Facilitator’s guide

Web Annex A.
Answer sheets
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**ANSWER SHEETS: MODULE 2, PRINCIPLES OF CARE**

**Answers to Exercise A, Principles of care, page 13**

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

All children with a Z-score less than -3 SD are considered severely malnourished.

**Possible answers to Exercise B, Principles of care, page 18**

**Photo 1.** Moderate oedema (++) seen in feet and lower legs (remember that you will need to physically examine a child to confirm presence of oedema). Severe wasting of upper arms; ribs and collarbones clearly show (severe wasting should be confirmed by anthropometry – either by MUAC or weight-for-height).

**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.** These show the front and back of the same child. The child may have severe wasting. From the front, the ribs show, and there is loose skin on the arms and thighs. The 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”. Wasting will need to be confirmed by anthropometry.

**Photo 5.** Generalized 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. The child’s upper arms are extremely thin with loose skin. (Also note the sunken eyes, a possible sign of dehydration, which will be discussed later.) There is some discoloration on the abdomen, which may be mild dermatosis; it is difficult to tell from the photo.

**Photo 7.** Mild dermatosis (+). This child has skin discoloration, often an early skin change in malnutrition. There is 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. The 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. This photo also shows inflammation, a sign of infection.

Photo 13. Since only the legs are visible, we 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. The photo shows a photophobic child; his eyes cannot tolerate light due to vitamin A deficiency. The child’s eyes must be opened gently for examination. He is likely to have corneal clouding as in photo 9.

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

Answers to Exercise C, Principles of care, page 24

Photo 18. This child has severe acute malnutrition. Her weight-for-length Z-score is above –3 SD, but she has oedema of both feet, as well as lower legs (at least moderate ++ oedema). Conduct appetite test (with ready-to-use therapeutic food (RUTF)). If the child fails an appetite test, she will be admitted for inpatient care. If the child passes the appetite test, she will be given RUTF and followed up during outpatient care.

Photo 19. This infant should be admitted to the severe malnutrition ward. Her weight-for-length Z-score is below –4 SD. Note: If you were to look on a weight-for-age chart, you would find that this child’s weight-for-age is very low. This child is stunted. She is small for her age.

Photo 20. This child’s weight-for-length Z-score is less than –4 SD. After testing the appetite and checking for signs of medical complications, it will be decided whether the child will be admitted for inpatient care or can be followed up during outpatient care. Note: It will be important to remove his shirt to examine him. Notice that the mother in this photo is also extremely thin.
**ANSWER SHEETS: MODULE 3, INITIAL MANAGEMENT**


1a. Tina’s Z-score is equal to –3. Her score may be written: –3 SD.

1b. Yes, Tina should be admitted for inpatient care since she has oedema of both feet. (Without the extra weight from oedema, Tina’s weight-for-length Z-score might be less than –3 SD.)

1c. Tina is not hypothermic because her temperature is above 35.5°C.

1d. Tina is not hypoglycaemic since her blood sugar is above 3 mmol.

1e. Tina does not have severe anaemia since her haemoglobin is well above 40 g/L.

1f. Tina is not in shock. She is not lethargic or unconscious, and she does not have cold hands.

1g. 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.*

Answers to Exercise A, Initial management. Case 2 – Kalpana

2a. Give a 50 ml bolus of 10% glucose or sucrose. Since she can drink, give it orally.

2b. Begin F-75 (according to weight) immediately after giving glucose and follow the feeding schedule (2-hourly feeds) thereafter. The recommended 2-hourly amount is 90 ml for an 8 kg child.

2c. Yes, Kalpana has very severe anaemia since her haemoglobin is 39 g/L. 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 ml × 8 kg = 80 ml).

Answers to Exercise A, Initial management. Case 3 – John

3a. Four treatments that John needs immediately:
   - oxygen
   - 5 ml/kg sterile 10% 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% glucose by IV (5 ml × 5.8 kg = 29.0 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% IV glucose with a 50 ml bolus by NG tube.*
3c. Give 87 ml IV fluids in first hour. This amount is calculated as on the CCP: 
15 ml x 5.8 kg = 87 ml.
3d. Repeat the same amount of IV fluids (87 ml) for next hour.
3e. ReSoMal and F-75 in alternate hours.
3f. F-75: 65 ml.

Answers to Exercise B, Initial management, page 26. Ramesh

1a. 5 ml x 7.3 kg = 36.5 ml, rounded to 37 ml ReSoMal every 30 minutes for 2 hours
1b. Least amount: 5 ml x 7.3 kg = 36.5 ml, rounded to 37 ml ReSoMal.
1c. Greatest amount: 10 ml x 7.3 kg = 73 ml ReSoMal.

Note: that 36.5 ml is rounded up to 37 ml.

Answers to Exercise B, Initial management. Sula

2a. 5 ml x 11.6 kg = 58 ml ReSoMal every 30 minutes for 2 hours.
2b. 5 ml x 11.6 kg = 58 ml ReSoMal is the least amount.
2c. 10 ml x 11.6 kg = 116 ml ReSoMal is the greatest amount.

Answers to Exercise C, Initial management, page 28. Case 1 – Marwan

Four 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)
• start on F-75 (70 ml for a 6.2 kg child).

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

Answers to Exercise C, Initial management. Case 2 – Ram

2a–2c. Answers are given on the CCP for Ram.
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.
2f. Signs of improving hydration:
- he has passed urine (recorded at 10:30 monitoring)
- he is no longer thirsty
- he has a moist mouth and tears.
2g. Stop offering ReSoMal routinely in alternate hours since he has signs of improving hydration. Ram should continue taking F-75 every 2 hours, even during the night. He must also be kept warm. Ram should also be given antibiotics according to schedule.
**INITIAL MANAGEMENT**

**NAME:** Ram  
**DATE OF BIRTH:** ___________  
**AGE:** 9 (months)  
**DATE OF ADMISSION:** ___________  
**TIME:** ___________  
**HOSP. ID:** ___________

**SIGNS OF SAM**

**SIGNS OF SHOCK:**
- None
- Semi-conscious/unconscious
- Cold hands
- Slow capillary refill (>3 seconds)
- Weak or fast pulse

**SIGNS OF SAM**

<table>
<thead>
<tr>
<th>Allergic reaction</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

**SIGNS OF SHOCK**

- None
- Semi-conscious/unconscious
- Cold hands
- Slow capillary refill (>3 seconds)
- Weak or fast pulse

**SIGNS OF SAM**

<table>
<thead>
<tr>
<th>Allergic reaction</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

**MEASLES**

<table>
<thead>
<tr>
<th>Measles</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

**EYE SIGNS**

<table>
<thead>
<tr>
<th>Allergic reaction</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

**Antibiotics (All receive)**

<table>
<thead>
<tr>
<th>Drug/Route</th>
<th>Dose/Frequency/Duration</th>
<th>Time of 1st Dose</th>
</tr>
</thead>
</table>

**Weight (kg): 4.4**

**Height / length (cm): 64**

**BP:**

- **Pulse rate**
- **Respiratory rate**

**Pulse oximetry:**

- **SaO2**:
- **SpO2**:

**Temperature:**

- **Rectal 36°C (96.8°F)**
- **Axillary 36°C (96.8°F)**

**Dehydration:**

- **Wet/dry:**
- **Dry:**
- **Leathery:**

**Other signs:**

- **Drowsy:**
- **Taught:**
- **Tongue:**

**Blood type:**

- **ReSOMaL (ml/kg/hour)**
- **F-75 (ml/kg/hour)**

**Meals:**

- **Oral do$$:**
- **NGT do$$:**

**Record all feeds on 24-hour Intake Chart.**

**If}
Answers to Exercise C, Initial management. Case 3 – Irena

3a. Answers are given on the CCP for Irena.
3b. Irena is not hypoglycaemic. Irena is not hypothermic.
3c. Yes, she needs vitamin A, since pus in the eye may hide other eye signs for vitamin A deficiency; she must receive a high dose of vitamin A immediately.
3d. Irena is lethargic, has cold hands, and has slow capillary refill and fast pulse.
3e. Give 5 ml/kg sterile 10% glucose by IV (5 ml × 6.1 kg = 30.5 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 NG.

3f. Give 15 ml × 6.1 kg = 91.5 ml IV fluids in the first hour.
3g. See monitoring data on the CCP. Irena should be given the same amount of IV fluids over the next hour.
3h. See second hour of IV section of Irena’s CCP.
3i. At 12:30 she needs ReSoMal. Calculate range of amounts as follows: 5–10 ml × 6.2 kg = 31–62 ml ReSoMal per hour. This range of amounts should be entered on the CCP.
3j. See diarrhoea section of Irena’s CCP.
3k. See diarrhoea section of Irena’s CCP.
3l. 70 ml F-75 (this amount should be recorded in the feeding section of the first page of the CCP).
3m. She should be offered 62 ml ReSoMal at 14.30.
**INITIAL MANAGEMENT**

**NAME:** Irena  
**DATE OF BIRTH:**  
**AGE:** 25 (months)  
**DATE OF ADMISSION:** 3 March  
**TIME:** 10.00  
**HOSP. ID:**  

**SEVERE SEIZURE (S)**

- Bilateral pitting oedema? Yes/No  
- Dermatitis? Yes/No  
- Weight (kg): 6.1  
- Height / length (cm): 74

**TEMPERATURE**  
- Rectal: 36°C (96.8°F), or axillary: 36°C (97.8°F), actively warm child.  
- Check temperature every 30 minutes.

**BLOOD GLUCOSE**  
- <3 mmol/l and <60 glucone orally  
- 6-10 mmol/l and lethargic, unconscious, or convulsing, give 10% dextrose 50-80 ml IV  
- Total amount = 5 ml x 6.1 kg (child's weight)  
- Then give 50 ml bolus NGT.

**HAEMOGLOBIN**  
- <10%  
- <8%  
- <6%  

**DEHYDRATION**

- Water d produces? (Yes/No)  
- Dryness of skin? (Yes/No)  
- Thirsty? (Yes/No)

**FEEDING**

- Begin feeding with F-75 as soon as possible.  
- If child is rehydrated, reweigh before determining amount to feed.  
- New weight: 6.1 kg  
- Amount for 2-hourly feeding = 70 ml F-75  
- Time first fed: 1:30pm

**ANTIBIOTICS**

<table>
<thead>
<tr>
<th>Drug/Route</th>
<th>Dose/Frequency/Duration</th>
<th>Time of 1st Dose</th>
</tr>
</thead>
</table>

**RECORDS**

- Record all feeds on 24-hour Feed Intake Chart.

**RECORDS**

- Measles? Yes/No  
- Eye Signs:  
  - None  
  - Left  
  - Right  
- Bitot's spots
- Corneal clouding
- Diarrhoea
- Vomiting
- Thirsty

**RECORDS**

- Measure temperature every 30 minutes.

**RECORDS**

- Monitor respiratory rate* (breaths/minute)  
- Pulse rate* (beats/minute)  
- Hydration signs (Yes/No)

**RECORDS**

- Amount taken (ml)  
- Total amount = 5 ml x 6.1 kg (child's weight)  
- For up to 10 hours, give ReSoMal and F-75 orally (or by NG tube) in alternate 2 hours and monitor every hour.**  

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**NOTES**

- *Stop ReSoMal if any sign of dehydration: Fast breathing, increasing pulse and respiratory rate, engravored, puffy face.**
- **Stop ReSoMal if two or more signs of dehydration: Child has reached target weight, pausing urine, moist tongue, making saliva, soft bowel movement."
- Subjective judgement for each case is needed.
Answers to Exercise D, Initial management, page 37. Case 1 – Ana

1a. Gentamicin and ampicillin.
1b. IV or IM.
1c. IV, using butterfly needle. Since Ana would need to receive five IM injections daily (one injection gentamicin, and four of ampicillin) for the first two days, it is preferable to use a butterfly needle to keep a vein open for injecting drugs.
1d. Ampicillin: vial of 500 mg mixed with 2.1 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.

1e. Ampicillin: Give 1.75 ml.

Gentamicin:

• if formulation (a) above, give 4.5 ml
• if formulation (b) above, give 4.5 ml
• if formulation (c) above, give 1.1 ml.

1f. Complete the table as follows:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Route</th>
<th>Dose</th>
<th>Frequency</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gentamicin</td>
<td>IV</td>
<td>4.5 ml or 1.1 ml (see above in 1e)</td>
<td>Once daily</td>
<td>7 days</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>IV</td>
<td>1.75 ml</td>
<td>Every 6 hours</td>
<td>2 days</td>
</tr>
</tbody>
</table>

1g. Stop IV ampicillin and give oral amoxicillin for next 5 days. (Continue gentamicin during this time. Since only one injection of gentamicin is required daily, it may be given by IM injection.)

1h. Answers will vary. Possible answers are: tablet, 250 mg; or syrup, 125 mg/5 ml.

1i. If 250 mg tablet, dose is ½ tablet. If 125 mg syrup, dose is 6 ml.

1j. Complete the table as follows:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Route</th>
<th>Dose</th>
<th>Frequency</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin</td>
<td>Oral</td>
<td>½ tablet, 6 ml syrup (see above)</td>
<td>Every 12 hours</td>
<td>5 days</td>
</tr>
</tbody>
</table>

Answers to Exercise D, Initial management. Case 2 – Dipti

2a. Benzylpenicillin.

2b. Only one formulation is given for IM injection. The dose is 0.7 ml.

2c. Complete the table as follows:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Route</th>
<th>Dose</th>
<th>Frequency</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzylpenicillin</td>
<td>IM</td>
<td>0.7 ml</td>
<td>Every 6 hours</td>
<td>5 days</td>
</tr>
</tbody>
</table>

2d. Oral ampicillin or oral amoxicillin.
2e. **Note:** Participants will do the rest of the exercise for either ampicillin or amoxicillin. Only one formulation is given for oral ampicillin: 250 mg tablet. Possible formulations of oral amoxicillin are: tablet, 250 mg; or syrup, 125 mg/5 ml.

2f. If ampicillin was chosen, 1½ tablets. If amoxicillin was chosen, answers will vary:
   - If 250 mg tablet, give ½ tablet. If 125 mg syrup, give 8 ml.

2g. If ampicillin was chosen:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Route</th>
<th>Dose</th>
<th>Frequency</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampicillin</td>
<td>Oral</td>
<td>1½ tablets</td>
<td>Every 6 hours</td>
<td>5 days</td>
</tr>
</tbody>
</table>

If amoxicillin was chosen:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Route</th>
<th>Dose</th>
<th>Frequency</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin</td>
<td>Oral</td>
<td>½ tablet, or 8 ml (see above)</td>
<td>Every 12 hours</td>
<td>5 days</td>
</tr>
</tbody>
</table>

**Answers to Exercise E, Initial management, page 41.**

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:
   - 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 IV/IM gentamicin and ampicillin (specify dose and frequency); give her the first doses now
   - call me if she seems worse, or if her temperature increases or decreases, or pulse or respiratory rates increase.
3. Some examples of possible questions are:
   - 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?
**NAME** Rayna  
**DATE OF BIRTH** _________  
**AGE** _______ (months)  
**DATE OF ADMISSION** October 3  
**TIME:** 09.00  
**HOSP. ID:**

### INITIAL MANAGEMENT

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

<table>
<thead>
<tr>
<th>SIGN OF SAM</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe wasting?</td>
<td>0+</td>
<td>++</td>
</tr>
<tr>
<td>Bilateral pitting oedema?</td>
<td>0+</td>
<td>++</td>
</tr>
<tr>
<td>Dermatosis?</td>
<td>0+</td>
<td>++</td>
</tr>
</tbody>
</table>

**Weight (kg):** 6.3  
**Height / length (cm):** 72  
**WHR, z-score:** < -3  
**MUAC (mm):**

**TEMPERATURE 35.7°C axillary**  

**BLOOD GLUCOSE (mmol/L): 3.4 mmol/l**  

If <3 mmol/l and lethargic, unconscious, or convulsing, give sterile 50% glucose 5ml/kg IV.  

**Total amount:** 5 ml x _____(child's wt) = _____ ml  
**Time glucose given:** Oral, NGT, IV

**Hb (g/dl) or PCV (%): 95**  

**Packed cell volume (PCV):**

**MEASLES:**

**EYE SIGNS:**

**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:** 70 ml F-75  
**Time first fed:** 09.15

**ANTIBIOTICS (All receive):**

<table>
<thead>
<tr>
<th>Drug/Route</th>
<th>Dosage/dose frequency/duration</th>
<th>Time of 1st Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENTAMICIN IM</td>
<td>Once a day for 7 days</td>
<td>09.15</td>
</tr>
<tr>
<td>AMPICILLIN IM</td>
<td>Every 6 hours for 2 days</td>
<td>09.15</td>
</tr>
<tr>
<td>From day 3, AMOXICILLIN Oral</td>
<td>Every 12 hours for 5 days</td>
<td></td>
</tr>
</tbody>
</table>

---

**SIGNS OF SHOCK:**  

- None  
- Lethargic/ unconscious  
- Cold hands  
- Slow capillary refill (>3 seconds)  
- Weak or fast pulse

If lethargic or unconscious, 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: Amounts IV fluids per hour: 15 ml x _____(child's wt) = _____ ml

**If improvements after 1 hour (respiratory and pulse rates are slower), repeat same amount IV fluids for second hour; then alternate ReSoMal and F-75 for up to 3 hours; if no improvement after 1 hour, treat for septic shock (transfuse whole fresh blood, see 'Hemoglobin'), give maintenance IV fluids (4 ml/kg/h) while waiting for blood.

### DEHYDRATION:

**Watery diarrhoea?**  
**Blood in stool?**  
**Frequent vomiting?**

If diarrhoea, circle signs present:

- Restless/irritable  
- Lethargic  
- Recent sunken eyes  
- Dry mouth/tongue  
- No tears

If diarrhoea and/or vomiting, give ReSoMal orally or by NG tube every 30 minutes for first 2 hours and monitor every 2 hours.  

For up to 10 hours, give ReSoMal and F-75 orally (or by NG tube) in alternate hours and monitor every 2 hours.  

Amount 5-10 ml x _____(child's wt) = _____ ml ReSoMal every 2 hours

- Stop ReSoMal if any sign of over-hydration: Fast breathing, increasing pulse and resp. rates, engorged jugular veins, puffing of eyelids.  
- Stop ReSoMal if two or more signs of dehydration: Passing urine, morose to irritable, making saliva, not thirsty.

Careful judgement for each case is needed.

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**Rehydration:**

**Number of stools**

**Number of vomits**

**Hydration signs**

**Amount taken (ml):**

**Time of**

**Number of urines**

**Amount of urine taken (ml):**

**Time of**

---

Stop ReSoMal if any sign of over-hydration: Fast breathing, increasing pulse and resp. rates, engorged jugular veins, puffing of eyelids.  

Stop ReSoMal if two or more signs of dehydration: Passing urine, morose to irritable, making saliva, not thirsty.

Careful judgement for each case is needed.
ANSWER SHEETS: MODULE 4, FEEDING

Answers to Exercise A, Feeding, page 13. 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. Complete as follows:

<table>
<thead>
<tr>
<th>Date: 5 December</th>
<th>Type of feed: F-75</th>
<th>Give: 8 feeds of 60 ml</th>
</tr>
</thead>
</table>

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. Complete as follows:

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days in hospital</td>
<td>1</td>
</tr>
<tr>
<td>Date</td>
<td>4/12</td>
</tr>
<tr>
<td>Daily weight (kg)</td>
<td>3.8</td>
</tr>
<tr>
<td>Weight gain (g/kg)</td>
<td>Calculate daily during transition</td>
</tr>
<tr>
<td>Oedema 0 + ++ +++</td>
<td>0</td>
</tr>
<tr>
<td>Diarrhoea/vomit O D V</td>
<td>D</td>
</tr>
<tr>
<td>Feed plan: type of feed</td>
<td>F-75</td>
</tr>
<tr>
<td># feeds daily</td>
<td>10</td>
</tr>
<tr>
<td>Total volume taken (ml)</td>
<td>400</td>
</tr>
</tbody>
</table>

Answers to Exercise A, Feeding. Case 2 – Pedro

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

<table>
<thead>
<tr>
<th>Date: 7 December</th>
<th>Type of feed: F-75</th>
<th>Give: 8 feeds of 80 ml</th>
</tr>
</thead>
</table>

Answers to Exercise A, Feeding. Case 3 – Rositha

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

3d. Complete as follows:

| Date: 9 February | 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.

Answers to Exercise A, Feeding. Case 4 – Suraiya

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

| Date: 15 March | 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 NG tube as needed.

Answers to Exercise B, Feeding, page 23. Case 1 – Delroy

1a. 125 ml. (The amount is increased by 10 ml since Delroy completed the last feeding. 125 ml should be entered in the column headed “a. Amount offered” for the 04:00 feeding.)
1b. For the 04:00 feeding, 10 ml was left, so the amount taken orally was 115 ml. These amounts should be entered in columns b and c:
   b. Amount left in cup (ml): 10 ml
   c. Amount taken orally (ml): 115 ml

At the bottom of the form, the following should be entered:
   Total c. Amount taken orally: 630 ml
   Total d. Amount taken by NG: 0
   Total e. Amount vomited: 0
   Total yes: 0

   Total volume taken over 24 hours: 630 ml.

1c. On the CCP, in the column for Day 6, should be added:
   Diarrhoea/vomit: 0
   Total volume taken (ml): 630
Answers to Exercise B, Feeding. Case 2 – Pedro

2a. No, he must stay at the same amount for the first two 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. On Day 7 (the third day of transition) he will gradually be given more F-100. 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.

Answers to Exercise B, Feeding. 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. Day 7, first day of transition – give Rositha two packets of RUTF and supplementary F-75, the same amount that was given on previous day:

| Date: 12 February | Type of feed: RUTF | Give: 6 feeds, daily feed = 2 packets |

3c. Day 8, second day of transition – stay with same amount of F-75 if unable to complete RUTF ration of the feed:

| Date: 13 February | Type of feed: RUTF | Give: 6 feeds, daily feed = 2 packets |

3d. Day 9, third day of transition – give RUTF and water if she is able to take all her feeds well:

| Date: 14 February | Type of feed: RUTF | Give: 6 feeds, daily feed = 2 packets |

Answers to Exercise C, Feeding, page 29. Case 1 – Delroy

1a. 135 ml.
1b. 105–155 ml.
1c. 135 ml.
1d. Increase by 10 ml if finishing feeds. Do not exceed 155 ml.
1e. 160 ml is the starting amount. It should not be increased on Day 9, as 160 ml is the maximum amount for a child weighing 4.4 kg. (When his weight increases on subsequent days, he may have more.)

Answers to Exercise C, Feeding. Case 2 – Pedro

2a. Since Pedro weighs 5.05 kg, his appropriate range of daily volume is 750–1100 ml of F-100.
2b. He took 900 ml, which is in this range.
2c. 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.
2d. Complete as follows:

<table>
<thead>
<tr>
<th>Date: 14 December</th>
<th>Type of feed: F-100</th>
<th>Give: 6 feeds of 160 ml</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Do not exceed 185 ml</td>
</tr>
</tbody>
</table>

Answers to Exercise C, Feeding. Case 3 – Rositha

3a. 570 ml.
3b. 780–1144 ml No, she did not take a total amount within this range.
3c. Rositha may have an infection causing her temperature to increase and causing her to eat less.
3d. √ Both of the above.

Answers to Exercise F, Feeding, page 46. Daily ward feed chart

Date: 17 May  Ward: **Severe acute malnutrition**

<table>
<thead>
<tr>
<th>Name of child</th>
<th>F-75</th>
<th></th>
<th>F-100</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number feeds</td>
<td>Amount/feed (ml)</td>
<td>Total (ml)</td>
<td>Number feeds</td>
</tr>
<tr>
<td>Meena</td>
<td>6</td>
<td>250</td>
<td>1500</td>
<td>6</td>
</tr>
<tr>
<td>Tara</td>
<td>12</td>
<td>50</td>
<td>600</td>
<td>6</td>
</tr>
<tr>
<td>Abul</td>
<td>6</td>
<td>180</td>
<td>1080</td>
<td>6</td>
</tr>
<tr>
<td>Maya</td>
<td>6</td>
<td>160</td>
<td>960</td>
<td>6</td>
</tr>
<tr>
<td>Nisha</td>
<td>12</td>
<td>65</td>
<td>780</td>
<td>6</td>
</tr>
<tr>
<td>Kapur</td>
<td>6</td>
<td>50</td>
<td>600</td>
<td>6</td>
</tr>
<tr>
<td>Haruu</td>
<td>6</td>
<td>115</td>
<td>920</td>
<td>6</td>
</tr>
<tr>
<td>Bahadur</td>
<td>8</td>
<td>135</td>
<td>1100</td>
<td>6</td>
</tr>
<tr>
<td>Lama</td>
<td>6</td>
<td>130</td>
<td>780</td>
<td>6</td>
</tr>
<tr>
<td>Prakesh</td>
<td>6</td>
<td>130</td>
<td>780</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>F-75 (total ml) needed for 24 hours</th>
<th>F-100 (total ml) needed for 24 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 080</td>
<td>9 360</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amount needed for 12 hours*</th>
<th>F-75</th>
<th>F-100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 540</td>
<td>4 680</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amount to prepare (round up to whole litre)</th>
<th>F-75</th>
<th>F-100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 litres</td>
<td>5 litres</td>
</tr>
</tbody>
</table>

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

1. **Photo 8:**
   a. Vitamin A – Days 1, 2, and 15.
   b. Chloramphenicol or tetracycline eye drops only (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).

2. **Photo 9:**
   a. Vitamin A – Days 1, 2, and 15.
   b. Chloramphenicol or tetracycline eye drops and atropine eye drops.

3. **Photo 10:**
   a. Vitamin A – Days 1, 2, and 15.
   b. Chloramphenicol or tetracycline eye drops only.

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

4. **(No photo):**
   a. Vitamin A – Days 1 and 15 (do not give on Day 2 since he had a dose yesterday).
   b. Chloramphenicol or tetracycline eye drops only.

5. **(No photo):**
   a. Vitamin A – Days 1, 2, and 15 (because he had measles within the past 3 months).
   b. No eye drops.

6. **(No photo):**
   a. No vitamin A (there is no indication for giving high dose vitamin A supplements, unless the feeds the child will be given do not comply with WHO standards).
   b. No eye drops.

7. **Photo 12:**
   a. Vitamin A – Days 1, 2, and 15.
   b. Chloramphenicol or tetracycline eye drops and atropine eye drops.
NAME: **Lani**

<table>
<thead>
<tr>
<th>M</th>
<th>F</th>
<th>DATE OF BIRTH</th>
<th>AGE (months)</th>
<th>DATE OF ADMISSION</th>
<th>HOSP. ID:</th>
</tr>
</thead>
<tbody>
<tr>
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**DAILY CARE**

**WEEK 1**

<table>
<thead>
<tr>
<th>DAYS IN HOSPITAL</th>
<th>1</th>
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<td>Daily weight (kg)</td>
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- Bilateral pitting oedema: 0 + ++ +++
- Diarrhoea (indicate number of loose stools): 0
- Vomiting (indicate the frequency): RESOMAL

**RESOMAL**

---

**WEEK 2**

<table>
<thead>
<tr>
<th>DAYS IN HOSPITAL</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<th>6</th>
<th>7</th>
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<td>Daily weight (kg)</td>
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<td>Weight gain (g/kg)</td>
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</table>

- Bilateral pitting oedema: 0 + ++ +++
- Diarrhoea (indicate number of loose stools): 0
- Vomiting (indicate the frequency): RESOMAL

**RESOMAL**

---

**WEEK 3**

<table>
<thead>
<tr>
<th>DAYS IN HOSPITAL</th>
<th>1</th>
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<tr>
<td>Daily weight (kg)</td>
<td>7.0</td>
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<tr>
<td>Weight gain (g/kg)</td>
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</tr>
</tbody>
</table>

- Bilateral pitting oedema: 0 + ++ +++
- Diarrhoea (indicate number of loose stools): 0
- Vomiting (indicate the frequency): RESOMAL

**RESOMAL**

---

**FEED PLAN**

<table>
<thead>
<tr>
<th>Type of feed</th>
<th># daily feeds</th>
<th>Amount given per feed (ml/packet)</th>
<th>Total amount taken (ml/packet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESOMAL</td>
<td>12</td>
<td>0.75 ml</td>
<td></td>
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</table>

**ANTIBIOTICS AND OTHER DRUGS**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Frequency</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gentamicin IV 1.3 ml</td>
<td>08.00</td>
<td></td>
</tr>
<tr>
<td>Ampicillin IV 1.75 ml</td>
<td>08.00</td>
<td></td>
</tr>
<tr>
<td>09.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amoxicillin 2 ml syrup</td>
<td>08.00</td>
<td></td>
</tr>
<tr>
<td>20.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Folic acid (if there is clinical anaemia)**

**VITAMIN A**

| 200 000 IU |

**Vitamin A**

**Multivitamin (if not in feed)**

**Drug for worms**

<table>
<thead>
<tr>
<th>Type of worm</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

**HBDN 2x daily**

**Eye PROBLEMS**

| Tetracycline ointment 3x daily | 08.00 | 14.00 | 20.00 |
| Chloramphenicol 1 drop 4x daily| 08.00 | 14.00 | 20.00 |
| Atropine 1 drop 3x daily        | 08.00 | 14.00 | 20.00 |

**Other**

| Wick ear | 08.00 | 20.00 |

**Eye PROBLEMS**

<table>
<thead>
<tr>
<th>Left</th>
<th>Right</th>
<th>After 7-10 days, when eye drops are no longer needed, shade boxes for eye drops</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Eye PROBLEMS**

<table>
<thead>
<tr>
<th>Dermatomix</th>
<th>+++</th>
</tr>
</thead>
</table>

**Eye PROBLEMS**

| Zinc oxide | |
|------------||

**Eye PROBLEMS**

<table>
<thead>
<tr>
<th>Other</th>
<th>Wick ear</th>
<th>08.00</th>
<th>20.00</th>
</tr>
</thead>
</table>

**Eye PROBLEMS**

---

**Notes:**

- Gentamicin IV 1.3 ml:
  - 08.00
- Ampicillin IV 1.75 ml:
  - 08.00
  - 14.00
  - 20.00
- Amoxicillin 2 ml syrup:
  - 08.00
  - 20.00
- Folic acid (if there is clinical anaemia):
  - None
- Vitamin A:
  - 200 000 IU
- Multivitamin (if not in feed):
  - None
- Drug for worms:
  - None
- HBDN 2x daily:
  - None
- Eye PROBLEMS:
  - Tetracycline ointment 3x daily:
    - 08.00
    - 14.00
    - 20.00
  - Chloramphenicol 1 drop 4x daily:
    - 08.00
    - 14.00
    - 20.00
  - Atropine 1 drop 3x daily:
    - 08.00
    - 14.00
    - 20.00
  - Other:
    - Wick ear
      - 08.00
      - 20.00
---

**Gentamicin IV 1.3 mg**

<table>
<thead>
<tr>
<th>08.00</th>
</tr>
</thead>
</table>

**Ampicillin IV 1.75 mg**

<table>
<thead>
<tr>
<th>08.00</th>
</tr>
</thead>
</table>

**Amoxicillin 2 ml syrup**

<table>
<thead>
<tr>
<th>08.00</th>
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**Tetracycline ointment 3x daily**

<table>
<thead>
<tr>
<th>08.00</th>
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</thead>
</table>

**Chloramphenicol 1 drop 4x daily**

<table>
<thead>
<tr>
<th>08.00</th>
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**Atropine 1 drop 3x daily**

<table>
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<th>08.00</th>
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**Other**

<table>
<thead>
<tr>
<th>Wick ear</th>
<th>08.00</th>
</tr>
</thead>
</table>

**Notes:**

- Gentamicin IV 1.3 mg:
  - 08.00
- Ampicillin IV 1.75 mg:
  - 08.00
  - 14.00
  - 20.00
- Amoxicillin 2 ml syrup:
  - 08.00
  - 20.00
- Folic acid (if there is clinical anaemia):
  - None
- Vitamin A:
  - 200 000 IU
- Multivitamin (if not in feed):
  - None
- Drug for worms:
  - None
- HBDN 2x daily:
  - None
- Eye PROBLEMS:
  - Tetracycline ointment 3x daily:
    - 08.00
    - 14.00
    - 20.00
  - Chloramphenicol 1 drop 4x daily:
    - 08.00
    - 14.00
    - 20.00
  - Atropine 1 drop 3x daily:
    - 08.00
    - 14.00
    - 20.00
  - Other:
    - Wick ear
      - 08.00
---

**Answer to Exercise B, Daily care, page 12, Case 1 – Lani**
### MONITORING RECORD

Monitor respiratory rate, pulse rate, and temperature **every 4 hours** until after transition to RUTF or F-100. Then monitoring can be less frequent (e.g., twice daily).

#### RESPIRATORY RATE

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breaths/minute</td>
<td>39.5</td>
</tr>
</tbody>
</table>

#### PULSE RATE

| Beats/minute | 100 |

#### TEMPERATURE

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Day 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>39.5</td>
<td></td>
</tr>
</tbody>
</table>

**Danger Signs:** Watch for increasing pulse and respirations, fast or difficult breathing, sudden increase or decrease in temperature, rectal temperature below 35.5° C, and other changes in condition (see Monitoring Danger Signs during Inpatient Management of Severe Acute Malnutrition Job Aid).

Normal pulse:
- 0 to 1 years: 100 to 160 beats/min
- 1 to 3 years: 90 to 150 beats/min
- 3 to 6 years: 80 to 140 beats/min

Normal respiration rate:
- <2 months: <60 breaths/min
- 2 to 11 months: <50 breaths/min
- 1 to 5 years: <40 breaths/min
Answers to Exercise C, Daily care, continued

1. Ampicillin (through IV cannula) and tetracycline and atropine eye drops.
2. 21:00.
3. Give her ampicillin (through IV cannula) and tetracycline eye drop in left eye.

Answers to Exercise D, Daily care, page 22. Case 1 – Lani

1a. Her temperature drops suddenly to 35.7°C.
1b. Yes, a sudden drop in temperature is a danger sign. Lani is approaching hypothermia.
1c. 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.
1d. No, Lani’s pulse and respirations remain fairly steady.
1e. 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.

Answers to Exercise D, Daily care. Case 2 – Carla

2a. No, Carla’s temperature remains steady and normal.
2b. Yes, Carla’s respiratory rate increased by 5 and pulse rate increased by 25 beats per minute between 02:00 and 06:00 on Day 2.
2c. Recheck both respiratory and pulse rates.
2d. Alert the doctor immediately. Do not give any more food or fluids until the doctor has examined the child.
2e. Carla shows signs of possible heart failure. She may have taken too much ReSoMal along with the F-75 being given by NG. Or there may be a hidden, non-responding infection (with suppressed fever).

Answers to Exercise D, Daily care. Case 3 – Bijouli

3a. His temperature increases from 37.1°C to 38.5°C. Yes, this is a danger sign.
3b. No, there is no increase of 25 beats per minute or more.
3c. Yes, 40 breaths per minute is considered fast breathing in a 2-year-old. Bijouli has had fast breathing since 22:00 on Day 2.
3d. Yes, the doctor should be alerted.
3e. Fast breathing and chest indrawing 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 4 times daily for at least 5 days.

Answers to Exercise E, Daily care, page 32.

1. Daniel’s desired discharge weight is 11.5 kg. It is entered on the weight chart on the following page.
2. Allow for a 1 kg weight loss (so 9.0 kg should be the bottom weight on the vertical axis).
3–4. Answers to questions 3 and 4 are entered on the following weight chart.
5. 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.

6. No, it is only a small loss, and he gains on the next day. There could be many possible causes, e.g. less intake or just stable intake, or a mistake in weighing or recording the weight.
NAME ________________ M F DATE OF BIRTH _______ AGE _____ (months) DATE OF ADMISSION _______ HOSP. ID:

WEIGHT CHART

Weight on admission: 10.1 kg
Height/length on admission: 87 cm
MUAC on admission: _____ mm
Bilateral pitting oedema on admission: 0 + ++ +++

Weight at transfer to OTP/discharge: ______ kg

Enter likely range of weights on the vertical axis in an appropriate scale (e.g., each row representing 0.1 kg). Allow rows below the starting weight in case weight decreases; weight may decrease by as much as 30% if the child has severe oedema.
**ANSWER SHEETS: MODULE 6, MONITORING AND PROBLEM SOLVING**

**Answers to Exercise A, Monitoring and problem solving, page 9. 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.)

**Answers to Exercise A, Monitoring and problem solving. 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 despite eating well. Lennox’s fever continues and is at 38°C.

**Possible answers to Exercise B, Monitoring and problem solving, page 21. 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 unrecognized 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:
- Observe feedings in the ward; watch carefully how Ceri is fed.
- Ask nurses why folic acid and multivitamin 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 caretaker how to hold Ceri and feed her with encouragement.
Possible answers to Exercise B, Monitoring and problem solving. Case 2 – Lennox

2a. Yes, Lennox is taking enough F-100. The recommended daily range for his weight of 8.0 kg is 1200–1760 ml, and he took 1400 ml.

2b. Benzylpenicillin has not taken care of Lennox’s infection. Lennox may have tuberculosis.

Answers to Exercise C, Monitoring and problem solving, page 25. CCP excerpt 1 – Aruni

Aruni’s average daily weight gain from 13/4 to 19/4 was 11.06 g/kg: 77.4÷7 = 11.06 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.

Answers to Exercise C, Monitoring and problem solving. CCP excerpt 2 – Kodeh

Kodeh’s average daily weight gain from 13/4 to 19/4 was 4.66 g/kg: 32.6÷7 = 4.66 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.

Answers to Exercise C, Monitoring and problem solving. CCP excerpt 3 – Sohna

Sohna’s average daily weight gain from 13/4 to 19/4 was 6.15 g/kg: 43.07÷7 = 6.15 g/kg.

This is a moderate average daily weight gain, so Sohna’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 (four out of 20) have poor weight gain. So yes, there is a problem with weight gain on this ward.

2. Common factor: three of the four children with poor weight gain are not with a mother.

3. 20% of the children (four out of 20) on the ward have poor weight gain (< 5 g/kg/day). Three of these four have no 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 on the ward. It would also be a good idea to see if all of the children with moderate or good weight gain have caretakers with them, and if the caretakers help with feeding.

A separate problem investigation should be done for Lalita.
Answers to Exercise D, Monitoring and problem solving, page 30.

Possible answers to questions for discussion

1. **Kofi.** Kofi died about 19:00 on his first day in the hospital. This time is quite possibly 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 rate and pulse rate had increased dangerously, probably due to overhydration. Kofi had been given normal saline IV in the emergency room (incorrect and dangerous case management). The IV was continued for 6 hours.

   **Vijay.** In emergency 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 ++ to +++.

   **Luca.** Luca was found dead at 04:00 in the morning 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 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 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 Kofi nor Vijay was given an antibiotic. Both needed antibiotics.

   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 ReSoMal was administered correctly.
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Website: https://www.who.int/health-topics/nutrition