:

mm



2.3 Determining Causes of Failure to Respond

The causes of a child's failure to respond may be related to procedures, staff, equipment or the environment throughout Inpatient Care, or they may be related only to the individual child. If many children are failing to respond, look for causes that affect the entire Inpatient Care, such as incorrect feeding practices or poor hygiene; these types of causes are discussed in Section 5.0. If your investigation is focused on one child, consider such possible causes as the following:

- Insufficient food given
 - Has the feeding plan been adjusted as the child gains weight?
 - Is the correct feed being given?
 - Is the correct amount offered at the required times?
 - Is the child being fed adequately at night?
 - Is the child being held and encouraged to eat?
 - Are leftovers recorded so the child's recorded intake is accurate?
 - Has the preparation and the quality of the therapeutic milk been checked?
- Vitamin or mineral deficiency
 - Is CMV added to the child's food each day?
- Insufficient attention given to child
 - Do staff pay less attention to this child for some reason (for example, because they believe he or she is 'beyond help')?
 - Is the mother present to assist in feeding and care of the child?
- **Rumination.** The child regurgitates food from the stomach to the mouth, then vomits part of it and swallows the rest. This usually happens when the child is not observed.
 - Is the child eating well but failing to gain weight?
 - Does the child smell of vomit or have vomit-stained clothes or bedding?
 - Does the child seem unusually alert and suspicious?
 - Does the child make stereotyped chewing movements?
- **Unrecognised infection.** Infections most commonly overlooked include pneumonia, urinary tract infection, ear infection and tuberculosis (TB). Others include malaria, dengue, viral hepatitis B and HIV infection. See CMAM Manual, Annex 8, Drug Dosages of SAM Treatment for Children under 5, and Appendix for more information on identifying possible infections and treating them.
- **Serious underlying disease** (such as congenital abnormalities, cancer, immunological diseases)

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

2.4 Identifying and Implementing Solutions for the Individual Child

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

Case 2 – Lennox

You remember that Lennox was failing to respond on day 10. He had a deep, persistent cough and some difficulty breathing. The physician had been treating Lennox for pneumonia with benzylpenicillin, which had been given for 5 days.

Since Lennox was not improving on benzylpenicillin, the physician did a complete examination. He obtained a chest x-ray, which showed a shadow on the lungs. The physician also learned that a relative who lives in Lennox’s household has TB.

2a. Lennox’s Inpatient Management Record on page 20 shows no weight gain. Has Lennox been taking enough F-100?

2b. What is a possible cause of Lennox’s failure to respond?

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

3.0 Monitoring Overall Weight Gain in Inpatient Care Rehabilitation Phase

Note: This procedure applies only for the few children that remain in Inpatient Care until full recovery.

Section 2.0 discussed problem solving for individual patients. The remaining sections discuss identifying and solving problems for Inpatient Care.

3.1 Compiling Data on Weight Gain in Inpatient Care Rehabilitation Phase

Once a month, review records for Inpatient Care for a given week (for example, the first week of the month) and compile data on a Weight Gain Tally Sheet for Inpatient Care Rehabilitation Phase. (See example below. There is a blank tally sheet in the CMAM Site Tally Sheet for Children 6–59 Months with SAM Job Aid.)

To complete the tally sheet:

- Identify the children that were on RUTF and/or F-100 for the entire week. (Only children on RUTF and/or F-100 are expected to gain weight.)
- Calculate the average daily weight gain for each of these children:
 - Add the daily weight gains recorded on the child’s Inpatient Management Record for the 7 days of the week being reviewed. Divide the total by 7.
- Determine if the child’s average daily weight gain was poor, moderate or good during that week.
- Record the child’s name in the appropriate column of the tally sheet.
- When the process is complete for each child on RUTF and/or F-100, total the columns.
- Determine what percentage of the children on RUTF and/or F-100 had poor, moderate or good weight gain. To do this:
 - Divide the total in each column by the total number of children on RUTF and/or F-100. Express as a percentage.

Compare the results to tally sheets from similar weeks in other months. Use the tally sheets as a basis for discussion and problem solving with staff. If you cannot complete this review process every month, try to do it at least four times a year.

Example Weight Gain Tally Sheet for Inpatient Care Rehabilitation Phase

Week of: 9/2/00	Good weight gain (≥ 10 g/kg/day)	Moderate weight gain (5 up to 10 g/kg/day)	Poor weight gain (< 5 g/kg/day)
Number of children on RUTF and/or F-100 for entire week: 12	Jalika Isatou Nancy Amie	Ebrima Babu Fatemata Sainey Galo Momodou	Fatou Abdouraham
Total number of children	4	6	2
% of children on RUTF and/or F-100 in Inpatient Care	33%	50%	17%

3.2 Determining if There Is a Problem with Weight Gain in Inpatient Care Rehabilitation Phase

If the weight gain of 10% or more of the children on RUTF or F-100 is poor, there is a problem that must be investigated. If there is a negative change as compared to previous months, there may also be a problem. For example, if the percentage of children in the ‘moderate’ column increases and the percentage in the ‘excellent’ column decreases, investigate the reasons for this change.

3.3 Stating the Problem Completely and Specifically

Describe the problem as completely and specifically as possible. Determine if the children that are not gaining weight adequately have certain things in common. For example:

- How long have they been in Inpatient Care?
- What are their ages?
- Are they located in a certain area of the ward?
- Are they cared for by certain staff?
- Are they receiving food or drinks that interfere with prescribed feeds?

You may think of other questions to ask to determine common factors. If there are no apparent common factors, then assume that the problem is throughout the ward.

After determining common factors, state the problem specifically, for example, ‘Four out of the five children whose mothers are not staying in the ward have poor weight gain’. If the problem is occurring throughout Inpatient Care, say so, for example, ‘25% of children in Inpatient Care have poor weight gain’.

Stating the problem specifically will help you look for the causes. Investigating causes by monitoring Inpatient Care procedures, food preparation, etc. will be discussed in Section 5.0.

Note: Average daily weight gain can be calculated on a regular basis (e.g., quarterly) on a sample of Inpatient Management Records of children with SAM who ended treatment successfully in the Inpatient Care Rehabilitation Phase (discharged cured [fully recovered] of severe wasting and oedema cases separately). (See [page 78](#) of the CMAM Manual, Section 7, Monitoring and Reporting.)



Exercise C

In this exercise, you will review information on children that have been on RUTF and/or F-100 for the past 7 days. They have remained in Inpatient Care until fully recovered. You will use a tally sheet to determine whether there is a problem with weight gain in Inpatient Care. There will then be a group discussion.

Information for the Exercise

Twenty children on the ward have been on RUTF and/or F-100 for the past 7 days. For 17 of these children, the average daily weight gain for the past 7 days has been calculated. These children's names have already been entered on the tally sheet below.

The Inpatient Management Record excerpts for three children are given on the next page. Follow the instructions on the next page to complete the tally sheet. Check your tally sheet with a facilitator if you wish. Then answer the questions on page 30.

Weight Gain Tally Sheet for Inpatient Care Rehabilitation Phase

Week of: 13/4/00	Good weight gain (≥ 10 g/kg/day)	Moderate weight gain (5 up to 10 g/kg/day)	Poor weight gain (< 5 g/kg/day)
Number of children on RUTF and/or F-100 for entire week: 20	Prakash Winston Sulayman Fatem Karamo Simeh	Lamin Rohey Jainaba Tako Aramatoulie Ala Isaidu Kaddy	Sanu Marianna Lalita
Total number of children			
% of children on RUTF and/or F-100 in Inpatient Care			

Instructions to Complete Tally Sheet

For each child in rehabilitation phase whose Inpatient Management Record excerpt is given below:

1. Calculate the average daily weight gain in the Rehabilitation Phase in the week of April 13–19, 2010:
 - Add the daily weight gains recorded on the child’s Inpatient Management Record for the 7 days of the week being reviewed (dates: 13/4/2010–19/4/2010). Divide the total by 7.
2. Determine if the child’s average daily weight gain was poor, moderate or good during that week.
3. Add the child’s name to the appropriate column of the tally sheet.

When you have added all three children to the tally sheet:

4. Total the columns on the tally sheet.
5. Determine what percentage of the children on RUTF and/or F-100 had poor, moderate or good weight gain. To do this:
 - Divide the total in each column by the total children on RUTF and/or F-100.
 - Express the result as a percentage.

Inpatient Management Record Excerpt 1 – Aruni (Aruni started rehabilitation on April 13)

DAYS IN HOSPITAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date	8/4	9/4	10/4	11/4	12/4	13/4	14/4	15/4	16/4	17/4	18/4	19/4			
Daily weight (kg)	4.6	4.5	4.55	4.6	4.63	4.65	4.7	4.8	4.85	4.9	5.0	5.0			
Weight gain (g/kg)	Calculate when on RUTF and/or F-100				6.5	4.3	10.7	21.3	10.4	10.3	20.4	0.0			

Inpatient Management Record Excerpt 2 – Kodeh (Kodeh started rehabilitation on April 13)

DAYS IN HOSPITAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date	6/4	7/4	8/4	9/4	10/4	11/4	12/4	13/4	14/4	15/4	16/4	17/4	18/4	19/4	
Daily weight (kg)	5.9	5.8	5.9	5.9	6.0	6.0	6.0	6.0	6.10	6.15	6.10	6.20	6.25	6.20	
Weight gain (g/kg)	Calculate when on RUTF and/or F-100				–	–	–	0.0	16.0	8.2	–8.1	16.4	8.1	–8.0	

Inpatient Management Record Excerpt 3 – Sohna (Sohna started rehabilitation on April 12)

DAYS IN HOSPITAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date	7/4	8/4	9/4	10/4	11/4	12/4	13/4	14/4	15/4	16/4	17/4	18/4	19/4		
Daily weight (kg)	7.7	7.7	7.7	7.8	7.8	8.0	8.1	8.15	8.22	8.2	8.3	8.3	8.35		
Weight gain (g/kg)	Calculate when on RUTF and/or F-100				–	25.6	12.5	6.17	8.6	–2.4	12.2	0.0	6.0		

Questions to Answer and Discuss

1. Does the tally sheet show that there is a problem with weight gain in Inpatient Care?

2. The senior nurse decided to look for common factors among the children that had poor weight gain. She found the following information:
 - Sanu – Arrived 21 days ago, age 2 years, orphan (no mother at the hospital), cared for by Nurse Rafia
 - Marianna – Arrived 18 days ago, age 19 months, no mother at hospital (aunt comes to visit), cared for by Nurse Anjuli
 - Lalita – Arrived 12 days ago, age 22 months, was on IV at admission and then NGT, but now takes feeds orally, moved yesterday to Nurse Rafia’s area, mother is present
 - Kodeh – Arrived 14 days ago, age 18 months, orphan (parents died and a neighbour left Kodeh at hospital), cared for by Nurse Amalia

What common factor(s), if any, are there among these children?

3. State the problem as specifically as possible using the information from the tally sheet and the information gathered by the senior nurse.

4. Do the common factors among the children with poor weight gain suggest a possible cause of the problem? If so, what is a possible cause? What further investigation may need to be done to investigate causes?

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

4.0 Monitoring Patient Outcomes

This section reports only on children 6–59 months. For the other age groups, i.e., infants < 6 months and children 5 and over, outcomes are not included because there is no good evidence and/or consensus on treatment and monitoring of outcomes.

4.1 Recording Each Patient’s Outcome on the Inpatient Management Record

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

Successful Outcomes

- Referred to Outpatient Care
 - Child whose condition stabilised is referred to Outpatient Care to continue treatment as soon as his or her appetite has returned and:
 - child is eating more than 75% of daily prescription of RUTF and starts to gain weight
 - medical complication is resolving
 - bilateral pitting oedema is decreasing
 - child is clinically well and alert
- Cured
 - Child who stayed in Inpatient Care until full recovery for special reasons:
 - child meets discharge criteria of 15% target weight gain and does not have bilateral pitting oedema for 2 consecutive weeks

(These children will be the special cases that were not referred to Outpatient Care earlier and therefore had to complete treatment in the Inpatient Care.)

Adverse Outcomes

- Defaulted (Early Discharge against Advice)
 - Child who is absent on the third consecutive day
 - Child’s outcome is not known (the child’s condition or outcome should be investigated by a home visit; the child could have died)
- Non-Recovered
 - Child who remained in Inpatient Care but does not reach discharge criteria after 2 months (8 weeks) in treatment; medical investigation for non-response to treatment should have been done previously
- Death
 - Child who died while in Inpatient Care; the following information should be noted in case of death:
 - apparent cause of death
 - number of days after admission the child died
 - time of day or night that death occurred
 - other relevant circumstances

Example from Inpatient Management Record

PATIENT OUTCOME	
Referral to Outpatient Care Site:	Date:
Comment:	
In case of treatment in Inpatient Care until full recovery and/or discharge , indicate <i>OUTCOME</i> :	
Date:	
Discharge based on 15% weight gain (Discharged cured)	Discharge weight \geq 15% weight gain: Yes No
Early departure or defaulting after 2 days' absence (Discharged defaulted)	MUAC: _____ mm
Non-recovery after 2 months in treatment (Discharged non-recovered)	Weight: _____ kg Height: _____ cm
Death (Discharged died)	Number of days after admission (circle): < 1 1-3 4-7 > 7
	Time of death: Day Night
	Apparent cause(s) of death: Had child received IV fluids? Yes No

4.2 Tagging Adverse Outcomes on the Inpatient Management Record

Use a coloured tag or some other means to indicate records with adverse outcomes (that is, death, defaulting, non-recovery), for referrals to Outpatient Care and for discharged cured. The tag will make these records easy to find in the files when you are doing a review.

4.3 Reviewing Patient Records for Common Factors in Adverse Outcomes

Periodically, and whenever there is a death, review tagged records. Note common factors that would suggest areas where case management practices or ward procedures may need to be carefully examined and improved.

For example, note whether recent deaths have occurred within the first 2 days of admission or later. Deaths that occur within the first 2 days are often due to hypoglycaemia, over-hydration, unrecognised or mismanaged septic shock or other serious infection. Deaths that occur after 2 days are often due to heart failure; check to see if deaths are occurring during transition to RUTF and/or F-100.

An increase in deaths occurring during the night or early morning, or on weekends, suggests that care of children at these times should be monitored and improved. For example, if there are many early morning deaths, it is possible that children are not being adequately covered and fed during the night.

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

Review of patient records for adverse outcomes can provide a basis for staff to discuss and solve problems. A process for group problem solving is described in Section 6.0. of this module.



Exercise D

In this exercise, you will review excerpts from the Inpatient Management Records of three children that died. You will review the circumstances of the deaths and determine whether there are common factors.

Study the Inpatient Management Record excerpts for Karim, Vijay and Luca on the following pages. Answer and be ready to discuss the following questions:

1. What are the circumstances of each child's death?

Karim –

Vijay –

Luca –

2. Are there common factors among the three deaths? If so what are they?
3. What areas of case management practices or Inpatient Care procedures need to be monitored to find related problems and causes?

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

Name: KARIM M F Age: 15 months Date of admission: 4 June 2010 Time: 10:00 Hospital ID number: 678 Page 1 of 6

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

SIGNS OF SAM Severe wasting? <input checked="" type="radio"/> Yes <input type="radio"/> No Bilateral Pitting Oedema? <input checked="" type="radio"/> 0 <input type="radio"/> + <input type="radio"/> ++ <input type="radio"/> +++		SIGNS OF SHOCK <input checked="" type="radio"/> None <input type="radio"/> Lethargic/unconscious <input type="radio"/> Cold hands <input type="radio"/> Slow capillary refill (> 3 seconds) <input type="radio"/> Weak or fast pulse If lethargic or unconscious*, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids: Amount IV fluids per hour: 15 ml x _____ kg (child's wt) = _____ ml																																																													
Dermatitis? 0 <input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 (raw skin, fissures)		* In case of suspected hypernatraemic dehydration, see Operational Guide or CMAM Manual Appendix, page 183. ** If respiratory and pulse rates are slower after 1 hour, repeat same amount IV fluids for second hour; then alternate ReSoMal and F-75 for up to 10 hours as in right section of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See 'Haemoglobin' section at left.) Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood.																																																													
Weight (kg): <u>6.3</u> Height / length (cm): <u>71</u> WFH z-score: <u>-3</u> MUAC (mm): <u>111</u>		<table border="1"> <tr> <td></td> <td>Start:</td> <td>Monitor every 10 minutes</td> <td>**2nd hr</td> <td>Monitor every 10 minutes</td> </tr> <tr> <td>Time</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Resp. rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Pulse rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> </table>			Start:	Monitor every 10 minutes	**2 nd hr	Monitor every 10 minutes	Time					Resp. rate			**		Pulse rate			**																																									
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TEMPERATURE: <u>36</u> °C axillary <u>Rectal</u> If axillary < 35° C or rectal < 35.5° C actively warm child. Check temperature every 30 minutes.																																																															
BLOOD GLUCOSE (mmol/L): <u>4</u> If no test available, treat for hypoglycaemia. If < 3 mmol/L and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG): Yes No If < 3 mmol/L and lethargic, unconscious or convulsing, give sterile 10% glucose IV: 5 ml x _____ kg (child's weight) = _____ ml. Then give 50 ml bolus NG. Time glucose given: Oral NG IV _____																																																															
HAEMOGLOBIN (Hb) (g/dl): <u>9</u> or Packed Cell Vol (PCV): _____ Blood type: _____ If Hb < 4 g/dl (or Hb 4–6 g/dl AND respiratory distress), transfuse 10 ml/kg whole fresh blood (or 5–7 ml/kg packed cells) slowly over 3 hours. Amount: Time started: _____ Ended: _____		DIARRHOEA Watery diarrhoea? <input checked="" type="radio"/> Yes <input type="radio"/> No Blood in stool? Yes <input type="radio"/> No <input checked="" type="radio"/> Vomiting? Yes <input type="radio"/> No <input checked="" type="radio"/> Number of days with diarrhoea: _____ If diarrhoea, circle signs present: <input checked="" type="radio"/> Skin pinch goes back slowly <input type="radio"/> Lethargic <input type="radio"/> Thirsty <input checked="" type="radio"/> Restless/irritable <input type="radio"/> Dry mouth/tongue <input type="radio"/> No tears <input checked="" type="radio"/> Sunken eyes																																																													
EYE SIGNS None <input type="radio"/> Left <input checked="" type="radio"/> Right <input type="radio"/> Bitot's spots Pus or inflammation <input type="radio"/> Corneal clouding <input checked="" type="radio"/> Corneal ulceration If ulceration, give vitamin A and atropine immediately. Record on Daily Care page. If no ulceration, give vitamin A preventive dose on week 4 or upon discharge.		For up to 10 hours, give ReSoMal and F-75 orally* in alternate hours. Monitor every hour. Amount of ReSoMal to offer**: 5 to 10 ml x _____ kg (child's wt) = _____ to _____ ml ReSoMal																																																													
ORAL DOSES VITAMIN A < 6 months* 50,000 IU *Treatment dose on days 1, 2, 15 6–12 months* ** 100,000 IU **Preventive dose on week 4 or upon discharge > 12 months* ** 200,000 IU		<table border="1"> <tr> <td>Time</td> <td>Start</td> <td></td> </tr> <tr> <td>Resp. rate</td> <td></td> </tr> <tr> <td>Pulse rate</td> <td></td> </tr> </table>		Time	Start																			Resp. rate																				Pulse rate																			
Time	Start																																																														
Resp. rate																																																															
Pulse rate																																																															
MEASLES Yes No Vaccination upon admission: Yes No (Record on Outcome page)		Passed urine? Y N Number stools Number vomits Hydration signs Amount taken (ml) F-75 F-75 F-75 F-75 F-75																																																													
FEEDING Begin feeding with F-75 as soon as possible. If child is rehydrated, reweigh before determining amount to feed. New weight: _____ kg. Amount for 2-hourly feedings: _____ ml F-75* Time first fed: _____ * If hypoglycaemic, feed ¼ of this amount every half hour for first 2 hours; continue until blood glucose reaches 3 mmol/L. Record all feeds on 24-Hour Food Intake Chart page.		* Give ReSoMal orally (or, if child is unconscious or too ill to take the ReSoMal orally, give by NGT). ** Stop ReSoMal if signs of hydration: Passing urine, moist tongue, making saliva, not thirsty. Stop ReSoMal if any sign of over-hydration: Increasing pulse and resp. rates, engorging jugular veins, increasing oedema, puffing of eyelids.																																																													
ANTIBIOTICS (Drug/Route)		Dose/Frequency/Duration Time of 1 st Dose																																																													
MALARIA TEST (Type/Date/Outcome):		Antimalarial: Dose/Frequency/Duration Time of 1 st Dose																																																													
HIV TEST (Type/Date/Outcome):		If + HIV test, give cotrimoxazole:																																																													

Name: KARIM

(M-F)

Age: 15 mths

Date of admission: 4 June 2010 Time: 10:00

Hospital ID number: 678

COMMENTS/OUTCOME

COMMENTS

IV began in emergency room and continued until 16:00 4 June

TRAINING GIVEN TO PARENTS/ CAREGIVERS

SPECIAL FOLLOW-UP OR DISCHARGE INSTRUCTIONS

IMMUNISATIONS

Immunisation card available? Yes No
 Circle vaccination already received. Complete the immunization schedule below, sign for any vaccination given in Inpatient Care and complete the Road to Health card. (Provide a Road to Health card if not yet received).

Vaccination	At birth	First	Second	Third
BCG*	At birth	—	—	—
Polio	At birth	At 6 weeks	At 10 weeks	At 14 weeks
Penta**	—	At 6 weeks	At 10 weeks	At 14 weeks
Rotavirus	—	At 6 weeks	At 10 weeks	—
Measles	—	At 9 months	—	—

* BCG: bacille Calmette-Guérin vaccine

** Penta: diphtheria, tetanus, pertussis, hepatitis B and haemophilus influenza vaccine

PATIENT OUTCOME

Referral to Outpatient Care Site:	Date:
Comment:	
In case of treatment in Inpatient Care until full recovery and/or discharge, indicate outcome:	
Date:	
Discharge based on 15% weight change (Discharged cured)	Discharge weight \geq 15% weight gain: Yes No
Early departure or defaulting after 2 days absence (Discharged defaulted)	MUAC: _____ mm Weight: _____ kg Height: _____ cm
Non-recovery after 2 months in treatment (Discharged non-recovered)	
Death (Discharged died)	Number of days after admission (circle): < 1 1-3 days 4-7 days > 7 days Time of death: Day <u>Night</u>
	Apparent cause(s) of death: Had child received IV fluids? <u>Yes</u> No

4/06

Name: VIJAY Age M-F Date of admission: 5 Oct 2010 Time: 8:00 Hospital ID number: 756 Page 1 of 6

INITIAL MANAGEMENT Comments on pre-referral and/or emergency treatment already given: IV ALBUMIN AND DIURETIC GIVEN FOR LOW ALBUMIN + OEDEMA

SIGNS OF SAM Severe wasting? <input checked="" type="radio"/> Yes <input type="radio"/> No Bilateral Pitting Oedema? <input type="radio"/> 0 <input type="radio"/> + <input checked="" type="radio"/> ++ <input type="radio"/> +++		SIGNS OF SHOCK None <input type="checkbox"/> Lethargic/unconscious <input type="checkbox"/> Cold hands <input type="checkbox"/> Slow capillary refill (> 3 seconds) <input type="checkbox"/> Weak or fast pulse <input type="checkbox"/>																																																																																	
Dermatitis? <input checked="" type="radio"/> 0 <input type="radio"/> + <input type="radio"/> ++ <input type="radio"/> +++ (raw skin, fissures)		If lethargic or unconscious*, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids: Amount IV fluids per hour: 15 ml x ___ kg (child's wt) = ___ ml																																																																																	
Weight (kg): <u>8.1</u> Height / length (cm): <u>78</u> WFH z-score: <u>-2</u> MUAC (mm): <u>112</u>		<table border="1"> <tr> <th></th> <th>Start:</th> <th>Monitor every 10 minutes</th> <th>**2nd hr</th> <th>Monitor every 10 minutes</th> </tr> <tr> <td>Time</td> <td></td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Resp. rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Pulse rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> </table>			Start:	Monitor every 10 minutes	**2 nd hr	Monitor every 10 minutes	Time			**		Resp. rate			**		Pulse rate			**																																																													
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TEMPERATURE: <u>38.5°C</u> axillary (rectal) If axillary < 35° C or rectal < 35.5° C actively warm child. Check temperature every 30 minutes.		* In case of suspected hypernatraemic dehydration, see Operational Guide or CMAM Manual Appendix, page 183. ** If respiratory and pulse rates are slower after 1 hour, repeat same amount IV fluids for second hour; then alternate ReSoMal and F-75 for up to 10 hours as in right section of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See 'Haemoglobin' section at left.) Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood.																																																																																	
BLOOD GLUCOSE (mmol/L): <u>5</u> If no test available, treat for hypoglycaemia. If < 3 mmol/L and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG): Yes No If < 3 mmol/L and lethargic, unconscious or convulsing, give sterile 10% glucose IV: 5 ml x ___ kg (child's weight) = ___ ml. Then give 50 ml bolus NG. Time glucose given: Oral NG IV		DIARRHOEA Watery diarrhoea? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Blood in stool? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Vomiting? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Number of days with diarrhoea: _____																																																																																	
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ANTIBIOTICS (Drug/Route)		Dose/Frequency/Duration																																																																																	
_____		_____																																																																																	
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MALARIA TEST (Type/Date/Outcome):		Antimalarial: _____ Dose/Frequency/Duration _____ Time of 1 st Dose _____																																																																																	
HIV TEST (Type/Date/Outcome):		If + HIV test, give cotrimoxazole: _____																																																																																	

Name: VIJAY

M F

Age: _____

Date of admission: 5 Oct 2010

Time: 8:00

Hospital ID number: 756

COMMENTS/OUTCOME

COMMENTS

TRAINING GIVEN TO PARENTS/ CAREGIVERS

SPECIAL FOLLOW-UP OR DISCHARGE INSTRUCTIONS

IMMUNISATIONS

Immunisation card available? Yes No
 Circle vaccination already received. Complete the immunization schedule below, sign for any vaccination given in Inpatient Care and complete the Road to Health card. (Provide a Road to Health card if not yet received).

Vaccination	At birth	First	Second	Third
BCG*	At birth	—	—	—
Polio	At birth	At 6 weeks	At 10 weeks	At 14 weeks
Penta**	—	At 6 weeks	At 10 weeks	At 14 weeks
Rotavirus	—	At 6 weeks	At 10 weeks	—
Measles	—	At 9 months	—	—

* BCG: bacille Calmette-Guérin vaccine

** Penta: diphtheria, tetanus, pertussis, hepatitis B and haemophilus influenza vaccine

PATIENT OUTCOME

Referral to Outpatient Care Site:	Date:
Comment:	
In case of treatment in Inpatient Care until full recovery and/or discharge, indicate outcome:	
Date:	
Discharge based on 15% weight change (Discharged cured)	Discharge weight ≥ 15% weight gain: Yes No
Early departure or defaulting after 2 days absence (Discharged defaulted)	MUAC: _____ mm Weight: _____ kg Height: _____ cm
Non-recovery after 2 months in treatment (Discharged non-recovered)	
Death (Discharged died)	Number of days after admission (circle): <1 1-3 days 4-7 days >7 days Time of death: <u>Day</u> Night
	Apparent cause(s) of death: Had child received IV fluids? <input checked="" type="radio"/> Yes <input type="radio"/> No

6
OCT

AT DEATH: POTASSIUM
 Low, Albumin High,
 OEDEMA +++

Name: LUCA (M)-F Age: 18 m Date of admission: 25 Feb 2011 Time: 9:00 Hospital ID number: 1064 Page 1 of 6

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

SIGNS OF SAM Severe wasting? <input checked="" type="radio"/> Yes <input type="radio"/> No Bilateral Pitting Oedema? 0 <input type="radio"/> <input checked="" type="radio"/> ++ <input type="radio"/> +++		SIGNS OF SHOCK <input checked="" type="radio"/> None <input type="radio"/> Lethargic/unconscious <input type="radio"/> Cold hands <input type="radio"/> Slow capillary refill (> 3 seconds) <input type="radio"/> Weak or fast pulse																																					
Dermatoses? 0 <input checked="" type="radio"/> ++ <input type="radio"/> +++ (raw skin, fissures)		If lethargic or unconscious*, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids: Amount IV fluids per hour: 15 ml x _____ kg (child's wt) = _____ ml																																					
Weight (kg): <u>6.8</u> Height / length (cm): <u>74</u> WFH z-score: <u>-3</u> MUAC (mm): <u>113</u>		<table border="1"> <tr> <th>Time</th> <th>Start</th> <th>Monitor every 10 minutes</th> <th>**2nd hr</th> <th>Monitor every 10 minutes</th> </tr> <tr> <td>Resp. rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Pulse rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> </table>		Time	Start	Monitor every 10 minutes	**2 nd hr	Monitor every 10 minutes	Resp. rate			**		Pulse rate			**																						
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Resp. rate			**																																				
Pulse rate			**																																				
TEMPERATURE: _____ °C axillary / rectal If axillary < 35° C or rectal < 35.5° C actively warm child. Check temperature every 30 minutes.		* In case of suspected hypernatraemic dehydration, see Operational Guide or CMAM Manual Appendix, page 183. ** If respiratory and pulse rates are slower after 1 hour, repeat same amount IV fluids for second hour; then alternate ReSoMal and F-75 for up to 10 hours as in right section of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See 'Haemoglobin' section at left.) Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood.																																					
BLOOD GLUCOSE (mmol/L): <u>4</u> If no test available, treat for hypoglycaemia. If < 3 mmol/L and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG): Yes No If < 3 mmol/L and lethargic, unconscious or convulsing, give sterile 10% glucose IV: 5 ml x _____ kg (child's weight) = _____ ml. Then give 50 ml bolus NG. Time glucose given: Oral NG IV		DIARRHOEA Watery diarrhoea? <input checked="" type="radio"/> Yes <input type="radio"/> No Blood in stool? Yes <input type="radio"/> No <input checked="" type="radio"/> Vomiting? Yes <input type="radio"/> No <input checked="" type="radio"/> Number of days with diarrhoea: _____																																					
HAEMOGLOBIN (Hb) (g/dl): <u>9</u> or Packed Cell Vol (PCV): _____ Blood type: _____ If Hb < 4 g/dl (or Hb 4-6 g/dl AND respiratory distress), transfuse 10 ml/kg whole fresh blood (or 5-7 ml/kg packed cells) slowly over 3 hours. Amount: _____ Time started: _____ Ended: _____		If diarrhoea, circle signs present: Skin pinch-goes-back slowly <input type="radio"/> Lethargic <input checked="" type="radio"/> Restless/irritable <input checked="" type="radio"/> Dry mouth/tongue <input checked="" type="radio"/> Sunken eyes <input checked="" type="radio"/> No tears <input type="radio"/>																																					
EYE SIGNS <input checked="" type="radio"/> None <input type="radio"/> Left <input type="radio"/> Right Bitot's spots Pus or inflammation Corneal clouding Corneal ulceration If ulceration, give vitamin A and atropine immediately. Record on Daily Care page. If no ulceration, give vitamin A preventive dose on week 4 or upon discharge.		If diarrhoea and/or vomiting, give ReSoMal orally*. Every 30 minutes for first 2 hours, monitor and give*: 5 ml x <u>6.8</u> kg (child's wt) = <u>34</u> ml ReSoMal																																					
ORAL DOSES VITAMIN A *Treatment dose on days 1, 2, 15 **Preventive dose on week 4 or upon discharge		For up to 10 hours, give ReSoMal and F-75 orally* in alternate hours. Monitor every hour. Amount of ReSoMal to offer**: 5 to 10 ml x <u>6.8</u> kg (child's wt) = <u>34</u> to <u>68</u> ml ReSoMal																																					
<table border="1"> <tr> <td>< 6 months*</td> <td>50,000 IU</td> </tr> <tr> <td>6-12 months* **</td> <td>100,000 IU</td> </tr> <tr> <td>> 12 months* **</td> <td>200,000 IU</td> </tr> </table>		< 6 months*	50,000 IU	6-12 months* **	100,000 IU	> 12 months* **	200,000 IU	<table border="1"> <tr> <th>Time</th> <th>Start</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> <tr> <td>Resp. rate</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pulse rate</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Time	Start									Resp. rate										Pulse rate									
< 6 months*	50,000 IU																																						
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> 12 months* **	200,000 IU																																						
Time	Start																																						
Resp. rate																																							
Pulse rate																																							
MEASLES Yes <input type="radio"/> No <input checked="" type="radio"/> Vaccination upon admission: Yes No (Record on Outcome page)		Passed urine? Y N																																					
FEEDING Begin feeding with F-75 as soon as possible. If child is rehydrated, reweigh before determining amount to feed. New weight: <u>6.9</u> kg. Amount for 2-hourly feedings: <u>15</u> ml F-75* Time first fed: <u>12:30</u> * If hypoglycaemic, feed 1/4 of this amount every half hour for first 2 hours; continue until blood glucose reaches 3 mmol/L. Record all feeds on 24-Hour Food Intake Chart page.		* Give ReSoMal orally (or, if child is unconscious or too ill to take the ReSoMal orally, give by NGT). ** Stop ReSoMal if signs of hydration: Passing urine, moist tongue, making saliva, not thirsty. Stop ReSoMal if any sign of over-hydration: Increasing pulse and resp. rates, engorging jugular veins, increasing oedema, puffing of eyelids.																																					
ANTIBIOTICS (Drug/Route) <u>AMOXICILLIN - ORAL</u>		Dose/Frequency/Duration <u>150g 3x A DAY FOR 5 DAYS</u>																																					
MALARIA TEST (Type/Date/Outcome):		Time of 1 st Dose <u>9:00</u>																																					
HIV TEST (Type/Date/Outcome):		Antimalarial: _____ Dose/Frequency/Duration _____ Time of 1 st Dose _____ If + HIV test, give cotrimoxazole: _____																																					

4.4 Calculating a Case-Fatality Rate for Inpatient Care

In a big ward (for example, with 100 admissions per month), calculate the Inpatient Care case-fatality rate once each month if possible. This will allow improvements or problems to be seen rapidly.

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

To Calculate the Case-Fatality Rate

- Determine the number of patients admitted to Inpatient Care in the past month(s). Also include children that die after arrival in the emergency ward or who die within the first 24 hours of admission.
- Determine the number of those children that were admitted who died in the same time period (month[s]). Wait to count deaths until the outcomes for the children are known. For example, wait until the start of November to count deaths among patients admitted in October.
- Divide the number of deaths by the number of children admitted during that same time period (month) and express the result as a percentage.

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

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

The case-fatality rate is calculated on a cohort of children that are admitted for treatment of SAM in a time period and who died during the same time period. The case fatality rate is not a very sensitive indicator as it may indicate severity of illness upon admission or quality of early care, but also poor community outreach and active case-finding (and therefore late referral), poor quality of care in Outpatient Care, problems with transportation to Inpatient Care or other barriers to access. Carefully review the circumstances of deaths and identify and solve related problems to reduce the case-fatality rate.

Note: Calculating a case-fatality rate in Inpatient Care as described here is not retained in the CMAM M&R system. (See [pages 68–79](#) of the CMAM Manual.)

The objective of a SAM ward should be to achieve an Inpatient Care Case-Fatality Rate of < 5%.



SHORT ANSWER EXERCISE

Calculate the case-fatality rates for Inpatient Care described below. State whether the rate is unacceptable, poor, moderate or acceptable.

1. The SAM ward at Central Hospital is small. Over the past 3 months, there have been 32 admissions. Five of these children died.

2. City Hospital had 98 admissions with SAM in October. Three of these children died.

- 3a. Mercy Hospital had 28 admissions to the SAM ward in June and July. Two of these children died.

- 3b. In the next 2 months, August and September, Mercy Hospital had 36 admissions to the SAM ward. Four of these children died.

- 3c. How does the rate for August and September compare with the previous 2 months? Is there a problem?

Compare your answers to this exercise to the answers given on [page 81](#) at the end of the module.

5.0 Monitoring Case Management Practices and Procedures

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

- case management practices
- food preparation
- ward procedures
- hygiene

This section provides suggestions for monitoring these items. Monitoring checklists for use in Inpatient Care visits are provided in the Supervisor’s Checklist for Inpatient Care Job Aid. Any ‘No’ answer to a question on the checklist indicates a problem that needs to be corrected.

Monitoring of performance of Inpatient Care is explained in Section 7.0 of this module.

5.1 Monitoring Case Management Practices

Deaths during initial case management are often the result of well-intentioned but incorrect practice. Monitor to ensure that all clinicians are following the case management practices described in the CMAM Manual, particularly during initial treatment. Ensure that emergency room (ER) personnel are also following appropriate practices for children with SAM. No checklist is given for monitoring case management, as it would be too lengthy. However, some examples of common incorrect practices to look for are described below.

Common incorrect practices in initial treatment; these can cause death	Correct practice
☉ Child not fed at night	During initial treatment ensure that the child is fed every 2 hours at night. Feeding is never less frequent than every 4 hours.
☉ IV fluids given even though child is not in shock	Give IV only if there are signs of shock (cold hand plus slow capillary refill or weak/fast pulse).
☉ IV albumin/amino acids given	Do not give these.
☉ Diuretics given to treat oedema	Do not give these. Oedema will resolve with correct initial treatment using F-75.
☉ High protein diet given immediately	Give F-75 until the child stabilises and appetite returns. Do RUTF appetite test and start RUTF and/or F-100 when the child passes the appetite test.
☉ Antibiotics not given because no clinical signs of infection	Presume infection and give antibiotics to all children with SAM as described in the CMAM Manual.
☉ Standard oral rehydration solution (ORS) used instead of Rehydration Solution for Malnutrition (ReSoMal)	Give ReSoMal to children with SAM with dehydration.
☉ Child left uncovered at night	Provide blanket and ensure that the child is covered at night.
☉ Anaemia treated with iron from admission	Wait to start iron until the child has been on F-100 for 2 days. If child is on RUTF, do not give additional iron because RUTF contains iron. Treat severe anaemia if needed. See CMAM Manual and Module 3, Initial Management, pages 11–12.

5.2 Monitoring Food Preparation

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

- Are ingredients for the recipes available?
- Is the correct recipe used for the ingredients that are available?
- Are ingredients stored appropriately and discarded at appropriate times?
- Are containers and utensils kept clean?
- Do kitchen staff (and those preparing feeds) wash their hands with soap before preparing food?
- Are the recipes for F-75 and F-100 followed exactly? (If changes are made due to lack of ingredients, are these changes appropriate?)
- Are measurements made exactly with proper measuring utensils (e.g., correct scoops)?
- Are ingredients thoroughly mixed (and cooked, if necessary)?
- Is the appropriate amount of oil mixed in (i.e., not left stuck in the measuring container)?
- Is CMV added correctly?
- Is correct amount of water added to make up a litre of formula with the recipe? (Staff should *not* add a litre of water, but just enough to make a litre of formula.) Is correct amount of water added to make formula with the commercial packages? (Staff should add the package to one or two litres of cooled boiled water. Staff should verify the instructions on the package.)
- Is food served at an appropriate temperature?
- Is the food consistently mixed when served (i.e., oil is mixed in, not separated)?
- Are correct amounts put in the cup for each child?
- Is leftover prepared food discarded promptly?



5.3 Monitoring Ward Procedures

Problems like inadequate weight gain on the ward, early departures and even deaths may be due to inadequate ward procedures. Whenever you suspect that there is a problem related to ward procedures, observe staff as they do those procedures or review relevant records. Procedures to monitor include the following.

Feeding

- Are correct feeds served in correct amounts?
- Are feeds given at the prescribed times, even on nights and weekends?
- Are children held and encouraged to eat (never left alone to feed)?
- Are children fed with a cup and saucer (never a bottle)?
- Is food intake (and any vomiting/diarrhoea) recorded correctly after each feed?
- Are leftovers recorded accurately?
- Are amounts of F-75 kept the same throughout the initial phase, even if weight is lost?
- Is RUTF appetite test done as soon as appetite returns and medical complications are resolving, and is RUTF offered in the transition phase?
- Is RUTF administered correctly?
- Is drinking water provided with RUTF intake?
- Is child consuming 75% or more of the required daily intake of RUTF before referral to Outpatient Care?
- For cases who remain in Inpatient Care on F-100 after transition, are amounts of F-100 given freely and increased as the child gains weight?



Warming

- Is the room kept between 25° C and 30° C (to the extent possible)?
- Are blankets provided and children kept covered at night?
- Are safe measures used for re-warming children?
- Are temperatures taken and recorded correctly?



Weighing

- Are scales functioning correctly?
- Are they standardised weekly? (Check scales as described in **Module 5, Daily Care.**)
- Are children weighed at about the same time each day, 1 hour before or after a feed (to the extent possible)?
- Do staff adjust the scale to zero before weighing children?
- Are children consistently weighed without clothes?
- Do staff correctly read weight to the correct degree of precision?
- Do staff immediately record weights on the child's Inpatient Management Record?
- Are weights correctly plotted on the Weight Chart?



Giving Antibiotics and Other Medications and Supplements

- Are antibiotics given as prescribed (correct dose[s] at correct time[s])?
- When antibiotics are given, do staff immediately make a notation on the Inpatient Management Record?
- Is folic acid given daily and recorded on the Inpatient Management Record?
- Is vitamin A given according to schedule?
- For children that are on F-100 for 2 days, is the correct dose of iron given daily and recorded on the Inpatient Management Record?



Ward Environment

- Are surroundings welcoming and cheerful?
- Are mothers offered a place to sit and sleep?
- Are mothers taught and encouraged to be involved in care?
- Are staff consistently courteous?
- As children recover, are they stimulated and encouraged to move and play?

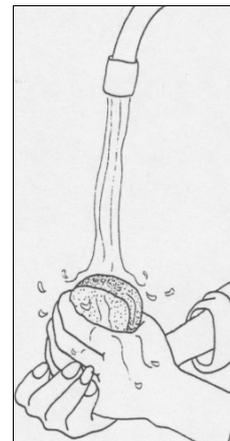


5.4 Monitoring Hygiene

Good hygiene is extremely important because children with SAM are highly susceptible to infection. Whenever you suspect that a problem may be related to hygiene, or periodically, visually inspect hygiene in the ward. Monitor such items as the following.

Hand Washing

- Are there working hand-washing facilities in the ward?
- Do staff consistently wash hands thoroughly with soap?
- Are their nails clean?
- Do they wash hands before handling food?
- Do they wash hands between patient visits?

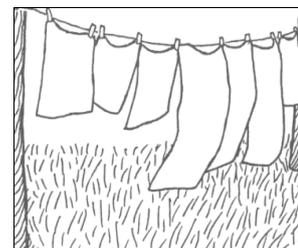


Mothers' Cleanliness

- Do mothers have a place to bathe, and do they use it?
- Do mothers wash hands with soap after using the toilet or changing nappies (diapers)?
- Do mothers wash hands before feeding children?

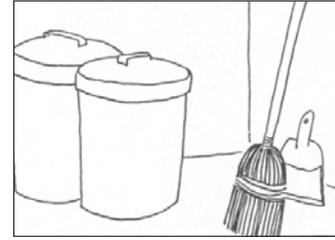
Bedding and Laundry

- Is bedding changed every day or when soiled/wet?
- Are nappies, soiled towels and rags, etc. stored in bags, then washed or disposed of properly?
- Is there a place for mothers to do laundry?
- Is laundry done in hot water?



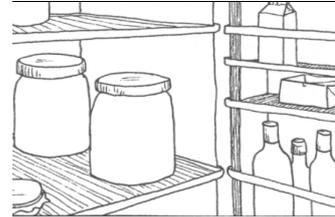
General Maintenance

- Are floors swept?
- Is trash disposed of properly?
- Is the ward kept as free as possible of insects and rodents?



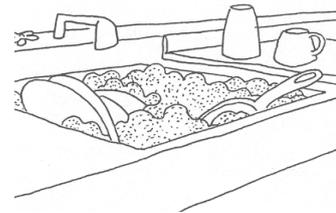
Food Storage

- Are ingredients and food kept covered and stored at the proper temperature?
- Are leftovers discarded?
- Is all therapeutic food stored in a hygienic manner?



Dishwashing

- Are dishes washed after each meal?
- Are they washed in hot water with soap?



Toys

- Are toys washable?
- Are toys washed regularly, and after each child uses them?

5.5 Who Should Monitor and How Often?

Monitoring can be done by trained health care providers from the hospital or trained nutrition officers from the district or regional health bureau.

Three days are usually needed to monitor practices and procedures in Inpatient Care. This would include the on-site problem-solving sessions (see Section 6.0 in this module). The frequency of visits for monitoring purposes needs to be discussed at other levels of the system.

5.6 Supportive Supervision and Mentoring (or Coaching)

Supervisors should perform regular supportive supervision visits and use a checklist to systematically cover specific job functions to assess and address service performance (see the Supervisor's Checklist for Inpatient Care Job Aid). At the same time, the supervisor is a mentor and he/she should use the opportunity to provide support to health care providers based on identified needs. Supervisory visits are conducted to help health care providers improve their performance. The visits should be seen as an ongoing part of the capacity development strategy and the motivation of health care providers.

Supervision of the quality of protocol implementation entails monitoring admission and discharge trends and adherence to protocols. Accurate recording and compilation of information regarding admissions, re-admissions and referrals and discharges from Inpatient Care sites is important. Analysis of Inpatient Care M&R data is essential for the supervisor, as it provides important information about the performance of the site and can be used to take actions to strengthen service quality.

Supervisors should review and discuss the quality of services by verifying challenges and opportunities on the following:

- Admission, referral and discharge procedures
- Adherence to medical and dietary treatment protocols
- Completion of the Inpatient Management Records and other M&R tools
- Progress of individual children
- Quality of health and nutrition counselling and education
- Performance of services
- Psychological support to mothers
- Advice on discharge
- Presence of qualified staff
- Workload of staff
- Organisation of the ward
- Hygiene of ward, children and mothers
- Supply and stock management
- Access to food for the mothers
- Adherence for free care

5.7 Quality Improvement of Management of SAM in Inpatient Care

Annex B provides an example of an action plan for quality improvement of management of SAM in Inpatient Care. Use the action plan matrix and follow the instructions.

For each activity, ask yourself:

- ‘Do we do this now?’ If yes, put a check under ‘Current Status’. If no, write in what you do now.
- ‘What must we do to start this activity?’ Consider all the actions that are needed to introduce each change and write them in.
- ‘Who will take responsibility for seeing that these actions are carried out? And by when?’
- ‘What new resources will we need?’
- ‘Who will take responsibility for getting these resources? And by when?’

6.0 Solving Problems

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

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

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

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

6.1 Process for Problem Solving in a Group

When conducting a problem-solving session with a group, use the following process as a guide.

- Welcome everyone to the meeting and explain the purpose. Be careful not to sound like you are threatening or blaming anyone. Stress that you need their ideas to understand the causes of the problem and how to solve it.
- State the facts of the problem as clearly and completely as possible. Include when, where and with whom the problem is occurring.
- Discuss cause(s) of the problem that you have discovered through monitoring. Ask the staff if they agree or disagree with your analysis. Ask the staff if they can think of other possible causes. Ask questions to try to find the 'root' causes of the problem. Causes may include:
 - obstacles (such as lack of time, insufficient staff or lack of equipment)
 - lack of motivation (for some reason, staff are not motivated to do a task correctly)
 - lack of skill or information (staff do not know what to do or how to do it)



The group must avoid blaming particular staff or having the discussion degenerate into a complaint session.

It may be helpful to write down identified causes on a flipchart or large sheet of paper.

- Ask the staff to help you think of solutions appropriate for the causes. Different causes require different solutions. For example, if there is a problem due to lack of supplies, a solution is to obtain more supplies. If a task is done poorly because staff members do not enjoy it, a solution may be to rotate that task so that everyone takes a turn, but no one has to do it too often. If staff forget how to do a certain task, the solution may be to make a job aid and post it on the wall. Ask staff to think of solutions that they believe will work. Discuss the steps needed to implement the solutions, i.e., who will do what after the meeting.
- Thank the staff for their ideas. Review what was decided in the meeting.

After the meeting it is important to implement the solutions as quickly as possible. Be sure to give feedback to staff on how the solutions are working. They will want to know if the problem is decreasing or is solved.



Tell a facilitator when you have reached this point in the module.



Exercise E

This exercise will be a role-play of a problem-solving session in a SAM ward. Your facilitator will assign you a role, such as:

- Physician in charge
- Senior nurse on duty in the morning (Matron)
- Senior nurse on duty in the afternoon
- Night nurse
- Junior auxiliary nurse
- Hospital administrator

You will be given a card describing your knowledge and attitude about the situation being discussed.

One participant (the ‘physician in charge’) will lead the discussion using the process described in the module. Another will assist by recording on the flipchart. Others will participate in the discussion according to their assigned roles.

The objective is to describe the problem clearly, discuss possible causes, identify the most likely causes and identify possible solutions.

7.0 Monitoring and Reporting on Inpatient Care

A well-designed M&R system is an essential component in CMAM. M&R focuses on children 6–59 months, because they are the primary target group for treatment.

With well-informed monitoring data, aspects of the management of SAM that need improvement can be identified in a timely manner. Appropriate action then can be taken to improve on individual care, organisation of care and overall quality of care.

Notes:

- If a large proportion of admissions are constituted of age groups 0–5 months, > 59 months, adolescent or adult, one should consider developing an M&R system for these age-specific groups separately. However, no standardised performance indicators are available.
- Reporting is based on calendar months. Therefore, 1 month usually covers 4 weeks. Occasionally, 1 month covers 5 weeks. This has to be taken into consideration when interpreting trends.

7.1 Tools for Monitoring and Reporting

Inpatient Site Tally Sheet

A site tally sheet provides information on weekly new admissions, old cases admitted, discharges, internal movements and total cases under treatment per site or health facility. All children admitted, referred and discharged from CMAM are categorised per entry and exit categories (see text below and the Exit and Entry Categories for Monitoring the Management of Severe Acute Malnutrition in Children 6–59 Months Job Aid) and then tallied; sex is tallied for all new admissions only.

Entry categories of Inpatient Care consist of the following information:

- **In treatment at the start of the week (A):**
 - The number of children 6–59 months who are in treatment at the start of the week.
- **New cases admitted:**
 - New admissions of children 6–59 months with SAM based on oedema **(B1)**
 - New admissions of children 6–59 months with SAM based on MUAC < 115 mm **(B2)**
 - New admissions of children 6–59 months with SAM based on WFH < –3 z-score **(B3)**
 - New admissions of other age groups with SAM: infants < 6 months, children ≥ 5 years, adolescents and adults **(B4)**
Note: These cases are entered for caseload, treatment and supply needs planning, but they do not affect assessment of performance.
- **Total new admissions (B):**
 - The number of all cases with SAM who are newly admitted to receive treatment.

- **Old cases admitted:**
 - **Returned defaulter (C1):** The child left the site before ending treatment and returns to continue the treatment within 2 months (same episode of illness)
 - **Referred from Outpatient Care or Inpatient Care (C2):** The condition of the child 6–59 months with SAM in Outpatient Care has deteriorated (decision is based on the Action Protocols in Outpatient Care; see Action Protocols for Children 6–59 Months with SAM in Outpatient Care Job Aid) and the child is referred to Inpatient Care. Referral of the child is not counted as a new admission because he or she was already in treatment for SAM.
Note: If the tally sheet is filled out in Outpatient Care, this category summarizes the cases that are referred from Inpatient Care because the children are recovering after stabilization.
- **Total entries (D):**
 - The number of all cases with SAM who entered the site to receive treatment.

Summary of Entries (D):

New Cases of SAM Children 6–59 months (B1, B2, B3)
Old Cases SAM Children 6–59 months: Returned defaulter (C1) and Referred from Outpatient Care or Inpatient Care (C2)
TOTAL ENTRIES (D) (D = B1 + B2 + B3 + C1 + C2)

Exit categories of Inpatient Care consist of the following information:

- **Children 6–59 months discharged:**
 - **Cured:** Child who remained in Inpatient Care until full recovery (i.e., special case who reached 15% weight gain for 2 weeks and was not referred to Outpatient Care after stabilisation) (**E1**)
 - **Died:** Child who died during treatment in Inpatient Care (**E2**)
 - **Defaulted:** Child who defaulted during treatment in Inpatient Care; child was absent for 2 days, and is declared a defaulter on the third day (**E3**)
 - **Non-recovered:** Child who did not reach the discharge criteria as cured after 2 months in treatment in Inpatient Care (**E4**)
- **Total discharges (E):**
 - The number of children 6–59 months who leave Inpatient Care as cured (fully recovered), died, defaulted or non-recovered.
Note: The number of total discharges is used as a denominator to calculate performance indicators for the cured, death, defaulter and non-recovery rates in the overall CMAM performance. It is less used in Inpatient Care because the majority of cases are referred to Outpatient Care after stabilisation, and therefore did not meet the treatment discharge criteria.

Summary of Discharges (E):

Discharged Cured Children 6–59 Months (E1)
Discharged Died Children 6–59 Months (E2)
Discharged Defaulted Children 6–59 Months (E3)
Discharged Non-Recovered Children 6–59 Months (E4)
TOTAL DISCHARGES (E) (E = E1 + E2 + E3 + E4)

- **Cases referred:**
 - **Referred to Inpatient Care or Outpatient Care (F1):** The condition of the child has stabilised, the appetite has returned and the medical complication is resolving. The child is referred to Outpatient Care to continue treatment at home. The child is not counted as discharged from CMAM because he or she has not yet met the discharge criteria.

Note: The child (re-)enters Outpatient Care as a referral, or old case.

Note: If the tally sheet is filled out in Outpatient Care, this category summarises the cases that are referred to Inpatient Care because the children’s condition is deteriorating.
 - **Referred to Higher Level of Care (F2):** The child is referred to a higher level of care for a medical condition that cannot be treated in Outpatient Care or Inpatient Care. The child has not ended treatment for SAM and will be treated in the other health facility until full recovery or will return to continue treatment until full recovery.

- **Total Exits:**
 - The number of children 6–59 months that exit the site, including all children that are discharged (as cured, died, defaulted or non-recovered) and that are leaving the site as referrals (did not end the treatment).

Summary Exits (G):

Total Discharges (Children 6–59 months) (E)
Referred to Outpatient Care (Children 6–59 months) (F1)
Referred to higher care level (Children 6–59 months) (F2)
TOTAL EXITS (G) (G = E + F1 + F2) (See note below on reporting on other age groups)

- **Total under treatment at the end of the week (H)**
 - The number of children 6–59 months who are under treatment at the end of the week; this is the number that is used for site and caseload planning. It is the sum of all children 6–59 months who were in treatment at the start of the week (A), plus those who were admitted (D), minus those who were referred or discharged (G). This is also the number to use for next week’s column A-cell of the Site Tally Sheet in the ‘TOTAL start of week’ row.
 - **H = A + D – G**

Other information added on the tally sheet includes:

- **Sex**, which is tallied for all children 6–59 months with SAM who are newly admitted.

Note on reporting of admission and discharge of ‘other age groups’, i.e., infants < 6 months, children ≥ 5 years, adolescents and adults: These age groups are not included in the tally sheet, except for the new admissions, since they are part of the caseload and affect the need for treatment and supplies of the health facility. It is recommended that separate tally monitoring reports for the other age groups be filled in, because different rules for admission and discharge and performance indicators apply.

Reporting Weeks for the Management of SAM

Weekly tallies follow the calendar weeks. The calendar weeks are used to define each calendar month for reporting. The tables below provide examples:

Example 1. January 2010 consists of weeks 2–5, starting on January 4 and ending on January 31

	January 2010						
	Sat	Sun	Mon	Tues	Wed	Thu	Fri
Week 1					1	2	3
Week 2	4	5	6	7	8	9	10
Week 3	11	12	13	14	15	16	17
Week 4	18	19	20	21	22	23	24
Week 5	25	26	27	28	29	30	31

Example 2. November 2010 consists of weeks 44–48, starting on October 30 and ending on December 3

	November 2010						
	Sat	Sun	Mon	Tues	Wed	Thu	Fri
Week 44	Oct 30	Oct 31	1	2	3	4	5
Week 45	6	7	8	9	10	11	12
Week 46	13	14	15	16	17	18	19
Week 47	20	21	22	23	24	25	26
Week 48	27	28	29	30	Dec 1	Dec 2	Dec 3

Example 3. Completed dates on a monthly tally sheet for the month of January 2010

Weeks	1	2	3	4	5	Total Month
Dates	Jan 4–10	Jan 11–17	Jan 18–24	Jan 25–30	/	4 weeks

In Sudan, weeks always start on a Saturday and end on a Friday. Inpatient care staff should therefore make a routine of consolidating weekly tallies every Saturday morning.

The site tally sheet is completed by the responsible health care provider, and covers weeks of a calendar month (indicating 4 or 5 weeks). The tally sheet provides a summary at the end of the month that makes it easy to fill in the monthly site report.

Site tally sheets are regularly checked by a supervisor for accuracy. The tally information can help identify differences in affected sex, age groups, type of SAM and trends.

Monthly Site Report

The monthly site report (see the Monthly Site Report for CMAM for Children 6–59 Months Job Aid) is completed monthly based on information recorded on the site tally sheet for children 6–59 months with SAM. The monthly report provides a summary of quantitative information to assess performance, monitor trends and identify areas that require investigation and/or improvement at the health facility level.

Each health facility with a CMAM site should send the monthly site report to the locality and/or state Federal Ministry of Health (FMOH). Monthly site reports are regularly checked by a supervisor for accuracy.



Exercise F1

Practice Completing an Inpatient Care Site Tally Sheet

On January 1, 2010, an Inpatient Care site opened in your hospital. You are in charge of M&R for the new site, and you will fill out a site tally sheet and a monthly site report for the first month. Every evening you tally the activities of the site on the site tally sheet. At the end of the week, you complete the tally sheet with the data collected during that week.

Week 1

During week 1, three male children 6–59 months with SAM are admitted; they have low MUAC readings (< 115 mm) and other medical complications. At the end of the week they are all still under treatment and their condition is slowly improving.

Week 2

During week 2, one female infant of 11 months with severe oedema is admitted, and four boys between the ages of 2 and 3 years with low MUAC readings (< 115 mm) and medical complications are admitted. In the same week, one child is referred to Outpatient Care after stabilization, as his medical condition was improving, he has a good appetite (passed the RUTF appetite test) and is clinically well and alert. The child will continue treatment in Outpatient Care in the health centre close to his home. No other children left the treatment site.

Week 3

During week 3, two girls 6–59 months with WFH < -3 z-scores and medical complications are admitted and one boy is referred from an Outpatient Care site because his condition was deteriorating and he started losing weight in the absence of oedema. He died later during this week. Two children are unexpectedly absent for 3 days.

Week 4

One female child 6–59 months with severe oedema is newly admitted, and three children are referred to the Outpatient Care site.

Every evening during your duty you have tallied the daily activities of the site, and at the end of each week you filled in the rest of the form for that week. Now, at the end of the month, you will complete the tally sheet for the month.

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

7.2 Performance Indicators

Performance of CMAM

There are three basic sets of indicators for measuring the performance of CMAM services for children 6–59 months, as described in the following section:

- **Output indicators** measure whether a CMAM service has completed the planned activities needed to achieve the established objectives. They are measured as numbers. Over time they monitor trends of increase and decrease in caseload, and are used for planning purposes for treatment and supply needs.
- **Process indicators** directly measure the performance of key processes, which in this case relates to the CMAM treatment process. They are not always part of weekly or monthly routine monitoring and can be measured at certain intervals or through non-routine monitoring activities.
- **Outcome indicators** measure whether a CMAM service has achieved its objectives and planned outcomes. They are measured as percentages, give an indication of performance and are used to monitor trends in performance. If a standardized method of indicators is used, outcome indicators can also be compared to global indicators, e.g., Sphere Minimum Standards².

Output indicators for Inpatient Care at the health facility level reported on per month

- Number of health care providers trained in Inpatient Care (by sex distribution)
- Report on the use of F-75, F-100, RUTF, ReSoMal and CMV
- Total number of new admissions
- Total number of children under treatment

Examples of process indicators

The following are process indicators that are measured monthly and/or periodically depending on capacity.

- **Cause of death.** Assessing and compiling this information can help identify problems with treatment and use of treatment protocols, and determine where strengthened support, training, supervision and quality improvement might be needed.
- **Reasons for absentees, defaulting and non-response to treatment.** Compilation of this information can help identify common reasons for default or non-response to treatment. Reasons for non-response might include a high prevalence of TB and/or HIV and feeding procedures within the hospital. This information might indicate a need for intensifying monitoring, supervision and QI. It is also important to understand the reasons for defaulting, barriers to accessing services and/or unrecorded death.
- **Readmission after discharge cured (or relapse).** Relapse means that the child's nutrition status deteriorated after being discharged from CMAM as cured and that the child returns for treatment of the new episode of SAM within 3 months. High readmission or relapse rates may indicate that children are discharged too soon or that the quality of care was not optimal. It may also indicate the need for improving infant and young child feeding (IYCF) practices or food security at the household level. Relapse is recorded on the child's Inpatient Management Record and can be tallied periodically from the Inpatient Management Records.

² The Sphere Project. 2011. *Humanitarian Charter and Minimum Standards in Disaster Response*. Oxford, UK: Oxfam. <http://www.sphereproject.org/>.

- **Average length of stay (LOS) of discharged cured.** LOS is the period (in number of days) that a child spends in Inpatient Care for stabilisation or until full recovery from SAM. LOS in Inpatient Care for stabilisation is expected to be short (around 7 days), and long until full recovery (maximum 60 days). (*Note:* The average LOS is calculated separately for the two groups.)

Average LOS in Inpatient Care for stabilisation or until full recovery reflects effectiveness of Inpatient Care. Average LOS is influenced by the proportion of children that presented late for treatment or who do not respond to treatment. A long LOS may indicate that children are not referred to Outpatient Care in a timely fashion. A short average LOS may indicate that children are discharged too soon. If there is a high relapse rate, this might be a possible cause.

Average LOS in Inpatient Care for stabilisation or until full recovery is calculated on a sample of referrals to Outpatient Care, or cured discharges, as the sum of LOS divided by number of Inpatient Management Records in the sample.

Average LOS calculation³:

$$\text{Average LOS} = \frac{\text{Sum of LOS}}{\text{Number of treatment cards in sample}}$$

- **Average daily weight gain (AWG) of discharged cured.** This is discussed in Section 3 of this module, [page 26](#).
- **Referrals between sites.** Children are referred from Inpatient Care to Outpatient Care after they regain appetite and their medical complication is resolving, and referred from Outpatient care to Inpatient Care if their condition deteriorates. A child may also be referred from Inpatient Care site to a higher level of care when his/her condition deteriorates or when the child is failing to respond to treatment. In all cases, the child has not ended his/her SAM treatment (is not discharged from the SAM treatment), but has (temporarily) moved (or exited) from the old site and continues treatment of SAM in the new site.

It is important to track children in between CMAM sites to ensure that the treatment of SAM is continued. Absolute numbers should be used to track children in between CMAM sites. Information on severity of cases that are referred and/or non-responded to treatment should be maintained because it highlights weaknesses in the quality of care (e.g., late presentation, quality of care, endemic patterns).

³ A reasonable random sample of Inpatient Management Records of discharged cured cases is 20. If fewer children have been discharged cured during the period of reporting, take all Inpatient Management Records. Calculate separately for those who have been referred to Outpatient Care and those who have been discharged cured.

Monthly Outcome or Performance Indicators

- **% discharged cured (cure rate)** = proportion of children that are discharged as cured out of total discharged*
- **% discharged died (death rate)** = proportion of children that died when under treatment out of total discharged*
- **% discharged defaulted (default rate)** = proportion of children that ho are recorded as absent for third consecutive day in Inpatient Care (and absent for third consecutive week in Outpatient Care) of total discharged*
- **% discharged non-recovered (non-recovery rate)** = proportion of children that do not meet the discharge criteria after 2 months under treatment in Inpatient Care (and after 4 months under treatment in Outpatient Care) out of total discharged*

* Total number of discharged = cured + died + defaulted + non-recovered

Performance of Inpatient Care

Inpatient Care site reports calculate performance indicators only for children 6–59 months who remain in CMAM Inpatient Care until full recovery (in cases where there are large numbers of special cases, if there is no RUTF available). In case absolute numbers are small, results of performance will be expressed in absolute numbers and not translated into percentages.

Note: If children are referred to Outpatient Care to continue treatment, then performance of CMAM services may be analysed as a whole, combining Inpatient Care and Outpatient Care.

The results are compared to international standards (see Table 1). International standards should not be taken as absolute, but as flexible levels for warning.

Table 1. Cut-Offs for CMAM Outcome Indicators Indicating Overall CMAM Performance as per the Sphere Minimum Standards

	CMAM (Inpatient Care and Outpatient Care)
Cure rate	> 75%
Default rate	< 15%
Death rate	< 10%



Optional further reading:
CMAM Manual, Section 7, [pages 68–79](#).



Exercise F2

Practice Completing a Monthly Site Report

Use the site tally sheet you completed in **Exercise F1** to complete the monthly site report for the Inpatient Care site. When the monthly report is completed, you will discuss the admission and discharge trends you observe in the first 4 weeks of the site. You will also discuss the performance of the site. Explain also what you will do next with the completed site tally sheet and the monthly site report for January.

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

Exercise G (Optional)

This exercise will be done in pairs, followed by a group discussion.

You will review excerpts from Inpatient Management Records for children treated at an Inpatient Care site who were admitted, referred and/or discharged during one month. You will be required to review the Inpatient Management Records, pay attention to the Initial Management page and the Comment/Outcome page to determine the **entry** and **exit** category in which each patient was classified. Use your Entry and Exit Categories for Monitoring the Management of Severe Acute Malnutrition in Children 6–59 Months Job Aid.

You are required to complete the site tally sheet using the information from the Inpatient Management Records. After completing the tally sheet for one month, you will be required to summarise the information from the tally sheet onto the monthly site report.

When you have finished the exercise, your facilitator will lead a group discussion on the exercise.

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

Annex A: Weight Gain Tally Sheet for Inpatient Care Rehabilitation Phase

Week of: xx/xx/xxxx	Good weight gain (≥ 10 g/kg/day)	Moderate weight gain (5 up to 10 g/kg/day)	Poor weight gain (< 5 g/kg/day)
Total number of children			
% of children on RUTF and/or F-100 in Inpatient Care			

Annex B: Example of Action Plan for Quality Improvement of Management of SAM in Inpatient Care

Use the matrix on the following pages and follow the instructions.

For each activity, ask yourself:

- ‘Do we do this now?’ If yes, put a check under ‘Current Status’. If no, write in what you do now.
- ‘What must we do to start this activity?’ Consider all the actions that are needed to introduce each change and write them in.
- ‘Who will take responsibility for seeing that these actions are carried out? And by when?’
- ‘What new resources will we need?’
- ‘Who will take responsibility for getting these resources? And by when?’

Step (Hospital)	Current status	Changes to be introduced	Who will organise changes?		New resources needed	Who will organise resources?	
	(What we do now)	(New things we must do)	Who?	When?		Who?	When?
<p>Malnourished children need care that is <u>different</u> from the care provided to other children.</p> <p>Prioritise severe wasting or oedema in the outpatient department (OPD) queue.</p> <p>Have a separate room or corner for SAM.</p>	<p>There is no triage.</p> <p>None.</p>	<p>Consider training one staff to do timely triage in OPD queue.</p> <p>Organise a separate corner.</p> <p>Use the Inpatient Management Record that denotes children with SAM</p>			<p>Height board.</p> <p>Check WHO or UNICEF office to see if they can help.</p>		
<p>Step 1. Prevent or treat hypoglycaemia</p> <p>PREVENT</p> <p>Admit quickly from OPD to the ward.</p> <p>Feed straightaway</p> <p>Feed every 2 hours day and night. Feed on time.</p> <p>Staff know warning signs: - low temperature - lethargy, limpness, loss of consciousness, drowsy - retraction of eyelids</p> <p>TREAT</p> <p><u>If hypoglycaemic,</u> - give bolus 10% glucose or sucrose solution. - feed straightaway</p> <p><u>If unconscious,</u> - give bolus 10% sterile glucose IV</p>	<p>Yes.</p> <p>Not done. (Long walk from home to hospital so hypoglycaemia is likely.)</p> <p>Feed 3-hourly during the day. Last feed 19:00. Breakfast 6:00. Acute staff shortage (2 nurses for 80 beds at night, 3 during day)).</p> <p>Not known.</p> <p>Not given.</p> <p>Not given.</p>	<p>Give 50 ml 10% glucose or sugar solution to all on arrival.</p> <p>Maintain 3-hourly feeds, but feed the very sick every 2 hours.</p> <p>Problem-solve frequent feeds. Community leaders may be able to stress importance of someone accompanying child.</p> <p>Train staff. Refer to use of job aids and wall chart.</p> <p>Introduce and make routine.</p> <p>Introduce and make routine.</p>			<p>Need to involve mothers more in feeding and to wake them at night. Currently most mothers return home to look after fields, etc., so they need a change of attitude.</p>		

Step (Hospital)	Current status (What we do now)	Changes to be introduced (New things we must do)	Who will organise changes?		New resources needed	Who will organise resources?	
			Who?	When?		Who?	When?
Step 2. Prevent or treat hypothermia							
PREVENT							
Feed straightaway	Not done.	Introduce and make routine.					
Feed every 2 hours day and night. Feed on time.	Feed every 3 hours.	Feed the very sick every 2 hours					
Keep child warm: Use kangaroo technique; cover with a blanket	Yes						
Keep room warm: - use heater - exclude draughts	Kept warm.						
Change wet clothes and bedding; Have 24-hour linen supply	Yes						
TREAT							
Feed straightaway	Not always done.	Train staff so correct procedures are routinely practised.					
Re-warm with heater or lamp or kangaroo method.	Not always done.	Train staff so correct procedures are routinely practised.					
Feed 2-hourly	Not always done.	Train staff so correct procedures are routinely practised.					

Step (Hospital)	Current status	Changes to be introduced	Who will organise changes?		New resources needed	Who will organise resources?	
	(What we do now)	(New things we must do)	Who?	When?		Who?	When?
Step 3. Prevent or treat dehydration PREVENT Give ReSoMal after each watery stool, orally Staff know: - how to prepare ReSoMal - how much to give and how often - how to record volume given, and time. Staff know warning signs of over-hydration.	- No. Use WHO ORS. - No. - Not recorded. No.	Train on why needed, how to prepare, who needs and when to stop, and how to record Train.					
TREAT Give ReSoMal 5ml/kg every 30 minutes for 2 hours orally, except if in shock. Monitor pulse and respirations at least hourly during oral rehydration. Stop ReSoMal when there are signs of hydration. Staff know signs of dehydration, hydration and over-hydration <i>If in shock:</i> - give oxygen - give 10% glucose by IV - give IV fluids - keep child warm - monitor pulse and respirations every 5–10 min. - give antibiotics	No Not monitored. No Not given. Not given. Yes (type?) Yes Not monitored. Yes	Train physicians, relevant staff. Refer to job aids and wall charts. Train. Train. Display instructions for treatment of shock in emergency areas. Display instructions for treatment of shock in emergency areas. Introduce as routine. Train on correct fluids, amount and duration.					

Step (Hospital)	Current status	Changes to be introduced	Who will organise changes?		New resources needed	Who will organise resources?	
	(What we do now)	(New things we must do)	Who?	When?		Who?	When?
Step 4. Correct electrolyte imbalance PREVENT Give F75 (and rehydrate with ReSoMal) in stabilisation phase as these are low in sodium and contain adequate amounts of micronutrients Do not give diuretics for oedema.	Yes Sometimes given.	Train.					
TREAT Give F75 (and rehydrate with ReSoMal) in stabilisation phase as these are low in sodium and contain adequate amounts of micronutrients If clinical signs of hypokalemia: give extra potassium	Yes No	Train.					
If clinical signs of hypomagnesium: give extra magnesium	No	Train.					

Step (Hospital)	Current status	Changes to be introduced	Who will organise changes?		New resources needed	Who will organise resources?	
	(What we do now)	(New things we must do)	Who?	When?		Who?	When?
Step 5. Prevent or treat infections and infestations							
PREVENT							
Keep children with SAM in a separate ward.	Yes						
Reduce overcrowding	Yes						
Provide good nursing care and prevent cross infections:	Weak.	Train.					
➤ Give drugs in time.							
➤ Monitor vital signs.							
➤ Wash hands before preparing feeds, after use of bathroom, after change of nappies, before and after handling the child.							
➤ Ensure good hygiene in the ward; Discard left over of feeds.							
Give first-line antibiotics, even if no clinical signs.	Antibiotics only given if clinical signs.	Train.					
Give antihelminth after one week in treatment to children > 1 year	Yes						
Give measles vaccine to unimmunised children >6 months old.							
Protect broken skin, for example:							
- use paraffin gauze							
- bandage hands if scratching							
TREAT							
Give Antibiotic.	Yes						
Know when to give first line antibiotic if SAM without medical complications, and first-line, second-line, third-line antibiotic if SAM with medical complications, and correct dose.	Yes						
Give antibiotics on time.	Yes						
Give antihelminth immediately in case of severe parasitic worm infestation.	Yes						
Treat other infections and infestations according to the national IMNCI protocol							
Give paracetamol in case of high fever.	Yes						

Step (Hospital)	Current status	Changes to be introduced	Who will organise changes?		New resources needed	Who will organise resources?	
	(What we do now)	(New things we must do)	Who?	When?		Who?	When?
Step 6. Correct micronutrient deficiencies							
Give vitamin A after 4 weeks or upon discharge.	Yes						
Give folic acid, single dose on day 1.	Not given.	Train.					
Give Iron sulphate after 2 days in transition phase and only when on F-100.	Not given.	Train.					
Staff know that vitamin A, folic acid, zinc and copper are already in the commercial therapeutic foods, or in the locally prepared foods when CMV is being used.	No	Train.					
Step 7. Start cautious feeding							
Stabilisation phase:							
Give F-75 therapeutic milk 130 ml/kg/day and divide into 2- to 3-hourly feeds.	Weak.	Train staff about all aspects of feeding, including use of Inpatient Management Record pages and job aids.					
If the child has severe oedema (+++), reduce the volume to 100 ml/kg/day.	No	Introduce, train.					
Give 2-hourly feeds in the first 24 hours, then change to 3-hourly feeds according to the condition of the child.	Weak.						
If the child has poor appetite, encourage the mother to support the child finishing the feed.	No	Train to assist the mother.					
Use an NGT, if the child takes < 80% of the amount offered for two consecutive feeds.	No, almost all children have NGT.	Train staff about when to use the NGT, and apply the correct techniques.					
Keep a 24-Hour Food Intake Chart for each child. Measure feeds carefully.	No	Introduce, train.					
If the child is breastfed, always offer breastfeeding before giving F-75.	Yes						
Weigh daily and plot weight.	Yes						
When appetite returns, move the child to transition phase.	Not done.	Introduce, train.					
Transition phase:							
Introduce RUTF:							
➤ Test the appetite with RUTF. Offer plenty of clean water to drink.							
➤ If the child takes the RUTF (passes the appetite test), continue all feeds with RUTF, based on 150 kcal/kg/day.							
➤ Complete the feed with F-100 if necessary.							
➤ If the child does not take RUTF, give F-100 but repeat the appetite test at every feed.							

Step (Hospital)	Current status	Changes to be introduced	Who will organise changes?		New resources needed	Who will organise resources?	
	(What we do now)	(New things we must do)	Who?	When?		Who?	When?
<p>If RUTF is not available, continue feeding the child with F-100 130-150 ml/kg/day and divide in 5-6 hourly feeds. If the child is breastfed, encourage continued breastfeeding.</p> <p>Weigh daily and plot weight. (The child should not gain more than 5 g/kg/day.)</p> <p>Observe the child for 24 hours to ensure he/she is able to eat the daily amount of RUTF, and refer the child to Outpatient Care for continuing treatment if the child is clinically well and alert and the oedema is reducing and the medical complication resolving.</p>							
<p>Step 8. Increase feeding to recover weight: “Catch-up growth” (for the exceptional cases who stay in Inpatient Care for rehabilitation):</p> <p>Give RUTF in correct amounts. Offer plenty of water to drink.</p> <p>If RUTF is not available, continue free feeding on F-100 150-220 ml/kg/day. Offer extra amounts of F-100, if the child finishes the amount prescribed.</p> <p>If the child is breastfed, encourage continued breastfeeding.</p> <p>Weigh daily and plot weight. (The child should start gaining weight, i.e., more than 10 g/kg/day).</p> <p>Gradually introduce home foods after the child reaches the discharge criteria.</p>	<p>Yes</p> <p>Yes</p> <p>Not given.</p> <p>Not given.</p> <p>Not given.</p>	<p>Introduce and train.</p> <p>Introduce and train.</p> <p>Introduce and train.</p>					
<p>Step 9. Stimulate emotional and sensorial development</p> <p>Provide tender loving care.</p> <p>Help and encourage mothers to comfort, feed and play with their children.</p> <p>Give structured play when the child is well enough, that improve development</p>	<p>Not always.</p> <p>Not always.</p> <p>Not always.</p>	<p>Encourage if feasible.</p> <p>Encourage if feasible.</p> <p>Encourage if feasible.</p>					

Step (Hospital)	Current status (What we do now)	Changes to be introduced (New things we must do)	Who will organise changes?		New resources needed	Who will organise resources?	
			Who?	When?		Who?	When?
Step 10. Prepare for referral and follow-up in Outpatient Care							
Fill in the Outcome page of the Inpatient Management Record,	Not done.	Train.					
Inform the mother of the closest Outpatient Care site to her home and give the mother a weekly ration of RUTF to continue treatment at home.	Not done.	Train.					
Send for immunisation update.	Not done.	Train.					
Establish a link with community health workers for home follow-up in Outpatient Care.	Not done.	Train.					
Write a clinical summary on the referral form for the health care providers in Outpatient Care.	Not done.	Train.					

Answers to Exercises

Answers to short answer exercise, page 3

1. b
2. b
3. a
4. b
5. b

Answers to short answer exercise, page 9

1. $7.30 \text{ kg} - 7.25 \text{ kg} = 0.05 \text{ kg}$

$0.05 \text{ kg} \times 1,000 = 50 \text{ grams gained}$

$50 \text{ grams} \div 7.25 = 6.90 \text{ g/kg/day}$

2. $6.25 \text{ kg} - 6.22 \text{ kg} = 0.03 \text{ kg}$

$0.03 \text{ kg} \times 1,000 = 30 \text{ grams gained}$

$30 \text{ grams} \div 6.22 = 4.8 \text{ g/kg/day}$

3. $7.5 \text{ kg} - 7.6 \text{ kg} = -0.1 \text{ kg}$

$-0.1 \text{ kg} \times 1,000 = -100 \text{ grams gained (or 100 grams lost)}$

$-100 \text{ grams} \div 7.6 = -13.16 \text{ g/kg/day}$

Answers to Exercise A, page 11

Case 1 – Ceri

1a. Ceri is not making much progress. The only progress evident is that her diarrhoea has stopped.

1b. Yes, there are problems. On day 5, Ceri has still not started to lose her oedema, and she is not eating well. (She leaves some feed at every feeding; she missed a night feeding.)

Case 2 – Lennox

2a. Lennox had no weight gain (0 g /kg/day).

2b. Yes, in some ways Lennox has made progress. He has lost his oedema. He no longer has dermatosis. His diarrhoea has stopped. He is now on F-100.

2c. Yes, there are problems. Lennox has not gained weight for 4 days on F-100 in spite of eating well. Lennox's fever continues and is at 38° C.

Possible Answers to Exercise B, page 24

Case 1 – Ceri

These are possible answers to the questions in the exercise. Participants may mention some of these answers during the discussion. Other answers may also be correct.

1a. Possible causes of Ceri's failure to respond:

- She missed a night feed; perhaps she is not being fed well at night.
- Perhaps she is not being encouraged to eat.
- Perhaps she has an unrecognised infection, or her antibiotic is not effective.
- Perhaps her food is not being prepared correctly. (This would affect other children as well.)
- CMV may not have been added to the locally prepared feed. (Potassium and magnesium are very important for loss of oedema.)
- Ceri has not been given folic acid for 3 days.

1b. Possible ways to investigate causes:

- Observe feedings in the ward; watch carefully how Ceri is fed.
- Ask nurses why folic acid has not been given. Also check supplies of folic acid.
- Look for a possible infection.
- Look for signs of ruminating (e.g., smell on clothes).
- Review Ceri's 24-Hour Food Intake Charts from earlier days.
- Observe food preparation.

1c. Possibly the nurses thought that Ceri was better off, so they paid less attention to her. They did not spend the time necessary to encourage her to eat.

1d. Talk to the staff about Ceri's needs and make her the focus of attention. Also teach Ceri's mother how to hold Ceri and feed her with encouragement.

Case 2 – Lennox

2a. Yes, Lennox is taking enough F-100. The recommended daily range for his weight of 8.0 kg is 1,200–1,760 ml, and he took 1,400 ml.

2b. Benzylpenicillin has not taken care of Lennox's infection. Lennox may have tuberculosis (TB).

Answers to Exercise C, page 28

Aruni

Aruni's average daily weight gain from 13/4 to 19/4 was 11.06 g/kg:

$$77.4 \div 7 = 11.06 \text{ g/kg}$$

This is a good average daily weight gain, so Aruni's name should be listed in the 'Good' column of the Weight Gain Tally Sheet.

Kodeh

Kodeh's average daily weight gain from 13/4 to 19/4 was 4.66 g/kg:

$$32.6 \div 7 = 4.66 \text{ g/kg}$$

This is a poor average daily weight gain, so Kodeh's name should be listed in the 'Poor' column of the Weight Gain Tally Sheet.

Sohna

Sohna's average daily weight gain from 13/4 to 19/4 was 6.15 g/kg:

$$43.07 \div 7 = 6.15 \text{ g/kg}$$

This is a moderate average daily weight gain, so Sohnna's name should be listed in the 'Moderate' column of the Weight Gain Tally Sheet.

Answers to questions for discussion

1. If 10% of children on a ward have poor weight gain, there is a problem. On this ward, 20% of the children (4 out of 20) have poor weight gain. So, yes, there is a problem with weight gain on this ward.
2. Common factor: 3 of the 4 children with poor weight gain are not with a mother.
3. 20% of the children (4 out of 20) on the ward have poor weight gain (< 5 g/kg/day). Three of these 4 have no mother at the hospital with them.
4. The common factors do suggest a possible cause. Without special attention from a mother, these children may not be encouraged to eat. To investigate the cause, it will be important to observe feedings on the ward. It would also be a good idea to see if all of the children with moderate or good weight gain have mothers with them, and if the mothers help with feeding.

A separate problem investigation should be done for Lalita.

Answers to Exercise D, page 33

Possible answers to questions for discussion

1. **Karim.** Karim died about 19:00 on his first day in the hospital. This time is quite possibly during a shift change. Karim had been in the hospital less than 24 hours. The cause of death is recorded as unknown. However, at his last monitoring, his breathing rate and pulse rate had increased dangerously, probably due to over-hydration. Karim had been given normal saline IV in the Emergency Room (incorrect and dangerous case management). The IV was continued for 6 hours.

Vijay. In the Emergency Room, Vijay was given IV albumin and a diuretic for low albumin and oedema (incorrect and dangerous case management). Vijay died 23 hours after admission. At death, his potassium level was low, his albumin high and his oedema had increased from moderate (++) to severe (+++).

Luca. Luca was found dead at 4:00 on day 3. Milk curds were coming out of her mouth. She had been vomiting during the day. Possibly she choked on her vomit.

2. In the cases of Karim and Vijay, there are common factors. Both cases received incorrect initial case management, particularly in the Emergency Room. Karim should not have been given an IV at all, since he was not in shock; if he had needed IV fluids, he should have been given one recommended for children with SAM for only 2 hours, and he should have been monitored every 10 minutes. The normal saline IV given to Karim for 6 hours may have caused heart failure due to over-hydration.

Vijay should not have been given IV albumin or a diuretic. Since Vijay is very malnourished, we can assume he is deficient in potassium. Giving a diuretic will make this deficiency worse, as potassium is lost in the urine. (This could explain why his oedema got worse.)

Neither Karim nor Vijay was given an antibiotic. Both needed an antibiotic.

Luca's case appears to be different and unrelated to Emergency Room practices. Her death may be due to lack of attentiveness of the staff at night. Also, Luca still had diarrhoea and vomiting on her third day in the ward, and it is not known whether she continued to receive ReSoMal after each loose stool.

3. Monitor initial case management practices, particularly in the Emergency Room. Pay special attention to incorrect use of IV fluids, albumin and diuretics. Monitor to ensure that antibiotics are being prescribed.

Investigate night staffing and ward procedures at night. Investigate whether Luca continued to receive ReSoMal after each loose stool.

Answers to short answer exercises, page 43

1. $5/32 = 0.156 = 15.6\%$, poor
2. $3/98 = 0.031 = 3.1\%$, acceptable
- 3a. $2/28 = 0.071 = 7.1\%$, moderate
- 3b. $4/36 = 0.111 = 11.1\%$, poor
- 3c. The case-fatality rate is worse. It has gone from moderate to poor. This is a problem.

Answers to Exercise F1, page 57

Community, Administrative Unit, Locality, State						
SITE (circle one)	Outpatient Care	Inpatient Care				
MONTH	January 1–28, 2010					
Date of week	January 1–7	January 8–14	January 15–21	January 22–28	TOTAL MONTH	
TOTAL start of week (A)	0	3	7	8		Start of Month: 0
New Cases SAM Children 6–59 months (Oedema) (B1)		I	I	I		3
New Cases SAM Children 6–59 months (MUAC < 115 mm) (B2)	III	IIII				7
New Cases SAM Children 6–59 months (WFH < -3 z-score) (B3)			II			2
[New Cases SAM other age groups: infants < 6 m, children ≥ 5 y, adolescents, adults]* (B4)	[]	[]	[]	[]	[]	[0]
TOTAL NEW ADMISSIONS (B) (B=B1+B2+B3)	3	5	3	1		12
Old Cases SAM: Returned defaulters (Children 6–59 months) (C1)						0
Old Cases SAM: Referred from Outpatient Care or Inpatient Care (Children 6–59 months) (C2)			I			1
TOTAL ENTRIES (D) (D=B1+B2+B3+C1+C2)	3	5	4	1		13
Discharged Cured (Children 6–59 months) (E1)						0
Discharged Died (Children 6–59 months) (E2)			I			1
Discharged Defaulted (Children 6–59 months) (E3)			II			2
Discharged Non-Recovered (Children 6–59 months) (E4)						0
TOTAL DISCHARGES (Children 6–59 months) (E) (E=E1+E2+E3+E4)	0	0	3	0		3
Referred to Outpatient Care or Inpatient Care (Children 6–59 months) (F1)		I		III		4
Referred to higher care level (Children 6–59 months) (F2)						0
TOTAL EXITS (Children 6–59 months) (G) (G=E+F1+F2)	0	1	3	3		7
Total end of week (Children 6–59 months) (H) (H=A+D-G)	3	7	8	6		End of Month: 6
SEX OF NEW CASES ADMITTED (Children 6–59 months)	MALE	3	4	1		
	FEMALE		1	2	1	

*Infants < 6 months, children ≥ 5 years, adolescents and adults (B4) are tallied and monitored separately, for planning purposes.

Answers to Exercise F2, page 61

SITE		ADMINISTRATIVE UNIT		LOCALITY		STATE		IMPLEMENTED BY	FMOH Other: _____								
Administrative Unit		MONTH / YEAR		TYPE (circle one)		ESTIMATED TARGET POPULATION < 5 y with SAM*		Outpatient Care	Inpatient Care				(MUAC < 115 mm)		(Oedema)		
TOTAL at START of month (A)	New cases with SAM				TOTAL NEW ADMISSIONS (B) (B=B1+B2+B3)	Old cases with SAM		TOTAL ENTRIES (D) (D=B+C1+C2)	Discharged children 6–59 months				TOTAL DISCHARGES (E) (E=E1+E2+E3+E4)	Referred cases		TOTAL EXITS (G) (G=E+F1+f2)	TOTAL at END of month (H) (H=A+D–G)
	Children 6–59 m		Other age groups (< 6 m, ≥ 5 y) (B4)	Returned defaulter (C1)		Referred from Inpatient Care/ Outpatient Care or higher care level (C2)	Discharged Cured (E1)		Discharged Died (E2)	Discharged Defaulted (E3)	Discharged Non-Recovered (E4)	Referred to Inpatient Care/ Outpatient Care (F1)		Referred to higher care level (F2)			
	Oedema (B1)	MUAC < 115 mm (B2)													WFH < –3 z-score (B3)		
0	3	7	2	(0)	12	0	1	13	0	1	2	0	3	4	0	7	6
						Children 6–59 months				(E1/E * 100) % Cure rate	(E2/E * 100) % Death rate	(E3/E * 100) % Default rate	(E4/E * 100) % Non-recovery rate				
						TARGETS				> 75%	< 10%	< 15%					
						Sphere minimum standards for overall CMAM											
<p>C1: Returned defaulter = defaulted while in treatment and returned within 2 months to continue treatment E1: Discharged Cured = met discharge criteria E2: Discharged Died = died while in treatment E3: Discharged Defaulted = absent for 2 consecutive weeks in Outpatient Care/2 days in Inpatient Care E4: Discharged Non-recovered = did not meet discharge criteria after 4 months in Outpatient Care/2 months in Inpatient Care</p>																	
SEX OF NEW ADMISSIONS children 6–59 months								MALE	8								
								FEMALE	4								

* Estimated target population under 5 = 20%, using the 2008 Census data; estimated target population under 5 with SAM, expressed in numbers (WFH < –3 z-score or MUAC < 115 mm, and bilateral pitting oedema), based on latest survey data or admission data.

Note: Infants < 6 months, children ≥ 5 years, adolescents and adults (B4) could be tallied and monitored separately, for planning purposes.

Answers to Exercise G, page 61: Inpatient Management Records

Name: Adam Sex: M F Age: 5 months Date of admission: JUNE 12, 2010 Time: _____ Hospital ID number: _____ Page 1 of 6

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

SIGNS OF SAM Severe wasting? <input checked="" type="radio"/> Yes <input type="radio"/> No Bilateral Pitting Oedema? <input type="radio"/> 0 <input type="radio"/> + <input type="radio"/> ++ <input type="radio"/> +++ Dermatitis? <input type="radio"/> 0 <input type="radio"/> + <input type="radio"/> ++ <input type="radio"/> +++ (raw skin, fissures) Weight (kg): <u>4.5 KG</u> Height / length (cm): _____ WFH z-score: _____ MUAC (mm): <u>NOT APPROPRIATE</u>		SIGNS OF SHOCK <input checked="" type="radio"/> None <input type="radio"/> Lethargic/unconscious Cold hands Slow capillary refill (> 3 seconds) Weak or fast pulse If lethargic or unconscious*, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids: Amount IV fluids per hour: 15 ml x _____ kg (child's wt) = _____ ml																																																																																																																																																																							
BLOOD GLUCOSE (mmol/L): _____ If no test available, treat for hypoglycaemia. If < 3 mmol/L and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG): Yes No If < 3 mmol/L and lethargic, unconscious or convulsing, give sterile 10% glucose IV: 5 ml x _____ kg (child's weight) = _____ ml. Then give 50 ml bolus NG. Time glucose given: Oral NG IV		<table border="1"> <tr> <td>Start:</td> <td>Monitor every 10 minutes</td> <td>**2nd hr</td> <td>Monitor every 10 minutes</td> </tr> <tr> <td>Time</td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Resp. rate</td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Pulse rate</td> <td></td> <td>**</td> <td></td> </tr> </table>		Start:	Monitor every 10 minutes	**2 nd hr	Monitor every 10 minutes	Time		**		Resp. rate		**		Pulse rate		**																																																																																																																																																							
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MEASLES Yes <input type="radio"/> No <input checked="" type="radio"/> Vaccination upon admission: Yes No (Record on Outcome page)		* Give ReSoMal orally (or, if child is unconscious or too ill to take the ReSoMal orally, give by NGT). ** Stop ReSoMal if signs of hydration: Passing urine, moist tongue, making saliva, not thirsty. Stop ReSoMal if any sign of over-hydration: Increasing pulse and resp. rates, engorging jugular veins, increasing oedema, puffing of eyelids.																																																																																																																																																																							
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Name: Adam

Sex: M F

Age: 5 mths

Date of admission: JUNE 12, 2010 Time: _____

Hospital ID number: _____

COMMENTS/OUTCOME

COMMENTS

Adam was successfully cured with a weight of 5.2 kg and good appetite

REFERRAL, FOLLOW-UP OR DISCHARGE INSTRUCTIONS

- Adam was gaining weight adequately on breastfeeding only
 - Adam's mother was advised to go on follow-up review at child welfare clinic

TRAINING GIVEN TO PARENTS/ CAREGIVERS

Mother was counselled to continue breastfeeding

IMMUNISATIONS

Immunisation card available? Yes No
 Circle vaccination already received. Complete the immunization schedule below, sign for any vaccination given in Inpatient Care and complete the Road to Health card. (Provide a Road to Health card if not yet received).

Vaccination	At birth	First	Second	Third
BCG*	At birth	—	—	—
Polio	At birth	At 6 weeks	At 10 weeks	At 14 weeks
Penta**	—	At 6 weeks	At 10 weeks	At 14 weeks
Rotavirus	—	At 6 weeks	At 10 weeks	—
Measles	—	At 9 months	—	—

* BCG: bacille Calmette-Guérin vaccine

** Penta: diphtheria, tetanus, pertussis, hepatitis B and haemophilus influenza vaccine

PATIENT OUTCOME

Referral to Outpatient Care Site:	Date:
Comment:	
In case of treatment in Inpatient Care until full recovery and/or discharge, indicate outcome: <u>Discharged CURED</u>	
Discharge based on 15% weight change (Discharged cured) <u>18/7/10</u>	Discharge weight ≥ 15% weight gain: Yes No
Early departure or defaulting after 2 days' absence (Discharged defaulted)	MUAC: _____ mm Weight: <u>5.2</u> kg Height: _____ cm
Non-recovery after 2 months in treatment (Discharged non-recovered)	
Death (Discharged died)	Number of days after admission (circle): < 1 1-3 days 4-7 days > 7 days Time of death: Day Night
	Apparent cause(s) of death: Had child received IV fluids? Yes No

Name: EATMA Sex: M F Age: 4/2/2009 Date of admission: 18 July 10 Time: 10:27 AM Hospital ID number: _____ Page 1 of 6

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

SIGNS OF SAM Severe wasting? Yes No Bilateral Pitting Oedema? 0 + <input checked="" type="radio"/> ++ +++ Dermatosis? 0 <input checked="" type="radio"/> + ++ +++ (raw skin, fissures) Weight (kg): <u>8.2</u> Height / length (cm): _____ WFH z-score: _____ MUAC (mm): <u>105</u>		SIGNS OF SHOCK <input checked="" type="radio"/> None Lethargic/unconscious Cold hands Slow capillary refill (> 3 seconds) Weak or fast pulse If lethargic or unconscious*, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids: Amount IV fluids per hour: 15 ml x _____ kg (child's wt) = _____ ml																																																													
TEMPERATURE: <u>36.5°C</u> (axillary) rectal If axillary < 35°C or rectal < 35.5°C, actively warm child. Check temperature every 30 minutes.		<table border="1"> <tr> <td></td> <td>Start:</td> <td>Monitor every 10 minutes</td> <td>**2nd hr</td> <td>Monitor every 10 minutes</td> </tr> <tr> <td>Time</td> <td></td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Resp. rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> <tr> <td>Pulse rate</td> <td></td> <td></td> <td>**</td> <td></td> </tr> </table>			Start:	Monitor every 10 minutes	**2 nd hr	Monitor every 10 minutes	Time			**		Resp. rate			**		Pulse rate			**																																									
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BLOOD GLUCOSE (mmol/L): <u>4</u> If no test available, treat for hypoglycaemia. If < 3 mmol/L and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG): Yes No If < 3 mmol/L and lethargic, unconscious or convulsing, give sterile 10% glucose IV: 5 ml x _____ kg (child's weight) = _____ ml. Then give 50 ml bolus NG. Time glucose given: Oral NG IV		* In case of suspected hypernatraemic dehydration, see Operational Guide or CMAM Manual Appendix, page 183. ** If respiratory and pulse rates are slower after 1 hour, repeat same amount IV fluids for second hour; then alternate ReSoMal and F-75 for up to 10 hours as in right section of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See 'Haemoglobin' section at left.) Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood.																																																													
HAEMOGLOBIN (Hb) (g/dl): <u>7</u> or Packed Cell Vol (PCV): _____ Blood type: _____ If Hb < 4 g/dl (or Hb 4-6 g/dl AND respiratory distress), transfuse 10 ml/kg whole fresh blood (or 5-7 ml/kg packed cells) slowly over 3 hours. Amount: _____ Time started: _____ Ended: _____		DIARRHOEA Watery diarrhoea? Yes <input checked="" type="radio"/> No Blood in stool? Yes <input checked="" type="radio"/> No Vomiting? Yes <input checked="" type="radio"/> No Number of days with diarrhoea: _____ If diarrhoea, circle signs present: Skin pinch goes back slowly Lethargic Thirsty Restless/irritable Dry mouth/tongue No tears Sunken eyes																																																													
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	F-75	F-75	F-75	F-75	F-75																																																										
ANTIBIOTICS (Drug/Route) <u>Amoxicillin ORAL</u>		Dose/Frequency/Duration <u>5 ml / 8 hrly for 5 days</u> Time of 1 st Dose																																																													
MALARIA TEST (Type/Date/Outcome): <u>- VE</u>		Antimalarial: _____ Dose/Frequency/Duration _____ Time of 1 st Dose _____																																																													
HIV TEST (Type/Date/Outcome): _____		If + HIV test, give cotrimoxazole: _____																																																													

Name: FATMA Sex: M F Age: 4/2/2009 Date of admission: 18 July 10 Time: 10:27 AM Hospital ID number: _____ Page 6 of 6

COMMENTS/OUTCOME

COMMENTS

TRAINING GIVEN TO PARENTS/ CAREGIVERS

IMMUNISATIONS

Immunisation card available? Yes No
 Circle vaccination already received. Complete the immunization schedule below, sign for any vaccination given in Inpatient Care and complete the Road to Health card. (Provide a Road to Health card if not yet received).

Vaccination	At birth	First	Second	Third
BCG*	At birth	—	—	—
Polio	At birth	At 6 weeks	At 10 weeks	At 14 weeks
Penta**	—	At 6 weeks	At 10 weeks	At 14 weeks
Rotavirus	—	At 6 weeks	At 10 weeks	—
Measles	—	At 9 months	—	—

* BCG: bacille Calmette-Guérin vaccine
 ** Penta: diphtheria, tetanus, pertussis, hepatitis B and haemophilus influenza vaccine

REFERRAL, FOLLOW-UP OR DISCHARGE INSTRUCTIONS

FATMA WAS REFERRED TO OTASH HEALTH CENTRE IN NYATA LOCALITY, SOUTH DARFUR

- The locality Nutrition office was contacted to follow-up
- Continue with treatment in outpatient care

PATIENT OUTCOME

Referral to Outpatient Care Site: OTASH HEALTH CENTRE Date: 24 July 10

Comment: NYATA

In case of treatment in Inpatient Care until full recovery and/or discharge, indicate outcome: _____ Date: _____

Discharge based on 15% weight change (Discharged cured)	Discharge weight ≥ 15% weight gain: Yes No
Early departure or defaulting after 2 days' absence (Discharged defaulted)	MUAC: _____ mm Weight: _____ kg Height: _____ cm
Non-recovery after 2 months in treatment (Discharged non-recovered)	Number of days after admission (circle): < 1 1-3 days 4-7 days > 7 days Time of death: Day Night
Death (Discharged died)	Apparent cause(s) of death: Had child received IV fluids? Yes No

Name: MONA Sex: M F Age: 7/12 Date of admission: 12 July 10 Time: 10:30 AM Hospital ID number: _____ Page 1 of 6

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

SIGNS OF SAM Severe wasting? <input checked="" type="radio"/> Yes <input type="radio"/> No Bilateral Pitting Oedema? <input checked="" type="radio"/> 0 <input type="radio"/> + <input type="radio"/> ++ <input type="radio"/> +++ Dermatitis? <input checked="" type="radio"/> 0 <input type="radio"/> + <input type="radio"/> ++ <input type="radio"/> +++ (raw skin, fissures) Weight (kg): <u>3.9</u> Height / length (cm): _____ WFH z-score: _____ MUAC (mm): <u>96</u>		SIGNS OF SHOCK <input checked="" type="radio"/> None <input type="radio"/> Lethargic/unconscious <input type="radio"/> Cold hands <input type="radio"/> Slow capillary refill (> 3 seconds) <input type="radio"/> Weak or fast pulse If lethargic or unconscious*, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids: Amount IV fluids per hour: 15 ml x _____ kg (child's wt) = _____ ml																																																																																	
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Name: MIONA Sex: M F Age: 7/12

Date of admission: 12 July 10 Time: 10:30 AM Hospital ID number: _____ Page 6 of 6

COMMENTS/OUTCOME

COMMENTS

MIONA'S MUAC ON REFERRAL WAS 100mm with good appetite. Mother was referred to OPC to continue.

TRAINING GIVEN TO PARENTS/ CAREGIVERS

- Appropriate complementary feeds
- RUTF provided key messages

IMMUNISATIONS

Immunisation card available? Yes No
Circle vaccination already received. Complete the immunization schedule below, sign for any vaccination given in Inpatient Care and complete the Road to Health card. (Provide a Road to Health card if not yet received).

Vaccination	At birth	First	Second	Third
BCG*	At birth	-	-	-
Polio	At birth	At 6 weeks	At 10 weeks	At 14 weeks
Penta**	-	At 6 weeks	At 10 weeks	At 14 weeks
Rotavirus	-	At 6 weeks	At 10 weeks	-
Measles	-	At 9 months	-	-

* BCG: bacille Calmette-Guérin vaccine
** Penta: diphtheria, tetanus, pertussis, hepatitis B and haemophilus influenza vaccine

REFERRAL, FOLLOW-UP OR DISCHARGE INSTRUCTIONS

Mother and child should report at KARARI Health Centre for outpatient care Friday 23/7/10
RUTF provided for 7 days

PATIENT OUTCOME

Referral to Outpatient Care Site: KARARI HEALTH CENTRE Date: 20 July 10

Comment: _____

In case of treatment in Inpatient Care until full recovery and/or discharge, indicate outcome:

Date:		Discharge weight ≥ 15% weight gain: Yes No
Discharge based on 15% weight change (Discharged cured)		
Early departure or defaulting after 2 days' absence (Discharged defaulted)		MUAC: _____ mm Weight: _____ kg Height: _____ cm
Non-recovery after 2 months in treatment (Discharged non-recovered)		
Death (Discharged died)		Number of days after admission (circle): <1 1-3 days 4-7 days >7 days Time of death: Day Night Apparent cause(s) of death: Had child received IV fluids? Yes No

Name: Omer Sex: M F Age: 16/6/08 Date of admission: 19 July 10 Time: _____ Hospital ID number: _____ Page 1 of 6

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

SIGNS OF SAM Severe wasting? <input checked="" type="radio"/> Yes <input type="radio"/> No Bilateral Pitting Oedema? <input checked="" type="radio"/> 0 <input type="radio"/> + <input type="radio"/> ++ <input type="radio"/> +++ Dermatosis? <input checked="" type="radio"/> 0 <input type="radio"/> + <input type="radio"/> ++ <input type="radio"/> +++ (raw skin, fissures) Weight (kg): <u>6.5</u> Height / length (cm): _____ WFH z-score: _____ MUAC (mm): <u>95</u>		SIGNS OF SHOCK <input checked="" type="radio"/> None <input type="radio"/> Lethargic/unconscious <input type="radio"/> Cold hands <input type="radio"/> Slow capillary refill (> 3 seconds) <input type="radio"/> Weak or fast pulse If lethargic or unconscious*, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids: Amount IV fluids per hour: 15 ml x _____ kg (child's wt) = _____ ml																																																																																																																																																																	
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Name: SELMA Sex: M F Age: 2 YRS Date of admission: 20 July 10 Time: 11:00 Hospital ID number: 10841 Page 1 of 6

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

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ANTIBIOTICS (Drug/Route) <u>AMOXICILLIN ORAL</u> <u>45-90 mg/kg/day</u>		Dose/Frequency/Duration <u>200 mg 3 times a day for 5 days</u> Time of 1 st Dose																															
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Name: SELMA

Sex: M F

Age: 2 YRS

Date of admission: 20 July 10

Time: 11:00

Hospital ID number: 10841

COMMENTS/OUTCOME

COMMENTS

MOTHER RUN AWAY WITH CHILD ON THE MORNING OF 21/7/10. CHILD WAS HAVING SEVERE DIARRHOEA ON DEPARTURE

TRAINING GIVEN TO PARENTS/ CAREGIVERS

NO

REFERRAL, FOLLOW-UP OR DISCHARGE INSTRUCTIONS

OUTPATIENT CARE NUTRITION OFFICER REQUESTED TO FOLLOW UP CHILD ON 24/7/10.

IMMUNISATIONS

Immunisation card available? Yes No
 Circle vaccination already received. Complete the immunization schedule below, sign for any vaccination given in Inpatient Care and complete the Road to Health card. (Provide a Road to Health card if not yet received).

Vaccination	At birth	First	Second	Third
BCG*	At birth	—	—	—
Polio	At birth	At 6 weeks	At 10 weeks	At 14 weeks
Penta**	—	At 6 weeks	At 10 weeks	At 14 weeks
Rotavirus	—	At 6 weeks	At 10 weeks	—
Measles	—	At 9 months	—	—

* BCG: bacille Calmette-Guérin vaccine

** Penta: diphtheria, tetanus, pertussis, hepatitis B and haemophilus influenza vaccine

PATIENT OUTCOME

Referral to Outpatient Care Site:	Date:
Comment: <u>DEFAULTED</u>	
In case of treatment in Inpatient Care until full recovery and/or discharge, indicate outcome:	
Date:	
Discharge based on 15% weight change (Discharged cured)	Discharge weight ≥ 15% weight gain: Yes No
Early departure or defaulting after 2 days' absence (Discharged defaulted) <u>23/7/10</u>	MUAC: _____ mm Weight: _____ kg Height: _____ cm
Non-recovery after 2 months in treatment (Discharged non-recovered)	
Death (Discharged died)	Number of days after admission (circle): < 1 1-3 days 4-7 days > 7 days Time of death: Day Night
	Apparent cause(s) of death: Had child received IV fluids? Yes No

CMAM Site Tally Sheet for Children 6–59 Months with SAM

Community, Administrative Unit, Locality, State						
SITE (circle one)	Outpatient Care	Inpatient Care				
MONTH	July 2010					
Date of week	July 4-10	July 11-17	July 18-24	July 25-31	TOTAL MONTH	
TOTAL start of week (A)			?			Start of Month:
New Cases SAM Children 6–59 months (Oedema) (B1)						
New Cases SAM Children 6–59 months (MUAC < 115 mm) (B2)						
New Cases SAM Children 6–59 months (WFH < -3 z-score) (B3)						
New Cases SAM other age groups: infants < 6 m, children ≥ 5 y, adolescents, adults* (B4)	[]	[]	[]	[]	[]	[]
TOTAL NEW ADMISSIONS (B) (B=B1+B2+B3)			3			
Old Cases SAM: Returned defaulters (Children 6–59 months) (C1)						
Old Cases SAM: Referred from Outpatient Care or Inpatient Care (Children 6–59 months) (C2)						
TOTAL ENTRIES (D) (D=B1+B2+B3+C1+C2)			3			
Discharged Cured (Children 6–59 months) (E1)			(1 cured case was < 6 m)			
Discharged Died (Children 6–59 months) (E2)						
Discharged Defaulted (Children 6–59 months) (E3)						
Discharged Non-Recovered (Children 6–59 months) (E4)						
TOTAL DISCHARGES (Children 6–59 months) (E) (E=E1+E2+E3+E4)			2			
Referred to Outpatient Care or Inpatient Care (Children 6–59 months) (F1)						
Referred to higher care level (Children 6–59 months) (F2)						
TOTAL EXITS (Children 6–59 months) (G) (G=E+F1+F2)			4			
Total end of week (Children 6–59 months) (H) (H=A+D-G)			?			End of Month:
SEX OF NEW CASES ADMITTED (Children 6–59 months)	MALE					
	FEMALE					

* Infants < 6 months, children ≥ 5 years, adolescents and adults (B4) are tallied and monitored separately, for planning purposes.