

ANSWER SHEETS FOR EXERCISES



Training Course on Inpatient Management of Severe Acute Malnutrition

(Adapted from the 2002 WHO *Training course on the inpatient management of severe acute malnutrition*)

Children 6–59 Months with SAM and Medical Complications

March 2012

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 2010 MOH/GHS *Interim National Guidelines for Community-Based Management of Severe Acute Malnutrition in Ghana*. The training course was modified by the MOH/GHS SAM Support Unit in collaboration with the MOH/GHS Regional SAM Support Teams. USAID/Ghana, FANTA-2 Bridge project, UNICEF/Ghana and WHO/Ghana provided technical and financial support to review and modify the training course. This revised training course is made possible by the generous support of the American people through the support of USAID/Ghana 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.

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Abbreviations and Acronyms

CCP	Critical Care Pathway
cm	Centimetre(s)
dl	Decilitre(s)
F-75	Formula 75 Therapeutic Milk
F-100	Formula 100 Therapeutic Milk
g	Gram(s)
kg	Kilogram(s)
IM	Intramuscular
IU	International Unit(s)
IV	Intravenous
mg	Milligram(s)
ml	Millilitre(s)
mmol	Millimole(s)
MUAC	Mid-Upper Arm Circumference
NGT	Nasogastric Tube
ReSoMal	Rehydration Solution for Malnutrition
RUTF	Ready-to-Use Therapeutic Food
SAM	Severe Acute Malnutrition
TB	Tuberculosis
WHZ	Weight-for-Height (or Length) Z-Score
° C	Degrees Celsius
%	Percent

MODULE 2, PRINCIPLES OF CARE

Module 2, Principles of Care: Exercise A (page 9)

- Photo 1: Moderate oedema (++), seen in feet and lower legs
Severe wasting of upper arms; ribs and collar bones clearly show
- Photo 2: Severe dermatosis (+++); note fissure on lower thigh
Moderate oedema (++) at least; feet, legs, hands, and lower arms appear swollen; the child's face is not fully shown in the photo, but the eyes may also be puffy, in which case the oedema would be severe (+++)
- Photos 3 and 4 (front and back view of same child):
- Child has severe wasting; from the front, the ribs show, and there is loose skin on the arms and thighs; bones of the face clearly show; from the back, the ribs and spine show; folds of skin on the buttocks and thighs look like 'baggy pants'
- Photo 5: Generalised oedema (+++); feet, legs, hands, arms, and face appear swollen
Probably moderate dermatosis (++); several patches are visible, but you would have to undress the child to see if there are more patches or any fissures; there may be a fissure on the child's ankle, but it is difficult to tell
- Photo 6: Severe wasting; the child looks like 'skin and bones'; ribs clearly show; upper arms are extremely thin with loose skin.
(Also note the sunken eyes, a possible sign of dehydration, which will be discussed later.)
Some discoloration on the abdomen, which may be mild dermatosis; it is difficult to tell from the photo
- Photo 7: Mild dermatosis (+); child has skin discoloration, often an early skin change in malnutrition
Some wasting of the upper arms, and the shoulder blades show, but wasting does not appear severe
- Photo 8: Pus, a sign of eye infection
- Photo 9: Corneal clouding, a sign of vitamin A deficiency
- Photo 10: Bitot's spot, a sign of vitamin A deficiency
Inflammation (redness), a sign of infection

- Photo 11: Corneal clouding, a sign of vitamin A deficiency
Irregularity in the surface suggests that this eye almost has an ulcer
- Photo 12: Corneal ulcer (indicated by arrow), emergency sign of vitamin A deficiency; if not treated immediately with vitamin A and atropine, the lens of the eye may push out and cause blindness
Also shows inflammation, a sign of infection
- Photo 13: Since only the legs are visible, cannot tell the extent of oedema; both feet and legs are swollen, so it is at least ++; notice the 'pitting' oedema in lower legs
- Photo 14: Moderate (++) dermatosis; note patches on hands and thigh; you would have to undress the child to see how extensive the dermatosis is
Generalized oedema (+++); legs, hands, arms and face appear swollen.
- Photo 15: Severe (+++) dermatosis and wasting (upper arms)
Moderate (++) oedema (both feet), lower legs, possibly hands

Additional photos discussed in relation to eye signs:

- Photo 16: Shows a photophobic child; eyes cannot tolerate light due to vitamin A deficiency; child's eyes must be opened gently for examination; likely to have corneal clouding as in Photo 9

For contrast, Photo 17 shows a baby with healthy, clear eyes.

Module 2, Principles of Care: Exercise B (page 20)

1. Shana: WHZ < -3
2. Rico: WHZ < -3
3. Tonya: WHZ -3
4. Kareem: WHZ -3

All children with a WHZ less than -3 are considered to have SAM.

Module 2, Principles of Care: Exercise C (page 25)

- Photo 18: This child should be classified as having (SAM). Her WHZ is greater than -3 , her MUAC is above 11.5 cm, but she has oedema in both feet and lower legs (at least moderate [grade ++] oedema). If the child has no medical complications, she should be treated in Outpatient Care. But if she has medical complications, she should be treated in Inpatient Care.
- Photo 19: This child should be classified as having SAM. Her WHZ is less than -4 , and her MUAC is less than 11.5 cm. The child has no apparent oedema. If the child has a good appetite and no medical complications, she should be treated in Outpatient Care, but if she has medical complications she should be treated in Inpatient Care.
- Photo 20: This child should be classified as having SAM. His WHZ is less than -4 , and his MUAC is less than 11.5 cm.
Note: It will be important to remove his shirt to examine him. Notice that the mother in this photo is also extremely thin.

MODULE 3, INITIAL MANAGEMENT

Module 3, Initial Management: Exercise A (page 15)

Case 1 – Tina

- 1a. Yes, Tina should be admitted to Inpatient Care since she has oedema in both feet and her MUAC is less than 11.2 cm. Tina has *marasmic-kwashiokor*.
- 1b. Tina is not hypothermic because her temperature is not less than 35° C.
- 1c. Tina is not hypoglycaemic since her blood sugar is above 3 mmol.
- 1d. Tina does not have severe anaemia since her haemoglobin is well above 4 g/dl.
- 1e. Tina is not in shock. She is not lethargic or unconscious, and she does not have cold hands.
- 1f. Two things that should be done for Tina immediately:
 - Keep her warm to prevent hypothermia
 - Start F-75; give 70 ml every 2 hours

Note: Experienced participants may also mention antibiotics. Antibiotics are needed and will be discussed later in the module.

Case 2 – Kalpana

- 2a. Give a 50 ml bolus of 10 percent glucose or sucrose.

Since she can drink, give it orally.

- 2b. Begin F-75 half an hour after giving glucose.

Every half-hour for 2 hours, give $\frac{1}{4}$ of the recommended 2-hourly amount (which is 90 ml for a child weighing 8 kg).

$$\frac{1}{4} \times 90 \text{ ml} = 22.25 \text{ ml}$$

So the amount to give every half-hour is about 22 ml (round amounts to the nearest ml).

- 2c. Yes, Kalpana has very severe anaemia since her haemoglobin is 3.9 g/dl.

She needs a blood transfusion. Since Kalpana has no signs of congestive heart failure, she can be given whole fresh blood. Stop all oral intake during the transfusion. Give a diuretic and then transfuse 80 ml whole fresh blood slowly over 3 hours ($10 \text{ ml/kg} \times 8 \text{ kg} = 80 \text{ ml}$).

Case 3 – John

- 3a. Four treatments that John needs immediately:

- Oxygen
- 5 ml/kg sterile 10 percent glucose by IV
- IV fluids
- Active rewarming (kangaroo technique or heater/lamp)

***Note:** Experienced participants may mention the need for antibiotics. Antibiotics are needed and will be discussed later in the module.*

- 3b. Give 29 ml sterile 10 percent glucose by IV ($5 \text{ ml/kg} \times 5.8 \text{ kg} = 29.0 \text{ ml}$, calculated under Blood Glucose on the CCP).

***Note:** Since John will receive IV fluids containing glucose, there is no need to follow his 10 percent IV glucose with a 50 ml bolus by NGT.*

- 3c. Give 87 ml IV fluids in first hour. This amount is calculated as on the CCP:

$$15 \text{ ml/kg} \times 5.8 \text{ kg} = 87 \text{ ml}$$

- 3d. Repeat the same amount of IV fluids (87 ml) for next hour.
- 3e. Give ReSoMal and F-75 in alternate hours.
- 3f. 65 ml of F-75 should be given at each feed.

Module 3, Initial Management: Exercise B (page 25)

Ramesh

- 1a. $5 \text{ ml/kg} \times 7.3 \text{ kg} = 36.5 \text{ ml}$, rounded to 37 ml of ReSoMal every 30 minutes for 2 hours
- 1b. Least amount: $5 \text{ ml/kg} \times 7.3 \text{ kg} = 36.5 \text{ ml}$, rounded to 37 ml of ReSoMal
- 1c. Greatest amount: $10 \text{ ml/kg} \times 7.3 \text{ kg} = 73 \text{ ml}$ of ReSoMal

Note that 36.5 ml is rounded up to 37 ml.

Sula

- 2a. $5 \text{ ml/kg} \times 11.6 \text{ kg} = 58 \text{ ml}$ of ReSoMal every 30 minutes for 2 hours
- 2b. Least amount: $5 \text{ ml/kg} \times 11.6 \text{ kg} = 58 \text{ ml}$ of ReSoMal
- 2c. Greatest amount: $10 \text{ ml/kg} \times 11.6 \text{ kg} = 116 \text{ ml}$ of ReSoMal

Module 3, Initial Management: Exercise C (page 29)

Case 1 – Marwan

1a. Three things that should be done immediately for Marwan:

- Give 50 ml bolus of 10% glucose orally
- Give 100,000 IU vitamin A and atropine eye drops immediately
- Actively rewarm him (kangaroo technique or heater/lamp)

Note: Experienced participants may mention the need for antibiotics. Antibiotics are needed and will be discussed later in the module.

1b. In a half-hour, give F-75. Give $\frac{1}{4}$ of the 2-hourly amount for a child weighing 6.2 kg:

$$\frac{1}{4} \times 70 \text{ ml} = 17.5 \text{ ml (Round up to 18 ml.)}$$

Case 2 – Ram

2a – 2c. Answers are given on the CCP for Ram, on the next page.

2d. Signs of overhydration:

- Increase in pulse and respiratory rates (both)
- Jugular veins engorged
- Increasing oedema, e.g., puffy eyelids

2e. Answers are given on the CCP for Ram on the next page.

2f. Signs of improving hydration:

- Passed urine (recorded at 10:30 monitoring)
- Is no longer thirsty
- Has a moist mouth and tears
- Skin pinch is normal

2g. Stop offering ReSoMal routinely in alternate hours since he has more than 3 signs of improving hydration. Give ReSoMal after each loose stool instead.

2h. Give 50 ml of F-75 (based on new weight of 4.5 kg). See this information recorded on Ram's CCP on the next page.

2i. Since Ram is under 2 years old, he should be given 50–100 ml ReSoMal after each loose stool to replace stool losses.

CCP for Ram

Name: Ram Sex: (M) F Age (months): 9 months Date of Admission: _____ Time: _____ Hospital ID Number: _____

INITIAL MANAGEMENT

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

ADMISSION AS: <u>(Old Case)</u> (from Outpatient, Inpatient Care or other), New case			SIGNS OF SHOCK <u>(None)</u> Lethargic/unconscious Cold hand Slow capillary refill (> 3 seconds) Weak/fast pulse																																																																																																																																		
VISIBLE SIGNS OF SAM Severe wasting? <u>(Yes)</u> No			If lethargic or unconscious, plus cold hand, plus either slow capillary refill or weak/fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left).																																																																																																																																		
Bilateral Pitting Oedema? <u>(0)</u> + ++ +++			Then give IV fluids: Amount IV fluids per hour: 15 ml x _____ kg (child's wt) = _____ ml																																																																																																																																		
Dermatitis? <u>(0)</u> + ++ +++ (raw skin, fissures)			Start: Monitor every 10 minutes *2 nd hr Monitor every 10 minutes																																																																																																																																		
Weight (kg): <u>4.4</u> MUAC (cm): <u>10.4</u>			Time																																																																																																																																		
TEMPERATURE: <u>37.5</u> °C <u>(axillary)</u> rectal If axillary < 35°C or rectal < 35.5°C, actively warm child. Check temperatures every 30 minutes.			Resp. Rate																																																																																																																																		
BLOOD GLUCOSE (mmol/l) <u>5 mmol/L</u> If < 3 mmol/L and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NGT). If < 3 mmol/L and lethargic, unconscious, or convulsing, give sterile 10% glucose IV: 5 ml x _____ kg (child's wt) = _____ ml. Then give 50 ml bolus by NGT.			Pulse rate																																																																																																																																		
Time glucose given: Oral NGT IV			*If respiratory & pulse rates are slower after 1 hour, repeat same amount IV fluids for 2 nd 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, left.) Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood.																																																																																																																																		
HAEMOGLOBIN (Hb) (g/dl): <u>1.2</u> or Packed cell vol (PCV): Blood type: If Hb < 4 g/dl or PCV < 12%, transfuse 10 ml/kg whole fresh blood (or 5–7 ml/kg packed cells) slowly over 3 hours. Amount: _____ Time started: _____ Ended: _____			DIARRHOEA Watery diarrhoea? <u>(Yes)</u> No Blood in stool? Yes No Vomiting? Yes No																																																																																																																																		
EYE SIGNS <u>(None)</u> Left Right Bitot's spots Pus/Inflammation Corneal clouding Corneal ulceration *If eye signs, give vitamin A on day 1, 2 and 15. Record on Daily Care page. **If corneal ulceration, give atropine eye drops immediately. Record on Daily Care page ***If no eye signs, give vitamin A preventive dose on the 4 th week or after full recovery from SAM (upon discharge), record on Comments/Outcome page.			If diarrhoea, circle signs present: Skin pinch goes back slowly Lethargic <u>(Thirsty)</u> Restless/irritable Dry mouth/tongue <u>(No tears)</u> Sunken eyes																																																																																																																																		
Oral dose of vitamin A: < 6 months 50,000 IU 6–11 months 100,000 IU ≥ 12 months 200,000 IU			If diarrhoea and/or vomiting, give ReSoMal. Every 30 minutes for first 2 hours, monitor and give: 5 ml x <u>4.4</u> kg (child's wt) = <u>22</u> ml ReSoMal																																																																																																																																		
MEASLES (Yes is circled if the child has measles now or had measles in the past 3 months) Yes <u>(No)</u>			For up to 10 hours, give ReSoMal and F-75 in alternate hours. Monitor every hour. Amount of ReSoMal to offer: 5 to 10 ml x <u>4.4</u> kg (child's wt) = <u>22</u> to <u>44</u> ml ReSoMal																																																																																																																																		
FEEDING Begin feeding with F-75 as soon as possible Amount for 2-hourly feedings: <u>50</u> ml F-75* Time first fed: <u>12:00</u> *If hypoglycaemic, feed _____ ml F-75 (¼ of the amount above) every half hour for the first 2 hours; continue until blood glucose reaches 3 mmol/L. **If child was dehydrated, use the new weight after rehydration to determine amount of F-75.			<table border="1"> <tr> <td>Time</td> <td>9:00</td> <td>9:30</td> <td>10:00</td> <td>10:30</td> <td>11:00</td> <td>12:00</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Resp. rate</td> <td>28</td> <td>28</td> <td>28</td> <td>28</td> <td>25</td> <td>25</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>105</td> <td>105</td> <td>105</td> <td>100</td> <td>100</td> <td>100</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Passed urine?</td> <td>Y</td> <td>N</td> <td>N</td> <td>Y</td> <td>N</td> <td>N</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Number stools</td> <td></td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Number vomits</td> <td></td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Hydration signs</td> <td></td> <td>Some</td> <td>Some</td> <td>moist mouth</td> <td>Not Thirsty</td> <td>Pinch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Amount taken (ml)</td> <td>22</td> <td>22</td> <td>22</td> <td>22</td> <td>44</td> <td>F-75</td> <td></td> <td>F-75</td> <td></td> <td>F-75</td> <td></td> <td>F-75</td> <td></td> <td>F-75</td> <td></td> </tr> </table>			Time	9:00	9:30	10:00	10:30	11:00	12:00										Resp. rate	28	28	28	28	25	25										Pulse rate	105	105	105	100	100	100										Passed urine?	Y	N	N	Y	N	N										Number stools		1	0	0	1	0										Number vomits		0	1	0	0	0										Hydration signs		Some	Some	moist mouth	Not Thirsty	Pinch										Amount taken (ml)	22	22	22	22	44	F-75		F-75		F-75		F-75		F-75	
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*If hypoglycaemic, feed _____ ml F-75 (¼ of the amount above) every half hour for the first 2 hours; continue until blood glucose reaches 3 mmol/L. **If child was dehydrated, use the new weight after rehydration to determine amount of F-75. Record all feeds on 24-hour Food Intake Chart.			*Give ReSoMal orally or in special cases by NGT ** Stop ReSoMal if signs of rehydration appear: Passing urine, moist tongue, making tears, not thirsty. However, if diarrhoea continues, give ReSoMal after each loose stool to replace stool losses and prevent dehydration ***Stop ReSoMal if any sign of over-hydration: Increase in pulse & resp. rates, jugular veins engorges, increase in oedema, puffy eyelids Once the child is rehydrated, reweigh to determine the amount of F-75 to continue feeding. New weight: _____ kg (record the amount of F-75 feeds to be given on the left hand section of this chart)																																																																																																																																		
ANTIBIOTICS (All received) Drug/Route			Dose/Frequency/Duration																																																																																																																																		
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HIV TEST Type/Date/Outcome			Time of 1 st Dose																																																																																																																																		
_____			_____																																																																																																																																		
_____			If HIV+, give Cotrimoxazole																																																																																																																																		

Case 3 – Irena

3a. Answers are given on the CCP for Irena on the next page.

3b. Irena is not hypoglycaemic.

Irena is not hypothermic.

3c. Yes, she needs vitamin A, (as do almost all children with SAM).

It is not necessary immediately; it can wait until later in the day.

3d. Irena is lethargic and has cold hands, slow capillary refill, and fast pulse.

Give 5 ml/kg sterile 10% glucose by IV ($5 \text{ ml/kg} \times 6.1 \text{ kg} = 30.5 \text{ ml}$).

***Note:** Since Irena will receive IV fluids containing glucose, there is no need to follow her IV 10% glucose with a 50 ml bolus by NGT.*

Give $15 \text{ ml/kg} \times 6.1 \text{ kg} = 91.5 \text{ ml}$ IV fluids in the first hour.

3e. See the monitoring data on the CCP on the next page. Irena should be given the same amount of IV fluids over the next hour.

3f. See the second hour of IV section of Irena's CCP on the next page.

3g. At 12:30 she needs ReSoMal. Calculate range of amounts as follows:

$$5\text{--}10 \text{ ml/kg} \times 6.2 \text{ kg} = 31\text{--}62 \text{ ml ReSoMal per hour}$$

This range of amounts is entered on the CCP on the next page.

3h. See the Diarrhoea section of Irena's CCP on the next page.

3i. See the Diarrhoea section of Irena's CCP on the next page.

3j. Give Irena 70 ml of F-75. This amount is recorded in the Feeding section of the first page of the CCP, on the next page.

3k. She should be offered 62 ml of ReSoMal at 14:30.

3l. Since Irena is 25 months old, she needs 100–200 ml of ReSoMal after each loose stool.

CCP for Irena

Name: Irena Sex: M ☒ F Age (months): 25 Date of Admission: March 3 Time: 10:00am Hospital ID Number: _____

INITIAL MANAGEMENT

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

ADMISSION AS: Old Case (from Outpatient, Inpatient Care or other), <u>New case</u>		SIGNS OF SHOCK None <u>Lethargic</u> <u>unconscious</u> <u>Cold hand</u> <u>Slow capillary refill</u> > 3 seconds <u>Weak</u> <u>fast pulse</u>																																																																																																				
VISIBLE SIGNS OF SAM Severe wasting? <u>Yes</u> No		If lethargic or unconscious, plus cold hand, plus either slow capillary refill or weak/fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left).																																																																																																				
Bilateral Pitting Oedema? <u>0</u> + ++ +++		Then give IV fluids: Amount IV fluids per hour: 15 ml x <u>6.1</u> kg (child's wt) = <u>91.5</u> ml																																																																																																				
Dermatosis? <u>0</u> + ++ +++ (raw skin, fissures)		<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>10:30</td> <td>10:40 10:50 11:00 11:10 11:20</td> <td>11:30</td> <td>11:40 11:50 12:00 12:10 12:20</td> </tr> <tr> <td>Resp. Rate</td> <td>40</td> <td>38 36 35 33 32</td> <td>30</td> <td>30 30 30 30 30</td> </tr> <tr> <td>Pulse rate</td> <td>140</td> <td>130 120 100 90 85</td> <td>80</td> <td>80 80 80 80 80</td> </tr> </table>			Start:	Monitor every 10 minutes	*2 nd hr	Monitor every 10 minutes	Time	10:30	10:40 10:50 11:00 11:10 11:20	11:30	11:40 11:50 12:00 12:10 12:20	Resp. Rate	40	38 36 35 33 32	30	30 30 30 30 30	Pulse rate	140	130 120 100 90 85	80	80 80 80 80 80																																																																															
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Pulse rate	140	130 120 100 90 85	80	80 80 80 80 80																																																																																																		
Weight (kg): <u>6.1</u> MUAC (cm): <u>10.9</u>		*If respiratory & pulse rates are slower after 1 hour, repeat same amount IV fluids for 2nd hour; then alternate ReSoMal and F-75 for up to 10 hours as in right section of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See Haemoglobin, left). Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood.																																																																																																				
TEMPERATURE: <u>36</u> °C <u>axillary</u> rectal If axillary < 35°C or rectal < 35.5°C, actively warm child. Check temperatures every 30 minutes.		DIARRHOEA																																																																																																				
BLOOD GLUCOSE (mmol/l) <u>4 mmol/L</u> If < 3 mmol/L and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NGT). If < 3 mmol/L and lethargic, unconscious, or convulsing, give sterile 10% glucose IV: 5 ml x <u>6.1</u> kg (child's wt) = <u>30</u> ml. Then give 50 ml bolus by NGT.		Watery diarrhoea? <u>Yes</u> No Blood in stool? Yes <u>No</u> Vomiting? <u>Yes</u> No																																																																																																				
Time glucose given: <u>10:30</u> Oral NGT <u>IV</u>		If diarrhoea, circle signs present: <u>Lethargic</u> <u>Thirsty</u> <u>Skin pinch goes back slowly</u> <u>Restless/irritable</u> <u>Sunken eyes</u>																																																																																																				
HAEMOGLOBIN (Hb) (g/dl): _____ or Packed cell vol (PCV): _____ Blood type: _____ If Hb < 4 g/dl or PCV < 12%, transfuse 10 ml/kg whole fresh blood (or 5–7 ml/kg packed cells) slowly over 3 hours. Amount: _____ Time started: _____ Ended: _____		If diarrhoea and/or vomiting, give ReSoMal. Every 30 minutes for first 2 hours, monitor and give: 5 ml x _____ kg (child's wt) = _____ ml ReSoMal																																																																																																				
EYE SIGNS None Left <u>Right</u> Bitot's spots <u>Plus</u> Inflammation Corneal clouding Corneal ulceration *If eye signs, give vitamin A on day 1, 2 and 15. Record on Daily Care page. ***If corneal ulceration, give atropine eye drops immediately. Record on Daily Care page ***If no eye signs, give vitamin A preventive dose on the 4 th week or after full recovery from SAM (upon discharge), record on Comments/Outcome page.		For up to 10 hours, give ReSoMal and F-75 in alternate hours. Monitor every hour. Amount of ReSoMal to offer:* 5 to 10 ml x _____ kg (child's wt) = _____ to _____ ml ReSoMal																																																																																																				
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FEEDING Begin feeding with F-75 as soon as possible Amount for 2-hourly feedings: <u>70</u> ml F-75* Time first fed: <u>1:30</u> *If hypoglycaemic, feed _____ ml F-75 (¼ of the amount above) every half hour for the first 2 hours; continue until blood glucose reaches 3 mmol/L. **If child was dehydrated, use the new weight after rehydration to determine amount of F-75. Record all feeds on 24-hour Food Intake Chart.																																																																																																						
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HIV TEST Type/Date/Outcome		If HIV+, give Cotrimoxazole																																																																																																				
		Dose/Frequency/Duration																																																																																																				
		Time of 1st Dose																																																																																																				

Module 3, Initial Management: Exercise D (page 39)

Case 1 – Pershant

- 1a. Give Pershant amoxicillin orally.
- 1b. Answers will vary. The formulation should be one of the following:
Syrup, 125 mg/5 ml
Syrup, 250 mg/5 ml
- 1c. If the 250 mg/5 ml syrup is given, give Pershant 2.5 ml.
If the 125 mg/5 ml syrup is given, give Pershant 5 ml.

(Notice that child weighing up to 8.0 kg are included in the highest weight range given. The middle range includes children up to but not including 8.0 kg.)

1d.

Drug	Route	Dose	Frequency	Duration
Amoxicillin	oral	5 ml or 2.5 ml syrup)	every 8 hours	5 days

Case 2 – Ana

- 2a. Ana should be given gentamicin and ampicillin.
- 2b. Ana can be given antibiotics intravenously or intramuscularly.
- 2c. Giving antibiotics through an IV, using a butterfly needle, is the preferred method. Since Ana would need to receive five IM injections daily (1 injection gentamicin and 4 of ampicillin) for the first 2 days, it is preferable to use a butterfly needle to keep a vein open for injecting drugs.
- 2d. Ampicillin: Mix a vial of 500 mg with 2.1 ml sterile water to give 500 mg/2.5 ml

For gentamicin, three choices are possible:

- a. Vial containing 20 mg (2 ml at 10 mg/ml) undiluted
 - b. Vial containing 80 mg (2 ml at 40 mg/ml) mixed with 6 ml sterile water to give 80 mg/8 ml
 - c. Vial containing 80 mg (2 ml at 40 mg/ml) undiluted
- 2e. Ampicillin: Give 1.75 ml.
- Gentamicin:
- If formulation a is used, give 4.5 ml
 - If formulation b is used, give 4.5 ml
 - If formulation c is used, give 1.1 ml

2f.

Drug	Route	Dose	Frequency	Duration
<i>ampicillin</i>	<i>IV</i>	<i>1.75 ml</i>	<i>every 6 hours</i>	<i>2 days</i>
<i>gentamicin</i>	<i>IV</i>	<i>4.5 ml or 1.1 ml (see 2e)</i>	<i>once daily</i>	<i>7 days</i>

2g. Stop IV ampicillin and give oral amoxicillin for the next 5 days. (Continue gentamicin during this time. Since only one injection of gentamicin is required daily, it may be given by IM injection.)

2h. Answers will vary. Possible answers are:

Syrup, 125 mg/5 ml

Syrup, 250 mg/5 ml

2i. If 125 mg syrup is used, give 5 ml.

If 250 mg syrup is used, give 2 ml.

2j.

Drug	Route	Dose	Frequency	Duration
<i>amoxicillin</i>	<i>oral</i>	<i>5 ml syrup, or 2 ml syrup (see above)</i>	<i>every 8 hours</i>	<i>5 days</i>

Case 3 – Dipti (optional)

3a.

Drug	Route	Dose	Frequency	Duration
<i>benzylpenicillin</i>				

3b. Only one formulation is given for IM injection. The dose is 0.7 ml.

3c.

Drug	Route	Dose	Frequency	Duration
<i>benzylpenicillin</i>	<i>IM</i>	<i>0.7 ml</i>	<i>every 6 hours</i>	<i>5 days</i>

3d. Give ampicillin or amoxicillin orally.

- 3e. **Note:** Participants will do the rest of the exercise for either ampicillin or amoxicillin.

Only one formulation is given for oral ampicillin: a 250 mg tablet.

Possible formulations of oral amoxicillin are:

Syrup, 125 mg/5 ml

Syrup, 250 mg/5 ml

- 3f. If ampicillin was chosen, give Dipti 1½ tablets.

If amoxicillin was chosen, answers will vary.

If the 125 mg syrup was given, Dipti's dose is 5 ml.

If the 250 mg syrup was given, Dipti's dose is 2 ml.

- 3g. If ampicillin was chosen:

Drug	Route	Dose	Frequency	Duration
<i>ampicillin</i>	<i>oral</i>	<i>1½ tablets</i>	<i>every 6 hours</i>	<i>5 days</i>

If amoxicillin was chosen:

Drug	Route	Dose	Frequency	Duration
<i>amoxicillin</i>	<i>oral</i>	<i>5 ml or 2 ml syrup (see above)</i>	<i>every 8 hours</i>	<i>5 days</i>

Module 3, Initial Management: Exercise E (page 47)

1. A copy of a completed first page of the CCP for Rayna is on the next page.
2. Some examples of key points to discuss with the head nurse might be the following.
 - Keep Rayna covered and warm at all times, especially at night.
 - Watch her carefully.
 - Starting now, feed her 70 ml of F-75 every 2 hours, even at night.
 - Give Rayna 200,000 IU of vitamin A today as soon as convenient.
 - Give amoxicillin (specify dose) every 8 hours. Give her the first dose now.
 - Call me (the admitting physician) if she seems worse or if her temperature increases or decreases or pulse and respiratory rates increase.
3. Some examples of possible questions include the following.
 - We are short of staff tonight. Can we feed Rayna every 3 or 4 hours tonight if we give her more?
 - If she is asleep, should we wake her to feed her?
 - What should I do if she vomits?

CCP for Rayna

Name: Rayna Sex: M (F) Age (months): 13 months Date of Admission: October 3 Time: 9:00am Hospital ID Number: _____

INITIAL MANAGEMENT

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

ADMISSION AS: <u>Old Case</u> (from Outpatient, Inpatient Care or other). New case		SIGNS OF SHOCK <u>(None)</u> Lethargic/unconscious Cold hand Slow capillary refill (> 3 seconds) Weak/fast pulse																																																																																																																																														
VISIBLE SIGNS OF SAM Severe wasting? <u>(Yes)</u> No		If lethargic or unconscious, plus cold hand, plus either slow capillary refill or weak/fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left).																																																																																																																																														
Bilateral Pitting Oedema? <u>0</u> (+) ++ +++		Then give IV fluids: Amount IV fluids per hour: 15 ml x _____ kg (child's wt) = _____ ml																																																																																																																																														
Dermatitis? <u>0</u> + ++ +++ (raw skin, fissures)		<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>3-4 mmol/L</u> If < 3 mmol/L and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NGT). If < 3 mmol/L and lethargic, unconscious, or convulsing, give sterile 10% glucose IV: 5 ml x _____ kg (child's wt) = _____ ml. Then give 50 ml bolus by NGT.																																																																																																																																																
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FEEDING Begin feeding with F-75 as soon as possible Amount for 2-hourly feedings: <u>70</u> ml F-75* Time first fed: <u>9:15</u> *If hypoglycaemic, feed _____ ml F-75 (1/2 of the amount above) every half hour for the first 2 hours; continue until blood glucose reaches 3 mmol/L. **If child was dehydrated, use the new weight after rehydration to determine amount of F-75. Record all feeds on 24-hour Food Intake Chart.																																																																																																																																																
ANTIBIOTICS (All received) Drug/Route <u>Amoxicillin - oral</u>		Dose/Frequency/Duration <u>5ml of 125 mg / 5ml every 8 hours for 5 days</u>																																																																																																																																														
MALARIA TEST Type/Date/Outcome _____		Time of 1 st Dose <u>9:15</u>																																																																																																																																														
HIV TEST Type/Date/Outcome _____		Antimalarial: _____ Dose/Frequency/Duration _____ Time of 1 st Dose _____																																																																																																																																														

MODULE 4, FEEDING

Module 4, Feeding: Exercise B (page 20)

Case 1 – Delroy

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

1c.

DATE: 5/12/01	TYPE OF FEED: F-75	GIVE: 8 feeds of 75 ml
---------------	--------------------	------------------------

1d. 8:00, 11:00, 14:00, 17:00, 20:00, 23:00, 2:00, 5:00

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

1e.

DAILY CARE

		Week 1							Week 2	
DAYS IN HOSPITAL		1	2	3	4	5	6	7	8	9
Date		4/12	5/12							
Daily weight (kg)		4.6	4.6							
Weight gain (g/kg)		Calculate daily after on RUTF or F-100								
Bilateral pitting oedema	0 + ++ +++	0	0							
Diarrhoea (D) or Vomit (V)	O D V	D	D							
FEED PLAN:	Type feed	F-75	F-75							
	# daily feeds	10	8							
	Volume to give per feed	50	75							
	Total volume taken (ml)	480								
	NG Tube Y N	N								
	Breastfeeding Y N	Y								
	Appetite test with RUTF F failed P passed	F								

Case 2 – Pedro

- 2a. Pedro took 570 ml on Day 2. The table shows that 80% of the expected daily total is 500 ml, so yes, Pedro took more than that.
- 2b. Because he vomited his last feed and is a reluctant eater, Pedro should stay on 3-hourly feeds.
- 2c.

DATE: 7/12/01	TYPE OF FEED: F-75	GIVE: 8 feeds of 80 ml
---------------	--------------------	------------------------

Case 3 – Rositha

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

DATE: 9/02/01	TYPE OF FEED: F-75	GIVE: 8 feeds of 80 ml
---------------	--------------------	------------------------

***Note:** When a child starts with severe oedema, continue using the F-75 table for severe oedema throughout the initial feeding days on F-75, even if the child's oedema goes away. The amount given at the beginning is the right amount for the child's 'true' weight. For example, the amounts given for Rositha's starting weight of 6.4 kg correspond approximately to those that would be given for a 'true' weight of 4.9 kg.*

Case 4 – Suraiya

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

DATE: 15/03/01	TYPE OF FEED: F-75	GIVE: 12 feeds of 60 ml
----------------	--------------------	-------------------------

Suraiya will continue on the same plan as the day before, but will be fed by NGT as needed.

Module 4, Feeding: Exercise C (page 34)

Case 1 – Delroy

- 1a. Delroy should be offered 140 ml of F-100 (The amount is increased by 10 ml since Delroy completed the last feeding. 140 ml should be entered in the column headed 'a. Amount Offered' for the 4:00 feeding.)
- 1b. For the 4:00 feeding, 10 ml was left, so the amount taken orally was 130 ml. These amounts should be entered in columns b and c.
- b. Amount left in cup (ml): 10
 - c. Amount taken orally (ml): 130

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

Total c. Amount taken orally: 720 ml
Total d. Amount taken by NGT: 0
Total e. Amount vomited: 0
Total yes: 0

Total volume taken over 24 hours: 720ml

- 1c. On the CCP, in the column for Day 6, add:
- Diarrhoea/vomit: 0
 - Total volume taken (ml): 720

Case 2 – Pedro

- 2a. No, he must stay at the same amount for the first 2 days of transition.
- 2b. The nurse should explain that it is important to be cautious while Pedro's body adjusts to more food. It is good that Pedro is hungry; that is a sign of improvement. However, too much food too quickly would be dangerous. The mother should be encouraged to breastfeed Pedro between feeds of F-100. It is important for the nurse to keep conducting the RUTF appetite test to see if Pedro will eat the RUTF.
- 2c. RUTF should first be offered to Pedro to test the appetite. If Pedro does not eat the RUTF, continue feeds of F-100 in increments of 10 ml. Pedro's mother should be encouraged to breastfeed Pedro between feeds of F-100.

Case 3 – Rositha

- 3a. Yes, she is ready for transition. Her oedema appears to be gone, and she eagerly finished all of her 4-hourly feedings of F-75 on Day 6.
- 3b. On Day 7, the first day of transition, give Rositha the same amount of F-100 as was given of F-75 on previous day:

DATE: 12/02/01	TYPE OF FEED: F-100	GIVE: 6 feeds of 105 ml
----------------	---------------------	-------------------------

- 3c. On Day 8, the second day of transition, stay with same amount of F-100.

DATE: 13/02/01	TYPE OF FEED: F-100	GIVE: 6 feeds of 105 ml
----------------	---------------------	-------------------------

- 3d. On Day 9, the third day of transition, increase feeds by 10 ml per feed as long as Rositha takes all of each feed.

DATE: 14/02/01	TYPE OF FEED: F-100	GIVE: 6 feeds of 115 ml
----------------	---------------------	-------------------------

Module 4, Feeding: Exercise D (page 41)

Case 1 – Delroy

- 1a. 170 ml
- 1b. 125–185 ml
- 1c. 180 ml
- 1d. Increase the feeds if Delroy is finishing his feeds. Do not exceed 185 ml.
- 1e. 190 ml is the starting amount. It should not be increased on Day 9, as 190 ml is the maximum amount for a child weighing 5.2 kg. (When his weight increases on subsequent days, he may have more.)

Case 2 – Pedro

- 2a. Since Pedro weighs 5.05 kg, his appropriate range of daily volume is 750–1,100 ml of F-100.

He took 900 ml, which is in this range.

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

- 2c.

DATE: 14/12/01	TYPE OF FEED: F-100 GIVE: <u>6</u> feeds of <u>160↑</u> ml <i>Do not exceed 185 ml</i>
----------------	---

Case 3 – Rositha

- 3a. 570 ml
- 3b. The appropriate daily range is 780–1,144 ml No, she did not take a total amount within this range.
- 3c. Rositha may have an infection causing her temperature to increase and her to eat less.
- 3d. ✓ Both of the above.

Module 4, Feeding: Exercise F (page 53)

DAILY WARD FEED CHART

Date: <u>17/05/01</u>				Ward: <u>Severe Acute Malnutrition</u>		
Name of Child	F-75			F-100		
	Number feeds	Amount/feed (ml)	Total (ml)	Number feeds	Amount/ feed (ml)	Total (ml)
Mina				6	250	1500
Tara	12	50	600			
Abul				6	180	1080
Maya				6	160	960
Nisha	12	65	780			
Ben	8	115	920			
Kwesi	6	130	780			
Vera				6	160	960
F-75 (total ml) needed for 24 hours			3,080	F-100 (total ml) needed for 24 hours		4,500
Amount needed for <u>12</u> hours*			1,540	Amount needed for <u>12</u> hours*		2,250
Amount to prepare (round up to whole litre)			2 litres	Amount to prepare (round up to whole litre)		3 litres

Name of Child	RUTF					
	Number feeds			Sachets per day**		
Kwami		6		3		
Kojo		6		3		
Aba		6		3		
Sami		6		3		
RUTF total (sachets) for 24 hours			12 packets			

* Divide daily amount by the number of times the feed is prepared each day. For example, if feeds are prepared every 12 hours, divide the daily amount by 2.

** If the days ration is 2 ½, 1½, etc, round off to the nearest whole number; counsel the mother on how to store the leftover ½ packets for the following day.

MODULE 5, DAILY CARE

Module 5, Daily Care: Exercise A (page 17)

1. Photo 8:

Vitamin A on Days 1, 2, and 15 (Pus may hide signs of vitamin A deficiency, so additional doses of vitamin A are given on Days 2 and 15 to be on the safe side.)

Chloramphenicol eye drops or tetracycline eye ointment only

2. Photo 9:

Vitamin A on Days 1, 2, and 15

Chloramphenicol eye drops or tetracycline eye ointments only

3. Photo 10:

Vitamin A on Days 1, 2, and 15

Chloramphenicol eye drops or tetracycline eye ointment only

***Note:** Although Bitot's spots alone do not require eye drops, inflammation suggests infection and requires chloramphenicol eye drops or tetracycline eye ointment.*

4. Vitamin A on Days 1 and 15 (Do not give on Day 2 since he had a dose yesterday.)

Chloramphenicol eye drops or tetracycline eye ointment only

5. Vitamin A on Days 1, 2, and 15 (because he had measles within the past 3 months)

No eye drops

6. Vitamin A on the fourth week of treatment only

No eye drops

7. Photo 12:

Vitamin A on Days 1, 2, and 15

Eye drops: Chloramphenicol eye drops or tetracycline eye ointment only
Atropine eye drops

Module 5, Daily Care: Exercise B (page 19)

Name: Lani Sex: M F Age (months): 18 months Date of Admission: _____ Time: _____ Hospital ID Number: _____

DAILY CARE

DAYS IN HOSPITAL	Date	Week 1							Week 2							Week 3						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Daily weight (kg)	<u>7.0</u>																					
Weight gain (g/kg)	<u>Calculate daily when on RUTF or F-100</u>																					
Bilateral pitting oedema 0 + ++ +++	<u>+</u>																					
Diarrhoea (D) or Vomit (V): 0 D V	<u>0</u>																					
FEED PLAN:	Type feed	<u>F-75</u>																				
	# daily feeds	<u>12</u>																				
	Volume to give per feed																					
	Total volume taken (ml)																					
	NG Tube Y N																					
	Breastfeeding Y N																					
	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. Initial when given.																					
	<u>Gentamicin 1.3 ml IV 8:00</u>																					
	<u>Ampicillin 1.75 ml 8:00</u>																					
	<u>IV Cannula 14:00</u>																					
	<u>20:00</u>																					
	<u>2:00</u>																					
	<u>Amoxicillin 8:00</u>																					
	<u>2 ml syrup 16:00</u>																					
	<u>24:00</u>																					
ANTIMALARIAL (note type of drug)																						
FOLIC ACID (5 mg single dose upon admission)	<u>8:00</u>	Give a single dose upon admission																				
VITAMIN A	<u>200,000 IU</u>	Give day 1, 2, and 15 if child admitted with eye sign or recent measles. Else, give routinely for prevention, single dose on week 4 or upon discharge unless evidence of dose in past one month																				
ANTHELMINTHIC Drug for worms only give to children > 24 months unless the younger child has worm infestation	<u>None</u>																					
IRON (if not on RUTF) Give 3mg/kg/day, 2 x daily Give Iron after Malaria treatment		Begin iron after 2 days on F-100. Do not give when on RUTF.																				
FOR EYE PROBLEMS		After 7–10 days, when eye drops are no longer needed, shade boxes for eye drops.																				
	<u>Tetracycline eye ointment: 2x daily or 8:00</u>																					
	<u>Chloramphenicol eye drops: 1 drop 4 x daily 14:00</u>																					
	<u>20:00</u>																					
	<u>2:00</u>																					
Corneal Ulceration, As above, plus 1% atropine eye drops: 1 drop 3 x daily																						
Dermatosis 0 + ++ (+++)																						
Bloody Stool (Yes or No)																						
Ear problems																						
Mouth or Throat problems																						
Bathing, 1% permanganate																						
OTHER	<u>Wick ear 8:00</u>																					

Module 5, Daily Care: Exercise C (page 28)

Name: Lani Sex: M F Age (months): 18 Date of Admission: _____ Time: _____ Hospital ID Number: _____

DAILY CARE

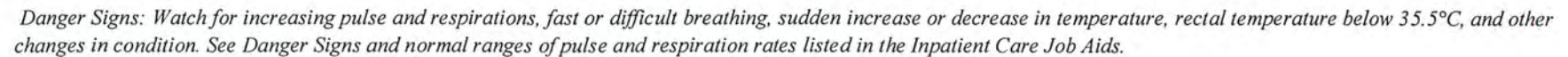
		Week 1							Week 2							Week 3							
DAYS IN HOSPITAL		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Date	<u>14/12</u>																						
Daily weight (kg)	<u>7.0</u>																						
Weight gain (g/kg)	<i>Calculate daily when on RUTF or F-100</i>																						
Bilateral pitting oedema 0 + ++ +++	<u>+</u>																						
Diarrhoea (D) or Vomit (V): 0 D V	<u>0</u>																						
FEED PLAN:	Type feed	<u>F-75</u>																					
	# daily feeds	<u>12</u>																					
	Volume to give per feed	<u>75</u>																					
	Total volume taken (ml)																						
	NG Tube Y N																						
	Breastfeeding Y N																						
	Appetite test with RUTF <i>F failed P passed</i>																						
ANTIBIOTICS		<i>List prescribed antibiotics in left column. Allow one row for each daily dose. Draw a box around days/times that each drug should be given. Initial when given.</i>																					
<u>Gentamicin IV 1.3ml</u>	<u>8:00</u>	<u>AC</u>																					
<u>Ampicillin 1.75ml</u>	<u>8:00</u>	<u>AC</u>																					
<u>IV Cannula</u>	<u>14:00</u>	<u>AC</u>																					
	<u>20:00</u>																						
	<u>2:00</u>																						
<u>Amoxicillin 2ml Syrup</u>	<u>8:00</u>																						
	<u>16:00</u>																						
	<u>24:00</u>																						
ANTIMALARIAL (note type of drug)																							
FOLIC ACID (5 mg single dose upon admission) <u>8:00</u>		<u>AC</u>	<i>Give a single dose upon admission</i>																				
VITAMIN A <u>200,000 IU</u>		<u>AC</u>	<i>Give day 1, 2, and 15 if child admitted with eye sign or recent measles. Else, give routinely for prevention, single dose on week 4 or upon discharge unless evidence of dose in past one month</i>																				
ANTHELMINTHIC Drug for worms only give to children > 24 months unless the younger child has worm infestation																							
IRON (if not on RUTF) Give 3mg/kg/day, 2 x daily Give Iron after Malaria treatment		<i>Begin iron after 2 days on F-100. Do not give when on RUTF.</i>																					
FOR EYE PROBLEMS		<i>After 7-10 days, when eye drops are no longer needed, shade boxes for eye drops.</i>																					
<u>Tetracycline eye ointment: 2x daily or</u>	<u>8:00</u>	<u>AC</u>																					
<u>Chloramphenicol eye drops 1 drop 4 x daily</u>	<u>14:00</u>	<u>AC</u>																					
	<u>20:00</u>																						
	<u>2:00</u>																						
Corneal Ulceration, As above, plus 1% atropine eye drops: 1 drop 3 x daily																							
Dermatosis 0 + ++ +++		<u>++</u>																					
Bloody Stool (Yes or No)																							
Ear problems																							
Mouth or Throat problems																							
Bathing, 1% permanganate		<u>passed</u>																					
OTHER <u>Wick ear</u>		<u>AC</u>																					

MONITORING RECORD

RESPIRATORY RATE

PULSE RATE

TEMPERATURE



1. Ampicillin (through IV cannula) and Chloramphenicol eye drops
2. 21:00
3. Give Ampicillin (through IV cannula) and Chloramphenicol eye drop in the left eye

Module 5, Daily Care: Exercise D (page 30)

Case 1 – Lani

1. Her temperature drops suddenly to 35.7° C.
2. Yes, a sudden drop in temperature is a danger sign. Lani is approaching hypothermia.
3. It is possible that Lani became uncovered during the night or missed a feed, either of which can lead to hypothermia.

Lani is already being treated with antibiotics for infection, so it is less likely that infection is a cause of the decrease in temperature. However, there may be a hidden infection that is not responding to the antibiotics that she has been given.

4. No, Lani's pulse and respirations remain fairly steady.
5. Cover Lani to keep her warm. Check to see if she took her last feeding. Check whether antibiotics have been given on schedule. Alert the doctor.

Case 2 – Carla

1. No, Carla's temperature remains steady and normal.
2. Yes, Carla's respiratory rate increased by 5 and pulse rate increased by 25 beats per minute between 2:00 and 6:00 on Day 2.
3. Re-check both respiratory and pulse rates.
4. Alert the doctor immediately. Do not give any more food or fluids until the doctor has examined the child.
5. Carla shows signs of possible heart failure. She may have taken too much ReSoMal along with the F-75 being given by NGT. Or there may be a hidden, non-responding infection (with suppressed fever).

Case 3 – Bijouli

1. His temperature increases from 37.1° C to 38.5° C. Yes, this is a danger sign.
2. No, there is no increase of 25 beats per minute or more.
3. Yes, 40 beats per minute is considered fast breathing in a 2 year old. Bijouli has had fast breathing since 22:00 on Day 2.

4. Yes, the doctor should be alerted.
5. Fast breathing and chest in-drawing are signs of pneumonia (severe pneumonia). This was not apparent on admission and is not responding to amoxicillin. Bijouli should be given benzylpenicillin 50,000 IU/kg IM four times daily for at least 5 days.

Module 5, Daily Care: Exercise E (page 40)

1. Daniel's desired discharge weight is 11.6 kg. It is entered on the Weight Chart on the next page.
2. Allow for a 1 kg weight loss. (Therefore 9.0 kg should be the bottom weight on the vertical axis.)

Answers to 3, 4, and 5 are entered on the Weight Chart on the next page.

6. For the first 6 days, Daniel lost oedema fluid. Then, starting on Day 8, after 2 days of transition to F-100, he gained weight steadily on F-100.
7. No, it is only a small loss, and he gains on the next day. There could be many possible causes, such as less intake or just stable intake or a mistake in weighing or recording the weight.

Daniel's Weight Chart

Name: DanielSex: (M) F

Age (months): _____

Date of Admission: _____

Time: _____

Hospital ID Number: _____

WEIGHT CHARTWeight on admission: 10.1 kg

Bilateral pitting oedema on admission:

0 (+) ++ +++

Desired weight if full recovery in inpatient care (Target weight), 15% weight gain of admission weight or weight free of oedema:

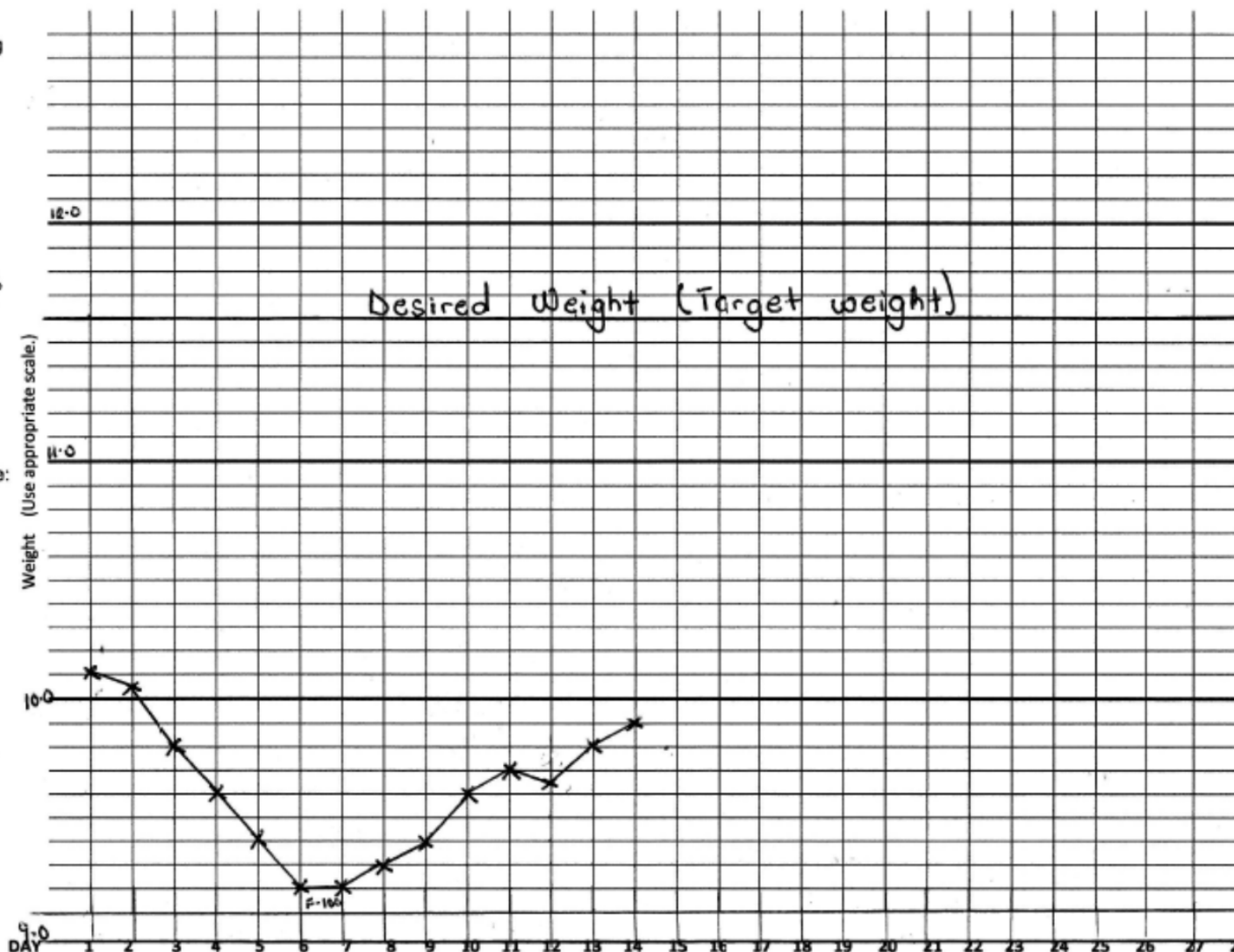
11.6 kg

Weight at referral to outpatient care:

_____ kg

Weight at discharge if treatment until full recovery in inpatient care:

_____ kg



MODULE 6, MONITORING, PROBLEM SOLVING, AND REPORTING

Module 6, Monitoring, Problem Solving, and Reporting: Exercise A (page 12)

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 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, and 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.

Module 6, Monitoring, Problem Solving, and Reporting: Exercise B (page 25)

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 include the following.
- 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.)
 - Mineral mix may not have been added to the feed. (Potassium and magnesium are very important for loss of oedema.)
 - Ceri has not been given folic acid or a multivitamin for 3 days.
- 1b. Possible ways to investigate causes include the following.
- Observe feedings in the ward; watch carefully how Ceri is fed.
 - Ask nurses why folic acid and multivitamins have not been given. Also check supplies of folic acid and multivitamins.
 - 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 or caregiver 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 TB.

Module 6, Monitoring, Problem Solving, and Reporting: Exercise C (page 30)

Answers from Instructions to Complete the Tally Sheet

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 Sohn's name should be listed in the **moderate** column of the Weight Gain Tally Sheet.

Answers to Questions to Answer and Discuss

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

idea to see if all of the children with moderate or good weight gain have mothers or caregivers with them, and if the mothers/caregivers help with feeding.

A separate problem investigation should be done for Lalita.

Module 6, Monitoring, Problem Solving, and Reporting: Exercise D (page 36)

1. **Kofi** – Kofi died about 19:00 on his first day in the hospital. This time possibly falls during a shift change. Kofi had been in the hospital less than 24 hours. The cause of death is recorded as unknown. However, at his last monitoring, his breathing and pulse rates had increased dangerously, probably due to overhydration. Kofi had been given normal saline IV in the emergency room (incorrect and dangerous case management), which 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, albumin high, and oedema had increased from ++ to +++.

Luca – Luca was found dead at 4:00 in the morning on Day 3. Milk curds were coming out of her mouth. She had been vomiting during the day and possibly choked on her vomit.

2. In the cases of Kofi and Vijay there are common factors. Both cases received incorrect initial case management, particularly in the emergency room. Kofi 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 severely malnourished children for only 2 hours, and he should have been monitored every 10 minutes. The normal saline IV given to Kofi for 6 hours may have caused heart failure due to overhydration.

Vijay should not have been given IV albumin or a diuretic. Since Vijay is very malnourished, we can assume he was 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 Kofi nor Vijay was given an antibiotic. Both needed 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.

Module 6, Monitoring, Problem Solving, and Reporting: Exercise F (page 68)

Health Facility Tally Sheet for the Management of SAM

HEALTH FACILITY: PML HospitalDISTRICT: Ashiedu KetekeFACILITY TYPE (Inpatient or Outpatient): Inpatient CareMONTH: January, 2010

Week	1	2	3	4	5	TOTAL
Date	3/01/10	10/01/10	17/01/10	24/01/10	31/01/10	
Total start of week (A)	0	0	1	0	2	
New Cases 6–59 m (Oedema) (B1)	0	0	0	0	0	0
New Cases 6–59 m (MUAC < 11.5 cm) (B2)	0	1	0	0	1	2
New Cases Other (> 59 months with MUAC < 11.5 cm or Oedema, Infants < 6 months) (B3)	0	0	0	0	1	1
Old Cases: Referred from other Outpatient or Inpatient Care; or Returned defaulter (C)	0	0	0	2	0	2
TOTAL ADMISSIONS (D=B1+B2+B3+C)	0	1	0	2	2	5
Cured (E1)	0	0	0	0	0	0
Died (E2)	0	0	1	0	0	1
Defaulted (E3)	0	0	0	0	1	1
Non-Recovered (E4)	0	0	0	0	0	0
Total Discharges (E=E1+E2+E3+E4)	0	0	1	0	1	2
Referrals to other Outpatient or Inpatient Care (F)	0	0	0	0	0	0
TOTAL EXITS (G= E+F)	0	0	1	0	1	2
Total at the end of the week (A+D-G)	0	1	0	2	3	

ADDITIONAL INFORMATION						
Males	0	0	0	0	0	0
Females	0	1	0	0	2	3
RUTF Quantities (Issued during the week) -In packets/pots	0	5	5	0	10	
RUTF Quantities (Balance at the end of the week) -In packets/pots	150	145	140	140	130	

Health Facility Monthly Report for the Management of SAM

REGION	Greater Accra	MONTH/YEAR	January, 2010
DISTRICT	Ashiedu Keteke	TYPE OF MANAGEMENT (CIRCLE)	Inpatient Outpatient
FACILITY	PML Hospital	ESTIMATED MAXIMUM CAPACITY	12
		ESTIMATED TARGET malnourished children under 5 (based on latest survey data and admission criteria)	

TYPE OF PRODUCT	Quantity at the start of the month	Quantity Received	Amount Consumed	Balance at the end of month
RUTF (in packets)	150	0	20	130
F-75 (in packets)	20 (1c+n)	0	5	15
F-100 (in packets)	30 (1c+n)	0	0	30
ReSoMal (in packets)	130 (1c+n)	0	3	127
CMV (in tins)	1	0	0	1

Total beginning of the month (A)	New Cases (B)			Old Cases (C) Returned referral from Outpatient Care or Inpatient Care; or Returned defaulters	TOTAL ADMISSION (D) (B+C=D)	Discharges (E)				Referral (F) to Inpatient Care or Outpatient Care	TOTAL EXITS (G) (E+F=G)	Total at the end of the month (H) (A+D-G=H)
	6-59 months (oedema) (B1)	6-59 months (MUAC < 11.5 cm) (B2)	Other (over 59 months with MUAC < 11.5 cm or oedema) (B3)			CURED (E1)	DIED (E2)	DEFAULTED (E3)	NON-RECOVERED (E4)			
0	0	2	1	2	5	0	1	1	0	0	2	3
						0 %	50 %	50 %	0 %			
						TARGET (Sphere standards) >75%	<10%	<15%				

E1: Cured = meets discharge criteria

E3: Defaulted = absent for three consecutive sessions

E4: Non-recovered = does not meet discharge criteria after 4 months in treatment (medical investigation done)