MODULE 6
MONITORING, PROBLEM SOLVING AND REPORTING

Government of Sudan

Training Course on
Inpatient Management of
Severe Acute Malnutrition

Children 6–59 Months with SAM
and Medical Complications

June 2011
This modified version of the 2002 World Health Organisation’s *Training Course on Inpatient Management of Severe Acute Malnutrition (SAM)* is the practical application of the 2009 Government of Sudan (GOS) Federal Ministry of Health (FMOH) *Interim Manual Community-Based Management of Severe Acute Malnutrition (November 2009)*. The training course is made possible by the generous support of the American people through the support of the Office of U.S. Foreign Disaster Assistance, Bureau for Democracy, Conflict and Humanitarian Assistance, and the Office of Health, Infectious Diseases, and Nutrition, Bureau for Global Health, United States Agency for International Development (USAID), under terms of Cooperative Agreement No. AID-OAA-A-11-00014, through the FANTA-2 Bridge, managed by FHI 360. The contents are the responsibility of FHI 360 and do not necessarily reflect the views of USAID or the United States Government.

Illustrations for modules: Susan Kress
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acronyms and Abbreviations</td>
<td>ii</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Learning Objectives</td>
<td>1</td>
</tr>
<tr>
<td><strong>1.0</strong> Using a Process to Identify and Solve Problems on Case Management</td>
<td>2</td>
</tr>
<tr>
<td>1.1 Identifying Problems</td>
<td>2</td>
</tr>
<tr>
<td>1.2 Investigating Causes of Problems</td>
<td>4</td>
</tr>
<tr>
<td>1.3 Determining Solutions</td>
<td>4</td>
</tr>
<tr>
<td>1.4 Implementing Solutions</td>
<td>5</td>
</tr>
<tr>
<td><strong>2.0</strong> Monitoring and Solving Problems with an Individual Patient</td>
<td>7</td>
</tr>
<tr>
<td>2.1 Monitoring Individual Patient Progress and Care</td>
<td>7</td>
</tr>
<tr>
<td>2.2 Identifying the Child Who Is Failing to Respond</td>
<td>10</td>
</tr>
<tr>
<td>Exercise A</td>
<td>11</td>
</tr>
<tr>
<td>2.3 Determining Causes of Failure to Respond</td>
<td>22</td>
</tr>
<tr>
<td>2.4 Identifying and Implementing Solutions for the Individual Child</td>
<td>22</td>
</tr>
<tr>
<td>Exercise B</td>
<td>24</td>
</tr>
<tr>
<td><strong>3.0</strong> Monitoring Overall Weight Gain in Inpatient Care Rehabilitation Phase</td>
<td>26</td>
</tr>
<tr>
<td>3.1 Compiling Data on Weight Gain in Inpatient Care Rehabilitation Phase</td>
<td>26</td>
</tr>
<tr>
<td>3.2 Determining if There Is a Problem with Weight Gain in Inpatient Care Rehabilitation Phase</td>
<td>27</td>
</tr>
<tr>
<td>3.3 Stating the Problem Completely and Specifically</td>
<td>27</td>
</tr>
<tr>
<td>Exercise C</td>
<td>28</td>
</tr>
<tr>
<td><strong>4.0</strong> Monitoring Patient Outcomes</td>
<td>31</td>
</tr>
<tr>
<td>4.1 Recording Each Patient’s Outcome on the Inpatient Management Record</td>
<td>31</td>
</tr>
<tr>
<td>4.2 Tagging Adverse Outcomes on the Inpatient Management Record</td>
<td>32</td>
</tr>
<tr>
<td>4.3 Reviewing Patient Records for Common Factors in Adverse Outcomes</td>
<td>32</td>
</tr>
<tr>
<td>Exercise D</td>
<td>33</td>
</tr>
<tr>
<td>4.4 Calculating a Case-Fatality Rate for Inpatient Care</td>
<td>42</td>
</tr>
<tr>
<td><strong>5.0</strong> Monitoring Case Management Practices and Procedures</td>
<td>44</td>
</tr>
<tr>
<td>5.1 Monitoring Case Management Practices</td>
<td>44</td>
</tr>
<tr>
<td>5.2 Monitoring Food Preparation</td>
<td>45</td>
</tr>
<tr>
<td>5.3 Monitoring Ward Procedures</td>
<td>45</td>
</tr>
<tr>
<td>5.4 Monitoring Hygiene</td>
<td>47</td>
</tr>
<tr>
<td>5.5 Who Should Monitor and How Often?</td>
<td>48</td>
</tr>
<tr>
<td>5.6 Supportive Supervision and Mentoring (or Coaching)</td>
<td>48</td>
</tr>
<tr>
<td>5.7 Quality Improvement of Management of SAM in Inpatient Care</td>
<td>49</td>
</tr>
<tr>
<td><strong>6.0</strong> Solving Problems</td>
<td>50</td>
</tr>
<tr>
<td>6.1 Process for Problem Solving in a Group</td>
<td>50</td>
</tr>
<tr>
<td>Exercise E</td>
<td>52</td>
</tr>
<tr>
<td><strong>7.0</strong> Monitoring and Reporting on Inpatient Care</td>
<td>53</td>
</tr>
<tr>
<td>7.1 Tools for Monitoring and Reporting</td>
<td>53</td>
</tr>
<tr>
<td>Exercise F1</td>
<td>57</td>
</tr>
<tr>
<td>7.2 Performance Indicators</td>
<td>58</td>
</tr>
<tr>
<td>Exercise F2</td>
<td>61</td>
</tr>
<tr>
<td>Exercise G (Optional)</td>
<td>61</td>
</tr>
<tr>
<td><strong>Annex A:</strong> Weight Gain Tally Sheet for Inpatient Care Rehabilitation Phase</td>
<td>62</td>
</tr>
<tr>
<td><strong>Annex B:</strong> Example of Action Plan for Quality Improvement of Management of SAM in Inpatient Care</td>
<td>63</td>
</tr>
<tr>
<td>Answers to Exercises</td>
<td>72</td>
</tr>
</tbody>
</table>
### Acronyms and Abbreviations

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

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

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

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

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

Learning Objectives

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

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

1.1 Identifying Problems

Identify problems by monitoring.

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

- A patient’s appetite has not returned.
- A patient has failed to gain weight for several days while taking ready-to-use therapeutic food (RUTF) and/or F-100.
- A mother\(^1\) wants to take her child home before the child has reached the discharge weight.
- A child seems to have an unrecognised infection.

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

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

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

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

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

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

\(^1\) The term ‘mother’ is used throughout this module. However, it is understood that the person who is responsible for the care of the child might not always be that child’s mother, but rather some other caregiver. However, for the sake of readability, ‘mother’ means ‘mother/caregiver’ throughout this module, ‘she’ means ‘she or he’ and ‘her’ means ‘her or his’.
Read each pair of problem descriptions below. Check the problem description that is more detailed and therefore more useful.

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

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

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

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

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

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

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

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

1.3 Determining Solutions

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

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

Example of Problem-Solving Process

Problem: Weight gain in Inpatient Care is not as good as it was several months ago. Instead of good weight gain for most children on RUTF and/or F-100 during rehabilitation phase (that
is, 10 g/kg/day or more), the typical weight gain is now less than 10 g/kg/day. The senior nurse decides to investigate by monitoring Inpatient Care procedures and food preparation. Below are some possible causes that she might find, along with an appropriate solution for each.

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

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

1.4 Implementing Solutions

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

To Promote Good Communication when Solving Problems:
- Hold regular staff meetings, during which positive feedback is given and any problems, causes and solutions are discussed.
- Provide staff with job descriptions that list their assigned tasks.
- Provide clear instructions whenever any change is made.
- Provide ‘job aids’, such as checklists or posted instructions, for any complex tasks.
Follow up to determine if a solution is implemented as intended. Then continue monitoring to determine whether the problem is solved. Give feedback to staff that includes praise for work done well, along with any instructions for improvement.
2.0 Monitoring and Solving Problems with an Individual Patient

2.1 Monitoring Individual Patient Progress and Care

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

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

- Observe every child and question the mother and nurse:
  - Is the child more alert? Smiling? Sitting up? Able to play?
  - Has the child lost oedema?
  - Is there less diarrhoea?
  - Has dermatosis improved?
  - How is the child’s appetite?

- Review the child’s weight chart
  - Is the child in transition (or rehabilitation) gaining weight according to the weight chart?
  - If there is a loss, is it due to decreasing oedema?

- Review the Inpatient Management Record and food intake chart
  - Is the child getting the recommended feeds?
  - Is prescribed care (such as antibiotics, folic acid, iron) being given?
  - Are there any danger signs recorded on the Inpatient Management Record: increased pulse rate, respiratory rate or temperature?

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

<table>
<thead>
<tr>
<th>Transition:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good weight gain: 5 g/kg/day. Excess weight gain is not a good sign.</td>
</tr>
<tr>
<td>Rehabilitation:</td>
</tr>
</tbody>
</table>
| Good weight gain: 10 g/kg/day or more
| Moderate weight gain: 5 up to 10 g/kg/day
| Poor weight gain: Less than 5 g/kg/day |

*Note: Daily weight gain is not calculated for children in the stabilisation phase and who are on the F-75 diet, because weight gain is not indicated during this phase. Their condition is stabilising.*
Note: Avoid the use of ‘discharge from Inpatient Care’ for children with SAM who after stabilisation leave the hospital and are referred to Outpatient Care and continue their treatment at home. When leaving Inpatient Care, they have not yet ended the treatment.

To Calculate Daily Weight Gain

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

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

\[ W_2 - W_1 = \text{____ kg} \quad \text{____ kg} \times 1,000 = \text{____ grams gained} \]

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

\[ \text{Weight gain in grams} \div W_1 = \text{____ g/kg/day} \]

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

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

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

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

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

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

A gain of 10.9 g/kg/day is considered a good weight gain.
Calculate the daily weight gain for the children described below. Assume that the weights were taken at about the same time each day.

1. Mustapha weighed 7.25 kg on day 10. He weighed 7.30 kg on day 11. What was his weight gain in g/kg/day?

2. Kebba weighed 6.22 kg on day 8. She weighed 6.25 kg on day 9. What was her weight gain in g/kg/day?

3. Galo weighed 7.6 kg on day 9. He weighed 7.5 kg on day 10. What was his weight gain in g/kg/day? (Note: Since Galo lost weight, the answer will be negative.)

Compare your answers to this exercise to answers given on page 78 at the end of the module.
2.2 Identifying the Child Who Is Failing to Respond

A child is failing to respond if he or she:
- does not improve initially
- gains weight but then levels off or deteriorates.

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

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

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

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

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

Case 1 – Ceri

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

Study the information about Ceri and answer the questions below.

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

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

**Signs of SAM**
- Severe wasting: Yes / No
- Bilateral Pitting Oedema: 0 / ++
- Dermatosis: 0 / ++ / +++ (raw skin, fissures)
- Weight (kg): 18
- Height / length (cm): 73
- W/H z-score: -3
- MUAC (mm): 21

**Temperature:**
- 36.8°C (axillary) rectal
- 36°C / 35°C actively warm child. Check temperature every 30 minutes.

**Blood Glucose (mmol/L):**
- If no test available: treat for hypoglycaemia.
- If < 1 mmol/L, and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG): Yes / No
- If < 3 mmol/L, and lethargic, unconscious or convulsing, give sterile 10% glucose IV: 5 ml/kg (child’s weight) = ml. Then give 50 ml bolus NG.
- Time glucose given: Oral / NG IV

**Haemoglobin (Hb) (g/L):**
- or packed Cell Vol (PCV): Blood type:
- If Hb < 4 g/dL (or Hb 4-6 g/dL AND respiratory distress), transfuse 10 ml/kg fresh blood (or 5-7 ml/kg packed cells) slowly over 3 hours. Amount:
- Time started:
- Time ended:

**Eye Signs:**
- No / Left / Right
- Blurred vision: Yes / No

**Diet:**
- Foods of anamnesis: No / Yes
- Oral feeding: Yes / No

**Oral Doses Vitamin A:**
- If < 6 months: 50,000 IU
- 6-12 months: 100,000 IU
- 12 months +: 200,000 IU

**MEASLES:**
- Yes / No
- Vaccination upon admission: Yes / No

**Diarrhoea:**
- Water diarrhoea: Yes / No
- Blood in stool: Yes / No
- Vomiting: Yes / No
- Number of days with diarrhoea:

**Dribbling and/or vomiting, give ReSoMal orally:**
- Every 30 minutes for first 2 hours, monitor and give:
- 5 ml/kg (child’s weight): ml ReSoMal

**Dribbling:**
- Pulse rate:
- Respiratory rate:
- If diarrhoea, circle signs present:
- dry mouth and tongue:
- Sunken eyes:
- Thirsty:
- Lethargic:

**Dribbling and/or vomiting, give ReSoMal orally:**
- For up to 10 hours, give ReSoMal and F-75 orally:
- For up to 2 hours, give ReSoMal and F-75 orally:
- Monitor every 30 minutes.

**Antibiotics:**
- Doxycycline / Chloramphenicol Acid
- Time of 5th dose:

**Malaria Test (Type/Date/Outcome):**
- Antimalaria:
- Time of 1st dose:

**HIV Test (Type/Date/Outcome):**
- If HIV test, give cotrimoxazole:

---

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

Children 6–59 Months with SAM and Medical Complications

---

**Date of admission:** 1 Feb 2011
**Time:** 9:30
**Hospital ID number:** 302
## DAILY CARE

### DAYS IN HOSPITAL

<table>
<thead>
<tr>
<th>Days</th>
<th>1</th>
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<td>Bilateral pitting oedema 0--+++</td>
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<td>Diarrhoea (D) or Vomiting (V)</td>
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</tbody>
</table>

### FEED PLAN:

- Type of feed
- Frequency of feeds
- Volume to give per feed
- Total volume taken (ml)

### ANTIBIOTICS

- Amoxicillin
- Clavulanic acid
- A Pedido

### ANTIMALARIAL (Note: type of drug)

- Folic acid

### VITAMIN A (Treatment dose on Day 1, 2, 15; shade days 3-14. Preventive dose after week 4 + oedema free)

- PS

### ANTIHELMINTHIC (Give week 2 presumptive dose. Unless severe infestation)

- If severe infestation: give immediately. If presumptive treatment: give after one week. See dosage in Job Aid Routine Medicine Protocols.

### IRON (Give 3mg/kg/day, 2x daily, after 2 days on F-100. Do not give when on RUTF. Give after malaria treatment)

### EYE INFECTIONS

- Parenteral treatment 2x daily or
- Chloramphenicol 0.1% drop 4x daily

### Corneal clouding and corneal ulceration:

- As above, plus atropine 1 drop 9x daily

### Dermatitis 0--+++:

- SP

### Ear, mouth or throat problems

- Bathing, 1% permanganate

---

**TRAINING COURSE ON INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION**

Children 6–59 Months with SAM and Medical Complications
<table>
<thead>
<tr>
<th>Time</th>
<th>Type of Feed</th>
<th>Amount left (ml or g)</th>
<th>Amount taken orally (a - b)</th>
<th>Amount taken by NGT, if needed (ml)</th>
<th>Estimated amount vomited (ml)</th>
<th>Watery diarrhoea (if present, yes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>2, Amount F75 offered</td>
<td>20</td>
<td>90</td>
<td></td>
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<tr>
<td>11:00</td>
<td>2, Amount F100 offered</td>
<td>25</td>
<td>85</td>
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<tr>
<td>14:00</td>
<td>2, Amount F100 offered</td>
<td>20</td>
<td>90</td>
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<tr>
<td>17:00</td>
<td>2, Amount F100 offered</td>
<td>30</td>
<td>85</td>
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<tr>
<td>20:00</td>
<td>2, Amount F100 offered</td>
<td>25</td>
<td>85</td>
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<tr>
<td>23:00</td>
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<td>5:00</td>
<td>2, Amount F100 offered</td>
<td>20</td>
<td>90</td>
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</tbody>
</table>

Column totals:  
- a: 1010  
- b: 1  
- c: 1  
- d:  
- e:  
- f:  

If child is ready for transition, test appetite: Failed, Passed 

Total volume taken over 24 hours = amount taken orally (c) + amount taken by NGT (d) - total amount vomited (e) = ___ ml and/or ___ mg RUTF
**Case 2 – Lennox**

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

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

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

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

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

When you have finished this exercise, please discuss your answers with a facilitator.
TRAINING COURSE ON INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION
Children 6–59 Months with SAM and Medical Complications

16
## DAILY CARE

<table>
<thead>
<tr>
<th>Name: Lenny</th>
<th>Age: 2 yrs</th>
<th>Date of admission: 2 Nov 2010</th>
<th>Time: 8:30</th>
<th>Hospital ID number: 561</th>
<th>Page 2 of 6</th>
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### DAYS IN HOSPITAL

<table>
<thead>
<tr>
<th>Week 1</th>
<th>1</th>
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</table>

### FEED PLAN:

- **Type of feed**: Formula
- **Daily feeds**: 7
- **Volume to give per feed**: 90 ml
- **Total volume taken (ml)**: 630

### Antibiotics

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<thead>
<tr>
<th>Antibiotic</th>
<th>Week 1</th>
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<tbody>
<tr>
<td>Amoxicillin</td>
<td>9.00</td>
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<tr>
<td>Ciprofloxacin</td>
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<tr>
<td>Gentamicin</td>
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### ANTIMALARIAL (Note type of drug)

- **Folic Acid (Single dose)**: 9.00

### Vitamin A

- Treatment dose on Day 1, 2, 15; shade Days 3–14. Preventive dose after week 4 + oedema free.

### Anthelmintic

- Give on week 2 presumptive dose, unless severe infection.

### Iron

- Give 2mg/kg/day, 2x daily, after 2 days on F-100. Do not give when on RUTF, give after malaria treatment.

### Eye Infections

- Tetracycline ointment 2x daily or Chloramphenicol 1 drop 4x daily
- Corneal clouding and corneal ulceration: As above, plus atropine 1 drop 3x daily

### Dermatitis

- 0 + ++ +++

### Ear, mouth or throat problems

<table>
<thead>
<tr>
<th>After 7-10 days, eye drops are no longer needed.</th>
</tr>
</thead>
</table>

### Bathing, 1% permanganate

- LT LT LT NK ON ON LT LT
### MONITORING RECORD

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

<table>
<thead>
<tr>
<th>DATE</th>
<th>DAY 1</th>
<th>DAY 2</th>
<th>DAY 3</th>
<th>DAY 4</th>
<th>DAY 5</th>
<th>DAY 6</th>
<th>DAY 7</th>
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<tbody>
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<td>Time</td>
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<tr>
<td>RESPIRATORY RATE</td>
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<tr>
<td>Breath/minute</td>
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<td>PULSE RATE</td>
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<tr>
<td>Beats/minute</td>
<td>95</td>
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</table>

**TEMPERATURE**

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 Danger Signs for the Management of Severe Acute Malnutrition in Children under 5 in Inpatient Care Job Aid).
### MONITORING RECORD

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

<table>
<thead>
<tr>
<th>DATE</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
<th>Sun</th>
<th>Day 1</th>
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</thead>
<tbody>
<tr>
<td>Time</td>
<td>2/18/01</td>
<td>5:00</td>
<td>1:00</td>
<td>9:00</td>
<td>5:00</td>
<td>1:00</td>
<td>9:00</td>
<td>5:00</td>
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</table>

#### RESPIRATORY RATE

Breaths/minute: 80, 85, 85, 85, 85, 85, 85, 85

#### PULSE RATE

Beats/minute: 100, 100, 100, 100, 100, 100, 100, 100

#### TEMPERATURE

![Temperature Graph](temperature-graph.png)

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 Danger Signs for the Management of Severe Acute Malnutrition in Children under 5 in Inpatient Care Job Aid).

## 24-HOUR FOOD INTAKE CHART

Complete one chart for every 24-hour period.

<table>
<thead>
<tr>
<th>DATE: 11 Nov</th>
<th>TYPE OF FEED: GIVE: 4 feeds of 10 ml of F75/100 or (5 ml spoons RUTF per 6 feeds) (___ packets a day)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time</strong></td>
<td><strong>a. 1/Amount F75 offered</strong></td>
</tr>
<tr>
<td>8:00</td>
<td>210</td>
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<tr>
<td>12:00</td>
<td>320</td>
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<td>16:00</td>
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<td>20:00</td>
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<td><strong>Column totals</strong></td>
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</table>

If child is ready for transition, test appetite. Appetite test: Failed Passed

Total volume taken over 24 hours = amount taken orally (c) + amount taken by NGT (d) - total amount vomited (e) = 1400 ml and/or______ mg RUTF
2.3 Determining Causes of Failure to Respond

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

- **Insufficient food given**
  - Has the feeding plan been adjusted as the child gains weight?
  - Is the correct feed being given?
  - Is the correct amount offered at the required times?
  - Is the child being fed adequately at night?
  - Is the child being held and encouraged to eat?
  - Are leftovers recorded so the child’s recorded intake is accurate?
  - Has the preparation and the quality of the therapeutic milk been checked?

- **Vitamin or mineral deficiency**
  - Is CMV added to the child’s food each day?

- **Insufficient attention given to child**
  - Do staff pay less attention to this child for some reason (for example, because they believe he or she is ‘beyond help’)?
  - Is the mother present to assist in feeding and care of the child?

- **Rumination.** The child regurgitates food from the stomach to the mouth, then vomits part of it and swallows the rest. This usually happens when the child is not observed.
  - Is the child eating well but failing to gain weight?
  - Does the child smell of vomit or have vomit-stained clothes or bedding?
  - Does the child seem unusually alert and suspicious?
  - Does the child make stereotyped chewing movements?

- **Unrecognised infection.** Infections most commonly overlooked include pneumonia, urinary tract infection, ear infection and tuberculosis (TB). Others include malaria, dengue, viral hepatitis B and HIV infection. See CMAM Manual, Annex 8, Drug Dosages of SAM Treatment for Children under 5, and Appendix for more information on identifying possible infections and treating them.

- **Serious underlying disease** (such as congenital abnormalities, cancer, immunological diseases)

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

2.4 Identifying and Implementing Solutions for the Individual Child

In some cases, the cause of a problem may require a specific medical solution. If the child has an infection, a clinician will need to prescribe appropriate treatment as described in the CMAM Manual.
Optional reading for clinicians: Those who are interested in infections can read Annex 8 and the Appendix of the CMAM Manual.

If a child is ruminating, it is best to have experienced staff members give him or her special attention. Staff need to show disapproval whenever the child begins to ruminate, without frightening the child, and encourage less harmful behaviours.

In many cases, the solution to a problem may seem apparent through ‘common sense’. For example, if a child is not being fed according to schedule, he or she must be fed according to schedule. If the CMV has not been added to the child’s food when locally preparing therapeutic milk recipes, it must be added. However, there may be underlying causes that are also important. Continue to ask ‘Why?’ until you reach the ‘root causes’ of problems. The solutions to problems must address the root causes.

**Example of a Problem with Root Causes**

**Problem:** A child becomes hypoglycaemic during her first night in Inpatient Care.

![Diagram showing the problem and its causes]

**One cause:** She was not fed at 2:00 and 4:00.

**Root cause:** The child’s mother was too tired to wake up and feed her.

**Root cause:** There are not enough night staff, so mothers are expected to feed the children at night.

**Root cause:** There is no quiet time or place for mothers to rest during the day.

**Solutions:** To solve this problem, it will be necessary to address all of the causes. Possible solutions include getting more night staff or finding a time and place for mothers to rest during the day. Night staff could also be asked to wake up the mothers and supervise night feeds, or help those mothers whose children require 2-hourly feeds.
Exercise B

In this exercise, you will discuss causes and solutions to problems affecting Ceri and Lennox, two cases presented previously in Exercise A.

Case 1 – Ceri

You remember that Ceri was failing to respond on day 5. She had not lost her oedema and was not eating well. She had not progressed to RUTF or F-100. You may wish to review the information about Ceri on pages 12–14.

Write answers to the following questions as preparation for a group discussion:

1a. What are some possible causes of Ceri’s failure to respond? (List at least three possible causes.)

1b. How could you find out the real cause(s)? List several possible ways to investigate.

1c. While observing feeding in Inpatient Care, the senior nurse found that the staff paid very close attention to the children with intravenous (IV) drips and nasogastric tubes (NGTs). They paid much less attention to the children feeding orally. Ceri did not appear as sick as many of the other children, and the nurses did not spend time with her encouraging her to eat.

Based on the senior nurse’s observations, what is a possible cause of Ceri’s failure to respond?

1d. What is a possible solution appropriate for the cause identified in question 1c above?
Case 2 – Lennox
You remember that Lennox was failing to respond on day 10. He had a deep, persistent cough and some difficulty breathing. The physician had been treating Lennox for pneumonia with benzylpenicillin, which had been given for 5 days.

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

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

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

Tell a facilitator when you are ready for the group discussion.
### 3.0 Monitoring Overall Weight Gain in Inpatient Care Rehabilitation Phase

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

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

### 3.1 Compiling Data on Weight Gain in Inpatient Care Rehabilitation Phase

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

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

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

#### Example Weight Gain Tally Sheet for Inpatient Care Rehabilitation Phase

<table>
<thead>
<tr>
<th>Week of: 9/2/00</th>
<th>Good weight gain (≥ 10 g/kg/day)</th>
<th>Moderate weight gain (5 up to 10 g/kg/day)</th>
<th>Poor weight gain (&lt; 5 g/kg/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of children on RUTF and/or F-100 for entire week:</td>
<td>Jalika</td>
<td>Ebrima</td>
<td>Fatou</td>
</tr>
<tr>
<td>12</td>
<td>Isatou</td>
<td>Babu</td>
<td>Abdouraham</td>
</tr>
<tr>
<td>Nancy</td>
<td>Fatemata</td>
<td>Sainey</td>
<td></td>
</tr>
<tr>
<td>Amie</td>
<td>Galo</td>
<td>Momodou</td>
<td></td>
</tr>
<tr>
<td>Total number of children</td>
<td>4</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>% of children on RUTF and/or F-100 in Inpatient Care</td>
<td>33%</td>
<td>50%</td>
<td>17%</td>
</tr>
</tbody>
</table>
3.2 Determining if There Is a Problem with Weight Gain in Inpatient Care Rehabilitation Phase

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

3.3 Stating the Problem Completely and Specifically

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

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

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

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

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

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

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

Information for the Exercise

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

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

Weight Gain Tally Sheet for Inpatient Care Rehabilitation Phase

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

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

1. Calculate the average daily weight gain in the Rehabilitation Phase in the week of April 13–19, 2010:
   - Add the daily weight gains recorded on the child’s Inpatient Management Record for the 7 days of the week being reviewed (dates: 13/4/2010–19/4/2010). Divide the total by 7.

2. Determine if the child’s average daily weight gain was poor, moderate or good during that week.

3. Add the child’s name to the appropriate column of the tally sheet.

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

4. Total the columns on the tally sheet.

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

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

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

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

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

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

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

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

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

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

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

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

Tell a facilitator when you are ready for the group discussion.
4.0 Monitoring Patient Outcomes

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

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

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

Successful Outcomes

- Referred to Outpatient Care
  - Child whose condition stabilised is referred to Outpatient Care to continue treatment as soon as his or her appetite has returned and:
    - child is eating more than 75% of daily prescription of RUTF and starts to gain weight
    - medical complication is resolving
    - bilateral pitting oedema is decreasing
    - child is clinically well and alert

- Cured
  - Child who stayed in Inpatient Care until full recovery for special reasons:
    - child meets discharge criteria of 15% target weight gain and does not have bilateral pitting oedema for 2 consecutive weeks

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

Adverse Outcomes

- Defaulted (Early Discharge against Advice)
  - Child who is absent on the third consecutive day
  - Child’s outcome is not known (the child’s condition or outcome should be investigated by a home visit; the child could have died)

- Non-Recovered
  - Child who remained in Inpatient Care but does not reach discharge criteria after 2 months (8 weeks) in treatment; medical investigation for non-response to treatment should have been done previously

- Death
  - Child who died while in Inpatient Care; the following information should be noted in case of death:
    - apparent cause of death
    - number of days after admission the child died
    - time of day or night that death occurred
    - other relevant circumstances
4.2 Tagging Adverse Outcomes on the Inpatient Management Record

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

4.3 Reviewing Patient Records for Common Factors in Adverse Outcomes

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

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

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

If many mothers are choosing to take their children home after only a few days, look for common reasons. Are the mothers unable to leave other children at home? Is the ward uncomfortable for them? Are the staff unfriendly? Early departures also suggest a need to monitor and improve ward conditions and procedures.
Review of patient records for adverse outcomes can provide a basis for staff to discuss and solve problems. A process for group problem solving is described in Section 6.0. of this module.

**Exercise D**

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

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

1. What are the circumstances of each child’s death?
   - Karim –
   - Vijay –
   - Luca –

2. Are there common factors among the three deaths? If so what are they?

3. What areas of case management practices or Inpatient Care procedures need to be monitored to find related problems and causes?

Tell a facilitator when you are ready for the group discussion.
TRAINING COURSE ON INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION
Children 6–59 Months with SAM and Medical Complications


**INITIAL MANAGEMENT**

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

**SIGNS OF SAM**
- Severe wasting?
  - Yes
  - No
- Bilateral Pitting Oedema?
  - Yes
  - **
  - **
- Dermatitis?
  - 0
  - 0
  - **
  - +++ [raw skin, fissures]

**Weight (kg):**
- 0.0

**Height / length (cm):**
- 71

**MUAC (mm):**
- 11

**TEMPERATURE (°C):**
- axillary: Rectal
- 39 if axillary less than 35°C or rectal less than 35.5°C actively warm child. Check temperature every 30 minutes.

**BLOOD GLUCOSE (mmol/l):**
- If test not available, treat for hypoglycaemia.
- If < 3 mmol/l and alert, give 50 ml 10% glucose or sugar (oral or NG): Yes: No
- If < 3 mmol/l and lethargic, unconscious or convulsing, give sterile 10% glucose IV:
  - 5 ml x kg (child's weight) = ml
  - **
  - Then give 50 ml 10% glucose.

Time glucose given:
- Oral: NG: IV

**HAEMOGLOBIN (Hb) (g/dl):**
- Normal values

**Blood type:**
- or Packed Cell Vol (PCV):

**EYE SIGNS**
- Bilal: Spots
  - Pus or Inflammation
  - Corneal Clouding
  - Corneal ulceration

**ORAL DOSES VITAMIN A:**
- < 6 months*: 50,000 IU
- 6–12 months*: 100,000 IU
- > 12 months*: 200,000 IU

**MEASLES**
- Yes
- No

**Vaccination on admission:**
- Yes
- No

**FEEDING**
- Feeding with F-75 as soon as possible.
  - If child is hydrated, reweigh before determining amount to feed. New weight: kg

**Amount for 2-hourly feedings:** ml F-75

**Time first feed:**
- If hypoglycaemic, feed 1/2 ml every hour for at least 2 hours; continue until blood glucose reaches 3 mmol/l.

**Record all feeds on 24-Hour Food Intake Chart page.**

**ANTIBIOTICS**
- Drug/Route:

**DOSE/FREQUENCY/DURATION:**
- Time of 1st Dose

**MALARIA TEST**
- Type/Data/Outcome:

**DOSE/FREQUENCY/DURATION:**
- Time of 1st Dose

**HIV TEST**
- Type/Data/Outcome:

**DOSE/FREQUENCY/DURATION:**
- Time of 1st Dose
Name: **KARIM**  
Age: 15 mths  
Date of admission: 4 June 2010  
Time: 10:00  
Hospital ID number: 678

### Monitoring Record

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

<table>
<thead>
<tr>
<th>DATE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td></td>
</tr>
</tbody>
</table>

#### Respiratory Rate

- **Breaths/minute**: 30

#### Pulse Rate

- **Beats/minute**: 90

#### Temperature

- **Temperature Range**:
  - 35.5
  - 39.0
  - 39.5
  - 38.5
  - 38.0
  - 37.5
  - 37.0
  - 36.5
  - 36.0
  - 35.5
  - 35.0
  - 34.5

*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 Danger Signs for the Management of Severe Acute Malnutrition in Children under 5 in Inpatient Care Job Aid.*
**COMMENTS/OUTCOME**

**IV began in Emergency Room and continued until 16:00 9 June**

**SPECIAL FOLLOW-UP OR DISCHARGE INSTRUCTIONS**

**TRAINING GIVEN TO PARENTS/ CAREGIVERS**

**IMMUNISATIONS**

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

<table>
<thead>
<tr>
<th>Vaccination</th>
<th>At birth</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG*</td>
<td>At birth</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Polio</td>
<td>At birth</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td>At 14 weeks</td>
</tr>
<tr>
<td>Penta**</td>
<td>—</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td>At 14 weeks</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>—</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td>—</td>
</tr>
<tr>
<td>Measles</td>
<td>—</td>
<td>At 9 months</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

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

**PATIENT OUTCOME**

**Referral to Outpatient Care Site:**

**Comment:**

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

<table>
<thead>
<tr>
<th>Discharge based on 15% weight change (Discharged cured)</th>
<th>Discharge weight ≥ 15% weight gain: Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early departure or defaulting after 2 days absence (Discharged defaulted)</td>
<td>MUAC: _____ mm</td>
<td>Weight: _____ kg</td>
</tr>
<tr>
<td>Non-recovery after 2 months in treatment (Discharged non-recovered)</td>
<td>Height: _____ cm</td>
<td></td>
</tr>
</tbody>
</table>

**Dead**

(Discharged died)

<table>
<thead>
<tr>
<th>Number of days after admission (circle):</th>
<th>4/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of death: Day</td>
<td>4/06</td>
</tr>
</tbody>
</table>

**Apparent cause(s) of death:**

Had child received IV fluids? **Yes** | **No**
### INITIAL MANAGEMENT

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

<table>
<thead>
<tr>
<th>Name</th>
<th>VISAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SIGNS OF SAM</th>
<th>Severe wasting?</th>
<th>(Yes)</th>
<th>(No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilateral Pinching Oedema?</td>
<td>(Yes)</td>
<td>(No)</td>
<td>(+++)</td>
</tr>
<tr>
<td>Dermatites?</td>
<td>(++)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (kg):</td>
<td>7.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height / length (cm):</td>
<td>78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUAC (mm):</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TEMPERATURE:**

- Oral: 36.5°C; axillary: 36°C; rectal: 35.5°C
- Normally warms child. Check temperature every 30 minutes.

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

- If no test available, treat for hypoglycemia: 3 mmol/L and above, give 50 mL/kg of 10% glucose or sucrose (not or MG)
- If < 3 mmol/L and letargy, unconscious or convulsing, give sterile 10% glucose IV: 5 mL/kg (child’s weight) = _ _ _ ml. Then give 50 mL/kg glucose.
- Time glucose given: Oral NG IV

**HAEMOGLOBIN (Hb) or Packed Cell Vol (PCV):**

- If Hb < 8/6g/dL or PCV < 20% AND respiratory distress, transfuse 10 mL/kg whole fresh blood (or 5–7 mL/kg packed cells) slowly over 3 hours.
- Amount started:
- Time started:
- Completed:

**EYE SIGNS:**

- Left
- Right

- Blotches:
- **Impinge on vision**
- Cornoid clouding
- Corneal ulceration

- If ulceration, give vitamin A and atropine immediately.
- Record on Daily Care page.

**ORAL DROPS VITAMIN A:**

- Treatment dose on days 3, 5, 10, 15
- Total dose:
- **Preservative-free dose on week 4 or upon discharge.**

**MEASLES**

- Yes (No) Vaccination upon admission: Yes (No) (Record on Outcome page)

**FEEDING**

- Begin feeding with F-25 as soon as possible.
- If child is rehydrated, eweight before determining amount to feed.
- **New weight:** _ _ _ kg

- Amount for 2-hourly feedings: 2 mL F-25
- **If hypoglycemic, feed at least this amount every half hour for 1 hour**
- Continue until blood glucose reaches 3 mmol/L.
- **Record all feeds on 24-Hour Food intake Chart page.**

<table>
<thead>
<tr>
<th>ANTIBIOTICS (Drug/Dose / Time of 1st Dose)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>MALARIA TEST (Type/Dose/Outcome):</th>
<th>Antimalarial:</th>
</tr>
</thead>
</table>

| HIV TEST (Type/Date / Outcome): | |

| SIGNS OF SHOCK | Lethargic/ unconscious | Cold hands | Slow capillary refill > 3 seconds | Weak or fast pulse |

- If lethargic or unconscious*, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen.
- Give IV glucose as described under Blood Glucose (left).
- Then give IV fluids: Amount IV fluids per hour: 15 mL x _ _ _ kg (child’s wt) = _ _ _ _ _ _ ml

**Time:**

- Start: Monitor every 10 minutes
- **+2** hr: Monitor every 10 minutes

**Resp. rate:**

**Pulse rate:**

* In case of suspected hyperammonemic dehydration, see Operational Guide on CMM Main Agenda, page 183.

**If respiratory and pulse rates are slower after 1 hour, repeat same amount IV fluids for second hour; then alternate ResoMal and F-25 for up to 10 hours as in right section of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See “Hemoglobin” section at left.) Give maintenance IV fluids (4 mL/kg/hour) while waiting for blood.

**DIARRHOEA**

- Watery diarrhoea? Yes (No)
- Blood in stool? Yes (No)
- Vomiting? Yes (No)
- Number of days with diarrhoea: _ _ _

If diarrhoea, stool signs present:

- **Skin pinch goes back slowly**
- Lethargic
- Thirsty
- Restless/Irritable
- Dry mouth/tongue
- No tears
- Sunken eyes

**If diarrhoea and/or vomiting, give ReSoMal orally:**

- Every 30 minutes for first 2 hours
- Monitor and give: 5 mL x _ _ _ kg (child’s wt) = _ _ _ _ _ _ mL ReSoMal

**If diarrhoea and/or vomiting persist for up to 10 hours, give ReSoMal and F-25 orally**

**Amount taken IV:**

- F-25
- F-25
- F-25
- F-25
- F-25

- **Give ReSoMal orally** (or, if child is unconscious or too ill to take the ReSoMal orally, give by NGT).

**Stop ReSoMal if signs of hydration:**

- Neither urine, milk, tears, nor saliva
- Not thirsty
- Stop ReSoMal if any sign of dehydration:
- Increasing pulse and resp. rates, engorging jugular veins, increasing icterus, puffing of eyelids.
Name: VISAY

Date of admission: 5 Oct 2010

Date:

Hospital ID number: 7560

Page 6 of 6

COMMENTS/OUTCOME

COMMENTS

SPECIAL FOLLOW-UP OR DISCHARGE INSTRUCTIONS

TRAINING GIVEN TO PARENTS/ CAREGIVERS

IMMUNISATIONS

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

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

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

PATIENT OUTCOME

Referral to Outpatient Care Site: Date:

Comment:

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

Discharge based on 15% weight change (Discharged cured)

Discharge weight ≥ 15% weight gain: Yes No

Date:

Early departure or defaulting after 2 days absence (Discharged defaulted)

MUAC: ___ mm
Weight: ___ kg
Height: ___ cm

Non-recovery after 2 months in treatment (Discharged non-recovered)

Number of days after admission (circle):
< 1 1-3 days 4-7 days > 7 days

Time of death: Day Night

Apparent cause(s) of death:
Had child received IV fluids? Yes No

At death: Potassium Low, Albumin High, Oedema +++

Low, Albumin High, Oedema +++

Low, Albumin High, Oedema +++
INITIAL MANAGEMENT

Name: Luca (App. 18m)

Data of admission: 25 Feb 2011 Time: 9:00

Hospital ID number: 106-4

RASHAN COBROLIN (HB) (g/d): 7

Eyes left right

Blood type

Haemoglobin (HB) (g/dL): 7

Blood pressure

Bilateral Pitting Oedema

Temperature

Celsius rectal

Weight (kg):

Height (cm): 79

BLOOD GLUCOSE (mmol/L): 4

If no test available, treat for hypoglycaemia

if < 2 mmol/L and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NGT). Yes No

if < 3 mmol/L and lethargic, unconscious or convulsing, give sterile 10% glucose IV:

5 ml/kg (child's weight) = ml. Then give 50 ml bolus NGT.

Time glucose given:

Oral NG IV

SIGNS OF SHOCK

Leathery/unconscious

Cold hands

Slow capillary refill (> 3 seconds)

Weak or fast pulse

if lethargic or unconscious*, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen.

Give IV glucose as described under blood glucose (left).

Then give IV fluids: Amount IV fluids per hour: 15 ml x kg (child's wt) = ml

Start: Monitor every 10 minutes

**”hr

Monitor every 10 minutes

Time:

Resp. rate

Pulse rate

**

In case of suspected hypovolaemic dehydration, see Operational Guide or CMAA Manual Appendix, page 183.

**If respiratory and pulse rates are slower after 2 hours, repeat same amount IV fluids for second hour; then alternate R6SeMal and F-75 for up to 10 hours as in right section of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See "Haemoglobin" section at left). Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood.

DIARRHEA

Wet/dry stools?:

Passed urine?: Y N

Number of days with diarrhea:

Vomiting:

Yes No

Number of episodes:

If diarrhea and/or vomiting, give ReSeMal orally*, every 30 minutes for first 2 hours, monitor and give:

5 ml/kg (child's wt) x 3 doses = ml ReSeMal

Start: Time:

Resp. rate

Pulse rate

If diarrhea and/or vomiting, give ReSeMal orally*, every 3 hours. Monitor every 30 minutes. Amount of ReSeMal to offer**:

5 to 10 ml x kg (child's wt) = ml ReSeMal

Antibiotics

Dose/Frequency/Duration

AMOXICILLIN - ORAL

150 mg 3 x A DAY FOR 4 DAYS

Malaria Test (Type/Date/Outcome): Antimalaria:

If + Malaria test, give cotrimoxazole:

HIV Test (Type/Date/Outcome):

Time of 1st Dose

** In case of suspected hypovolaemic dehydration, see Operational Guide or CMAA Manual Appendix, page 183.

** If respiratory and pulse rates are slower after 2 hours, repeat same amount IV fluids for second hour; then alternate R6SeMal and F-75 for up to 10 hours as in right section of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See "Haemoglobin" section at left). Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood.
### DAILY CARE

<table>
<thead>
<tr>
<th>Week 3</th>
<th>Week 2</th>
<th>Week 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name: Luca</td>
<td>Date of admission: 25 Feb 2011</td>
<td>Time: 9:00</td>
</tr>
<tr>
<td>16.4</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Weight gain (g/kg)</td>
<td>Calculate when on RUTF or F-100</td>
<td></td>
</tr>
<tr>
<td>Bilateral pitting oedema</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Diarrhoea (D) or Vomit (V)</td>
<td>DV</td>
<td>DV</td>
</tr>
<tr>
<td>FEED PLAN:</td>
<td>Type feed</td>
<td>F75</td>
</tr>
<tr>
<td># daily feeds</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Volume to give per feed</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>Total volume taken (ml)</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Breastfeeding</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Appetite test with RUTF</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>ANTIMALARIAL (Note type of drug)</td>
<td>GLE 0.0</td>
<td>GLE 0.0</td>
</tr>
<tr>
<td>POLAC (Single dose)</td>
<td>Preventive vitamin A dose is given after 4 weeks and when oedema-free.</td>
<td></td>
</tr>
<tr>
<td>VITAMIN A</td>
<td>Treatment dose on Day 1, 2, 15; shade Days 3–14. Preventive dose after week 4 + oedema free.</td>
<td></td>
</tr>
<tr>
<td>ANTIHELMINTHIC</td>
<td>Given on week 2 presumptive dose, unless severe infection.</td>
<td></td>
</tr>
<tr>
<td>MON</td>
<td>Given 3mg/kg/day, 2x daily, after 2 days on F-100. Do not give when on RUTF. Give after malaria treatment.</td>
<td></td>
</tr>
<tr>
<td>EYE INFECTIONS</td>
<td>Tetracycline ointment 2x daily or Chloramphenicol 1 drop 4x daily.</td>
<td></td>
</tr>
<tr>
<td>Corneal clouding and corneal ulceration:</td>
<td>As above, plus atropine 1 drop 3x daily.</td>
<td></td>
</tr>
<tr>
<td>Dermatosis</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Ear, mouth or throat problems</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Bathing, 1% permanganate</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Name: Luca  
Age: 18 mths  
Date of admission: 25 Feb 2011  
Time: 9:00  
Hospital ID number: 1046

Comments/Outcome

COMMENTS

Special Follow-up or Discharge Instructions

Training Given to Parents/Caregivers

Immunisations

- Immunisation card available: Yes  
- Circle vaccination already received. Complete the immunisation schedule below, sign for any vaccination given in Inpatient Care and complete the Road to Health card. (Provide a Road to Health card if not yet received).

<table>
<thead>
<tr>
<th>Vaccination</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG*</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polio</td>
<td>At birth</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
</tr>
<tr>
<td>Penta**</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td>At 14 weeks</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td></td>
</tr>
<tr>
<td>Measles</td>
<td>At 9 months</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Patient Outcome

- Referral to Outpatient Care Site:  
- Date:  
- Comment:  
- In case of treatment in Inpatient Care until full recovery and/or discharge, indicate outcome:  
  - Discharge based on 15% weight change (Discharged cured)  
  - Early departure or defaulting after 2 days absence (Discharged defaulted)  
  - Non-recovery after 2 months in treatment (Discharged non-recovered)  
  - Death (Discharged died)  

- Discharge weight ≥ 15% weight gain: Yes  
- MUAC: _____ mm  
- Weight: _____ kg  
- Height: _____ cm  
- Number of days after admission (circle): < 1  
- 1-3 days  
- 4-7 days  
- ≥ 7 days  
- Time of death: Day  
- Death: 4:00 AM  
- Apparent cause(s) of death:  
- Had child received IV fluids? Yes  
No
4.4 Calculating a Case-Fatality Rate for Inpatient Care

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

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

To Calculate the Case-Fatality Rate

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

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

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

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

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

The objective of a SAM ward should be to achieve an Inpatient Care Case-Fatality Rate of < 5%.
Calculate the case-fatality rates for Inpatient Care described below. State whether the rate is unacceptable, poor, moderate or acceptable.

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

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

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

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

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

Compare your answers to this exercise to the answers given on page 81 at the end of the module.
5.0 Monitoring Case Management Practices and Procedures

Periodically, or to investigate causes of problems, you may need to monitor:
- case management practices
- food preparation
- ward procedures
- hygiene

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

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

5.1 Monitoring Case Management Practices

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

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

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

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

5.3 Monitoring Ward Procedures

Problems like inadequate weight gain on the ward, early departures and even deaths may be due to inadequate ward procedures. Whenever you suspect that there is a problem related to ward procedures, observe staff as they do those procedures or review relevant records. Procedures to monitor include the following.
Feeding
- Are correct feeds served in correct amounts?
- Are feeds given at the prescribed times, even on nights and weekends?
- Are children held and encouraged to eat (never left alone to feed)?
- Are children fed with a cup and saucer (never a bottle)?
- Is food intake (and any vomiting/diarrhoea) recorded correctly after each feed?
- Are leftovers recorded accurately?
- Are amounts of F-75 kept the same throughout the initial phase, even if weight is lost?
- Is RUTF appetite test done as soon as appetite returns and medical complications are resolving, and is RUTF offered in the transition phase?
- Is RUTF administered correctly?
- Is drinking water provided with RUTF intake?
- Is child consuming 75% or more of the required daily intake of RUTF before referral to Outpatient Care?
- For cases who remain in Inpatient Care on F-100 after transition, are amounts of F-100 given freely and increased as the child gains weight?

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

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

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

Ward Environment

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

5.4 Monitoring Hygiene

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

Hand Washing

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

Mothers’ Cleanliness

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

Bedding and Laundry

- Is bedding changed every day or when soiled/wet?
- Are nappies, soiled towels and rags, etc. stored in bags, then washed or disposed of properly?
- Is there a place for mothers to do laundry?
- Is laundry done in hot water?
General Maintenance
- Are floors swept?
- Is trash disposed of properly?
- Is the ward kept as free as possible of insects and rodents?

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

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

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

5.5 Who Should Monitor and How Often?

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

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

5.6 Supportive Supervision and Mentoring (or Coaching)

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

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

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

5.7 Quality Improvement of Management of SAM in Inpatient Care

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

For each activity, ask yourself:

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

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

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

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

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

6.1 Process for Problem Solving in a Group

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

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

  The group must avoid blaming particular staff or having the discussion degenerate into a complaint session. It may be helpful to write down identified causes on a flipchart or large sheet of paper.
- Ask the staff to help you think of solutions appropriate for the causes. Different causes require different solutions. For example, if there is a problem due to lack of supplies, a solution is to obtain more supplies. If a task is done poorly because staff members do not enjoy it, a solution may be to rotate that task so that everyone takes a turn, but no one has to do it too often. If staff forget how to do a certain task, the solution may be to make a job aid and post it on the wall.
  - Ask staff to think of solutions that they believe will work. Discuss the steps needed to implement the solutions, i.e., who will do what after the meeting.
- Thank the staff for their ideas. Review what was decided in the meeting.
After the meeting it is important to implement the solutions as quickly as possible. Be sure to give feedback to staff on how the solutions are working. They will want to know if the problem is decreasing or is solved.

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

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

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

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

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

The objective is to describe the problem clearly, discuss possible causes, identify the most likely causes and identify possible solutions.
7.0 Monitoring and Reporting on Inpatient Care

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

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

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

7.1 Tools for Monitoring and Reporting

Inpatient Site Tally Sheet

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

Entry categories of Inpatient Care consist of the following information:

- **In treatment at the start of the week (A):**
  - The number of children 6–59 months who are in treatment at the start of the week.

- **New cases admitted:**
  - New admissions of children 6–59 months with SAM based on oedema (B1)
  - New admissions of children 6–59 months with SAM based on MUAC < 115 mm (B2)
  - New admissions of children 6–59 months with SAM based on WFH < −3 z-score (B3)
  - New admissions of other age groups with SAM: infants < 6 months, children ≥ 5 years, adolescents and adults (B4)
    - **Note:** These cases are entered for caseload, treatment and supply needs planning, but they do not affect assessment of performance.

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

Total entries (D):
- The number of all cases with SAM who entered the site to receive treatment.

### Summary of Entries (D):

<table>
<thead>
<tr>
<th>New Cases of SAM Children 6–59 months (B1, B2, B3)</th>
<th>Old Cases SAM Children 6–59 months: Returned defaulter (C1) and Referred from Outpatient Care or Inpatient Care (C2)</th>
</tr>
</thead>
</table>

**TOTAL ENTRIES (D)**  
\( D = B1 + B2 + B3 + C1 + C2 \)

Exit categories of Inpatient Care consist of the following information:

- **Children 6–59 months discharged:**
  - **Cured:** Child who remained in Inpatient Care until full recovery (i.e., special case who reached 15% weight gain for 2 weeks and was not referred to Outpatient Care after stabilisation) (**E1**)  
  - **Died:** Child who died during treatment in Inpatient Care (**E2**)  
  - **Defaulted:** Child who defaulted during treatment in Inpatient Care; child was absent for 2 days, and is declared a defaulter on the third day (**E3**)  
  - **Non-recovered:** Child who did not reach the discharge criteria as cured after 2 months in treatment in Inpatient Care (**E4**)  

Total discharges (E):
- The number of children 6–59 months who leave Inpatient Care as cured (fully recovered), died, defaulted or non-recovered.
  
  **Note:** The number of total discharges is used as a denominator to calculate performance indicators for the cured, death, defaulter and non-recovery rates in the overall CMAM performance. It is less used in Inpatient Care because the majority of cases are referred to Outpatient Care after stabilisation, and therefore did not meet the treatment discharge criteria.

### Summary of Discharges (E):

<table>
<thead>
<tr>
<th>Discharged Cured Children 6–59 Months (E1)</th>
<th>Discharged Died Children 6–59 Months (E2)</th>
<th>Discharged Defaulted Children 6–59 Months (E3)</th>
<th>Discharged Non-Recovered Children 6–59 Months (E4)</th>
</tr>
</thead>
</table>

**TOTAL DISCHARGES (E)**  
\( E = E1 + E2 + E3 + E4 \)
Cases referred:
  o Referred to Inpatient Care or Outpatient Care (F1): The condition of the child has stabilised, the appetite has returned and the medical complication is resolving. The child is referred to Outpatient Care to continue treatment at home. The child is not counted as discharged from CMAM because he or she has not yet met the discharge criteria.
    Note: The child (re-)enters Outpatient Care as a referral, or old case.
    Note: If the tally sheet is filled out in Outpatient Care, this category summarises the cases that are referred to Inpatient Care because the children’s condition is deteriorating.
  o Referred to Higher Level of Care (F2): The child is referred to a higher level of care for a medical condition that cannot be treated in Outpatient Care or Inpatient Care. The child has not ended treatment for SAM and will be treated in the other health facility until full recovery or will return to continue treatment until full recovery.

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

Summary Exits (G):

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

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

Other information added on the tally sheet includes:
- **Sex**, which is tallied for all children 6–59 months with SAM who are newly admitted.

Note on reporting of admission and discharge of ‘other age groups’, i.e., infants < 6 months, children ≥ 5 years, adolescents and adults: These age groups are not included in the tally sheet, except for the new admissions, since they are part of the caseload and affect the need for treatment and supplies of the health facility. It is recommended that separate tally monitoring reports for the other age groups be filled in, because different rules for admission and discharge and performance indicators apply.
Reporting Weeks for the Management of SAM
Weekly tallies follow the calendar weeks. The calendar weeks are used to define each calendar month for reporting. The tables below provide examples:

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

<table>
<thead>
<tr>
<th>Week</th>
<th>Sat</th>
<th>Sun</th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>4</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>5</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
</tr>
</tbody>
</table>

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

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

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

<table>
<thead>
<tr>
<th>weeks</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dates</td>
<td>Jan 4–10</td>
<td>Jan 11–17</td>
<td>Jan 18–24</td>
<td>Jan 25–30</td>
<td>/</td>
<td>4 weeks</td>
</tr>
</tbody>
</table>

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

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

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

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

Each health facility with a CMAM site should send the monthly site report to the locality and/or state Federal Ministry of Health (FMOH). Monthly site reports are regularly checked by a supervisor for accuracy.
Exercise F1

Practice Completing an Inpatient Care Site Tally Sheet

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

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

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

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

**Week 4**
One female child 6–59 months with severe oedema is newly admitted, and three children are referred to the Outpatient Care site.

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

Tell a facilitator when you are ready for a group discussion.
### 7.2 Performance Indicators

#### Performance of CMAM

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

- **Output indicators** measure whether a CMAM service has completed the planned activities needed to achieve the established objectives. They are measured as numbers. Over time they monitor trends of increase and decrease in caseload, and are used for planning purposes for treatment and supply needs.

- **Process indicators** directly measure the performance of key processes, which in this case relates to the CMAM treatment process. They are not always part of weekly or monthly routine monitoring and can be measured at certain intervals or through non-routine monitoring activities.

- **Outcome indicators** measure whether a CMAM service has achieved its objectives and planned outcomes. They are measured as percentages, give an indication of performance and are used to monitor trends in performance. If a standardized method of indicators is used, outcome indicators can also be compared to global indicators, e.g., Sphere Minimum Standards.

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

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

#### Examples of process indicators

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

- **Cause of death.** Assessing and compiling this information can help identify problems with treatment and use of treatment protocols, and determine where strengthened support, training, supervision and quality improvement might be needed.

- **Reasons for absentees, defaulting and non-response to treatment.** Compilation of this information can help identify common reasons for default or non-response to treatment. Reasons for non-response might include a high prevalence of TB and/or HIV and feeding procedures within the hospital. This information might indicate a need for intensifying monitoring, supervision and QI. It is also important to understand the reasons for defaulting, barriers to accessing services and/or unrecorded death.

- **Readmission after discharge cured (or relapse).** Relapse means that the child’s nutrition status deteriorated after being discharged from CMAM as cured and that the child returns for treatment of the new episode of SAM within 3 months. High readmission or relapse rates may indicate that children are discharged too soon or that the quality of care was not optimal. It may also indicate the need for improving infant and young child feeding (IYCF) practices or food security at the household level. Relapse is recorded on the child’s Inpatient Management Record and can be tallied periodically from the Inpatient Management Records.

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

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

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

Average LOS calculation:\[^3\]:

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

• **Average daily weight gain (AWG) of discharged cured.** This is discussed in Section 3 of this module, page 26.

• **Referrals between sites.** Children are referred from Inpatient Care to Outpatient Care after they regain appetite and their medical complication is resolving, and referred from Outpatient care to Inpatient Care if their condition deteriorates. A child may also be referred from Inpatient Care site to a higher level of care when his/her condition deteriorates or when the child is failing to respond to treatment. In all cases, the child has not ended his/her SAM treatment (is not discharged from the SAM treatment), but has (temporarily) moved (or exited) from the old site and continues treatment of SAM in the new site.

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

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

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

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

Performance of Inpatient Care

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

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

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

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

<table>
<thead>
<tr>
<th></th>
<th>CMAM (Inpatient Care and Outpatient Care)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cure rate</td>
<td>&gt; 75%</td>
</tr>
<tr>
<td>Default rate</td>
<td>&lt; 15%</td>
</tr>
<tr>
<td>Death rate</td>
<td>&lt; 10%</td>
</tr>
</tbody>
</table>

Optional further reading:
CMAM Manual, Section 7, pages 68–79.
**Exercise F2**

**Practice Completing a Monthly Site Report**

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

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

**Exercise G (Optional)**

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

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

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

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

Tell a facilitator when you are ready for a group discussion.
Annex A: Weight Gain Tally Sheet for Inpatient Care Rehabilitation Phase

| Week of:  
|  xx/xx/xxxx | Good weight gain  
|  (≥ 10 g/kg/day) | Moderate weight gain  
|  (5 up to 10 g/kg/day) | Poor weight gain  
|  (< 5 g/kg/day) |
|---|---|---|
| Total number of children | | |
| % of children on  
|  RUTF and/or F-100 in Inpatient Care | | |
Annex B: Example of Action Plan for Quality Improvement of Management of SAM in Inpatient Care

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

For each activity, ask yourself:
- ‘Do we do this now?’ If yes, put a check under ‘Current Status’. If no, write in what you do now.
- ‘What must we do to start this activity?’ Consider all the actions that are needed to introduce each change and write them in.
- ‘Who will take responsibility for seeing that these actions are carried out? And by when?’
- ‘What new resources will we need?’
- ‘Who will take responsibility for getting these resources? And by when?’
<table>
<thead>
<tr>
<th>Step 1. Prevent or treat hypoglycaemia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PREVENT</strong></td>
</tr>
<tr>
<td>Admit quickly from OPD to the ward.</td>
</tr>
<tr>
<td>Feed straightaway</td>
</tr>
<tr>
<td>Feed every 2 hours day and night. Feed on time.</td>
</tr>
<tr>
<td>Staff know warning signs:</td>
</tr>
<tr>
<td>- low temperature</td>
</tr>
<tr>
<td>- lethargy, limpness, loss of consciousness, drowsy</td>
</tr>
<tr>
<td>- retraction of eyelids</td>
</tr>
<tr>
<td><strong>TREAT</strong></td>
</tr>
<tr>
<td>If hypoglycaemic,</td>
</tr>
<tr>
<td>- give bolus 10% glucose or sucrose solution.</td>
</tr>
<tr>
<td>- feed straightaway</td>
</tr>
<tr>
<td>If unconscious,</td>
</tr>
<tr>
<td>- give bolus 10% sterile glucose IV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step</th>
<th>Current status</th>
<th>Changes to be introduced</th>
<th>Who will organise changes?</th>
<th>New resources needed</th>
<th>Who will organise resources?</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Hospital)</td>
<td>(What we do now)</td>
<td>(New things we must do)</td>
<td>Who?</td>
<td>When?</td>
<td>Who?</td>
</tr>
<tr>
<td>Malnourished children need care that is different from the care provided to other children.</td>
<td>There is no triage.</td>
<td>Consider training one staff to do timely triage in OPD queue.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prioritise severe wasting or oedema in the outpatient department (OPD) queue.</td>
<td>None.</td>
<td>Organise a separate corner.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have a separate room or corner for SAM.</td>
<td></td>
<td>Use the Inpatient Management Record that denotes children with SAM</td>
<td></td>
<td></td>
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<tr>
<td>Step 1. Prevent or treat hypoglycaemia</td>
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<tr>
<td>PREVENT</td>
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</tr>
<tr>
<td>Admit quickly from OPD to the ward.</td>
<td>Yes.</td>
<td>Give 50 ml 10% glucose or sugar solution to all on arrival.</td>
<td></td>
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</tr>
<tr>
<td>Feed straightaway</td>
<td>Not done. (Long walk from home to hospital so hypoglycaemia is likely.)</td>
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<tr>
<td>Feed every 2 hours day and night. Feed on time.</td>
<td>Feed 3-hourly during the day. Last feed 19:00. Breakfast 6:00.</td>
<td>Maintain 3-hourly feeds, but feed the very sick every 2 hours.</td>
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<tr>
<td>Acute staff shortage (2 nurses for 80 beds at night, 3 during day)).</td>
<td></td>
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<td></td>
<td>Need to involve mothers more in feeding and to wake them at night. Currently most mothers return home to look after fields, etc., so they need a change of attitude.</td>
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<tr>
<td>Staff know warning signs:</td>
<td>Not known.</td>
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<tr>
<td>- low temperature</td>
<td></td>
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<tr>
<td>- lethargy, limpness, loss of consciousness, drowsy</td>
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<tr>
<td>- retraction of eyelids</td>
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<tr>
<td>TREAT</td>
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</tr>
<tr>
<td>If hypoglycaemic,</td>
<td>Not given.</td>
<td>Introduce and make routine.</td>
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<tr>
<td>- give bolus 10% glucose or sucrose solution.</td>
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<tr>
<td>- feed straightaway</td>
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<tr>
<td>If unconscious,</td>
<td>Not given.</td>
<td>Introduce and make routine.</td>
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<tr>
<td>- give bolus 10% sterile glucose IV</td>
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<tr>
<td>Step 2. Prevent or treat hypothermia</td>
<td>Current status</td>
<td>Changes to be introduced</td>
<td>Who will organise changes?</td>
<td>New resources needed</td>
<td>Who will organise resources?</td>
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<td><strong>(Hospital)</strong></td>
<td>(What we do now)</td>
<td>(New things we must do)</td>
<td>Who?</td>
<td>When?</td>
<td>Who?</td>
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<tr>
<td>PREVENT</td>
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</tr>
<tr>
<td>Feed straightaway</td>
<td>Not done</td>
<td>Introduce and make routine.</td>
<td></td>
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</tr>
<tr>
<td>Feed every 2 hours day and night.</td>
<td>Feed every 3 hours.</td>
<td>Feed the very sick every 2 hours</td>
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<tr>
<td>Feed on time.</td>
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<tr>
<td>Keep child warm: Use kangaroo technique; cover with a blanket</td>
<td>Yes</td>
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<tr>
<td>Keep room warm:</td>
<td>Kept warm.</td>
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<tr>
<td>- use heater</td>
<td></td>
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<td></td>
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<tr>
<td>- exclude draughts</td>
<td></td>
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<tr>
<td>Change wet clothes and bedding; Have 24-hour linen supply</td>
<td>Yes</td>
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<tr>
<td>TREAT</td>
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</tr>
<tr>
<td>Feed straightaway</td>
<td>Not always done.</td>
<td>Train staff so correct procedures are routinely practised.</td>
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</tr>
<tr>
<td>Re-warm with heater or lamp or kangaroo method.</td>
<td>Not always done.</td>
<td>Train staff so correct procedures are routinely practised.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Feed 2-hourly</td>
<td>Not always done.</td>
<td>Train staff so correct procedures are routinely practised.</td>
<td></td>
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</tr>
<tr>
<td>Step 3. Prevent or treat dehydration</td>
<td>Current status</td>
<td>Changes to be introduced</td>
<td>Who will organise changes?</td>
<td>New resources needed</td>
<td>Who will organise resources?</td>
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<tr>
<td>(Hospital) (What we do now)</td>
<td>(New things we must do)</td>
<td>Who? When?</td>
<td>Who? When?</td>
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<tr>
<td>PREVENT</td>
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<tr>
<td>Give ReSoMal after each watery stool, orally</td>
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<tr>
<td>Staff know:</td>
<td></td>
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<tr>
<td>- how to prepare ReSoMal</td>
<td>No. Use WHO ORS.</td>
<td>Train on why needed, how to prepare, who needs and when to stop, and how to record</td>
<td></td>
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<tr>
<td>- how much to give and how often</td>
<td>No.</td>
<td></td>
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<tr>
<td>- how to record volume given, and time.</td>
<td>Not recorded.</td>
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<tr>
<td>Staff know warning signs of over-hydration.</td>
<td>No.</td>
<td>Train.</td>
<td></td>
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<tr>
<td>TREAT</td>
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<tr>
<td>Give ReSoMal 5ml/kg every 30 minutes for 2 hours orally, except if in shock.</td>
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<tr>
<td>Monitor pulse and respirations at least hourly during oral rehydration.</td>
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<tr>
<td>Stop ReSoMal when there are signs of hydration. Staff know signs of dehydration, hydration and over-hydration.</td>
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<tr>
<td>In shock:</td>
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<tr>
<td>- give oxygen</td>
<td>Not given.</td>
<td>Display instructions for treatment of shock in emergency areas.</td>
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<tr>
<td>- give 10% glucose by IV</td>
<td>Not given.</td>
<td>Display instructions for treatment of shock in emergency areas.</td>
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<tr>
<td>- give IV fluids</td>
<td>Yes (type?)</td>
<td></td>
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<tr>
<td>- keep child warm</td>
<td>Yes</td>
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<tr>
<td>- monitor pulse and respirations every 5–10 min.</td>
<td>Not monitored.</td>
<td>Introduce as routine. Train on correct fluids, amount and duration.</td>
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<tr>
<td>- give antibiotics</td>
<td>Yes</td>
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<tr>
<td>Step 4. Correct electrolyte imbalance</td>
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<tr>
<td><strong>PREVENT</strong></td>
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<tr>
<td>Give F75 (and rehydrate with ReSoMal) in stabilisation phase as these are low in sodium and contain adequate amounts of micronutrients</td>
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<tr>
<td>Do not give diuretics for oedema.</td>
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<tr>
<td><strong>TREAT</strong></td>
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</tr>
<tr>
<td>Give F75 (and rehydrate with ReSoMal) in stabilisation phase as these are low in sodium and contain adequate amounts of micronutrients</td>
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</tr>
<tr>
<td>If clinical signs of hypokalemia: give extra potassium</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>If clinical signs of hypomagnesium: give extra magnesium</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Step</th>
<th>Current status</th>
<th>Changes to be introduced</th>
<th>Who will organise changes?</th>
<th>New resources needed</th>
<th>Who will organise resources?</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Hospital)</td>
<td>(What we do now)</td>
<td>(New things we must do)</td>
<td>Who? When?</td>
<td></td>
<td>Who? When?</td>
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<tr>
<td>Step 4</td>
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<tr>
<td>Correct...</td>
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<tr>
<td>electrolyte</td>
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<tr>
<td>imbalance</td>
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</tbody>
</table>

- **Prevent**
  - Give F75 (and rehydrate with ReSoMal) in stabilisation phase as these are low in sodium and contain adequate amounts of micronutrients.
  - Do not give diuretics for oedema.

- **Treat**
  - Give F75 (and rehydrate with ReSoMal) in stabilisation phase as these are low in sodium and contain adequate amounts of micronutrients.
  - If clinical signs of hypokalemia: give extra potassium
  - If clinical signs of hypomagnesium: give extra magnesium
### Step 5. Prevent or treat infections and infestations

<table>
<thead>
<tr>
<th>Prevent</th>
<th>TREAT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PREVENT</strong></td>
<td><strong>TREAT</strong></td>
</tr>
<tr>
<td>Keep children with SAM in a separate ward.</td>
<td>Give Antibiotic.</td>
</tr>
<tr>
<td>Reduce overcrowding</td>
<td>Know when to give first line antibiotic if SAM without medical complications, and first-line, second-line, third-line antibiotic if SAM with medical complications, and correct dose.</td>
</tr>
<tr>
<td>Provide good nursing care and prevent cross infections:</td>
<td>Give antibiotics on time.</td>
</tr>
<tr>
<td>➢ Give drugs in time.</td>
<td>Give antihelminth immediately in case of severe parasitic worm infestation.</td>
</tr>
<tr>
<td>➢ Monitor vital signs.</td>
<td>Treat other infections and infestations according to the national IMNCI protocol.</td>
</tr>
<tr>
<td>➢ Wash hands before preparing feeds, after use of bathroom, after change of nappies, before and after handling the child.</td>
<td>Give paracetamol in case of high fever.</td>
</tr>
<tr>
<td>➢ Ensure good hygiene in the ward; Discard left over of feeds.</td>
<td></td>
</tr>
</tbody>
</table>
### Step 6. Correct micronutrient deficiencies

<table>
<thead>
<tr>
<th>Current status (What we do now)</th>
<th>Changes to be introduced (New things we must do)</th>
<th>Who will organise changes? Who?</th>
<th>When?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Give vitamin A after 4 weeks or upon discharge.</td>
<td>Yes</td>
<td>Train.</td>
<td></td>
</tr>
<tr>
<td>Give folic acid, single dose on day 1.</td>
<td>Not given.</td>
<td>Train.</td>
<td></td>
</tr>
<tr>
<td>Give iron sulphate after 2 days in transition phase and only when on F-100.</td>
<td>Not given.</td>
<td>Train.</td>
<td></td>
</tr>
<tr>
<td>Staff know that vitamin A, folic acid, zinc and copper are already in the commercial therapeutic foods, or in the locally prepared foods when CMV is being used.</td>
<td>No</td>
<td>Train.</td>
<td></td>
</tr>
</tbody>
</table>

### Step 7. Start cautious feeding

<table>
<thead>
<tr>
<th>Stabilisation phase:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Give F-75 therapeutic milk 130 ml/kg/day and divide into 2- to 3-hourly feeds.</td>
<td>Weak.</td>
</tr>
<tr>
<td>If the child has severe oedema (+++), reduce the volume to 100 ml/kg/day.</td>
<td>No</td>
</tr>
<tr>
<td>Give 2-hourly feeds in the first 24 hours, then change to 3-hourly feeds according to the condition of the child.</td>
<td>Weak.</td>
</tr>
<tr>
<td>If the child has poor appetite, encourage the mother to support the child finishing the feed.</td>
<td>No</td>
</tr>
<tr>
<td>Use an NGT, if the child takes &lt; 80% of the amount offered for two consecutive feeds.</td>
<td>No, almost all children have NGT.</td>
</tr>
<tr>
<td>Keep a 24-Hour Food Intake Chart for each child.</td>
<td>No</td>
</tr>
<tr>
<td>Measure feeds carefully.</td>
<td>Yes</td>
</tr>
<tr>
<td>If the child is breastfed, always offer breastfeeding before giving F-75.</td>
<td>Yes</td>
</tr>
<tr>
<td>Weigh daily and plot weight.</td>
<td>Yes</td>
</tr>
<tr>
<td>When appetite returns, move the child to transition phase.</td>
<td>Not done.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transition phase:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduce RUTF:</td>
<td></td>
</tr>
<tr>
<td>- Test the appetite with RUTF. Offer plenty of clean water to drink.</td>
<td></td>
</tr>
<tr>
<td>- If the child takes the RUTF (passes the appetite test), continue all feeds with RUTF, based on 150 kcal/kg/day.</td>
<td></td>
</tr>
<tr>
<td>- Complete the feed with F-100 if necessary.</td>
<td></td>
</tr>
<tr>
<td>- If the child does not take RUTF, give F-100 but repeat the appetite test at every feed.</td>
<td></td>
</tr>
</tbody>
</table>
### Step 8. Increase feeding to recover weight: “Catch-up growth” (for the exceptional cases who stay in Inpatient Care for rehabilitation):

<table>
<thead>
<tr>
<th>SB</th>
<th>Current status</th>
<th>Changes to be introduced</th>
<th>Who will organise changes?</th>
<th>New resources needed</th>
<th>Who will organise resources?</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Hospital)</td>
<td>(What we do now)</td>
<td>(New things we must do)</td>
<td>Who?</td>
<td>When?</td>
<td>Who?</td>
</tr>
<tr>
<td>If RUTF is not available, continue feeding the child with F-100 130-150 ml/kg/day and divide in 5-6 hourly feeds. If the child is breastfed, encourage continued breastfeeding. Weigh daily and plot weight. (The child should not gain more than 5 g/kg/day.) Observe the child for 24 hours to ensure he/she is able to eat the daily amount of RUTF, and refer the child to Outpatient Care for continuing treatment if the child is clinically well and alert and the oedema is reducing and the medical complication resolving.</td>
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<tr>
<td>Step 9. Stimulate emotional and sensorial development</td>
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<tr>
<td>Help and encourage mothers to comfort, feed and play with their children.</td>
<td>Not always.</td>
<td>Encourage if feasible.</td>
<td></td>
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</tr>
<tr>
<td>Give structured play when the child is well enough, that improve development</td>
<td>Not always.</td>
<td>Encourage if feasible.</td>
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</tbody>
</table>
### Step 10. Prepare for referral and follow-up in Outpatient Care

<table>
<thead>
<tr>
<th>Step (Hospital)</th>
<th>Current status (What we do now)</th>
<th>Changes to be introduced (New things we must do)</th>
<th>Who will organise changes?</th>
<th>New resources needed</th>
<th>Who will organise resources?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inform the mother of the closest Outpatient Care site to her home and give the mother a weekly ration of RUTF to continue treatment at home.</td>
<td>Not done.</td>
<td>Train.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Establish a link with community health workers for home follow-up in Outpatient Care.</td>
<td>Not done.</td>
<td>Train.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Write a clinical summary on the referral form for the health care providers in Outpatient Care.</td>
<td>Not done.</td>
<td>Train.</td>
<td></td>
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</tbody>
</table>
Answers to Exercises

Answers to short answer exercise, page 3

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

Answers to short answer exercise, page 9

1. 7.30 kg – 7.25 kg = 0.05 kg
0.05 kg × 1,000 = 50 grams gained
50 grams ÷ 7.25 = 6.90 g/kg/day

2. 6.25 kg – 6.22 kg = 0.03 kg
0.03 kg × 1,000 = 30 grams gained
30 grams ÷ 6.22 = 4.8 g/kg/day

3. 7.5 kg – 7.6 kg = –0.1 kg
–0.1 kg × 1,000 = –100 grams gained (or 100 grams lost)
–100 grams ÷ 7.6 = –13.16 g/kg/day

Answers to Exercise A, page 11

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

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

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

2b. Yes, in some ways Lennox has made progress. He has lost his oedema. He no longer has dermatosis. His diarrhoea has stopped. He is now on F-100.
2c. Yes, there are problems. Lennox has not gained weight for 4 days on F-100 in spite of eating well. Lennox’s fever continues and is at 38°C.

**Possible Answers to Exercise B, page 24**

**Case 1 – Ceri**

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

1a. Possible causes of Ceri’s failure to respond:
- She missed a night feed; perhaps she is not being fed well at night.
- Perhaps she is not being encouraged to eat.
- Perhaps she has an unrecognised infection, or her antibiotic is not effective.
- Perhaps her food is not being prepared correctly. (This would affect other children as well.)
- CMV may not have been added to the locally prepared feed. (Potassium and magnesium are very important for loss of oedema.)
- Ceri has not been given folic acid for 3 days.

1b. Possible ways to investigate causes:
- Observe feedings in the ward; watch carefully how Ceri is fed.
- Ask nurses why folic acid has not been given. Also check supplies of folic acid.
- Look for a possible infection.
- Look for signs of ruminating (e.g., smell on clothes).
- Review Ceri’s 24-Hour Food Intake Charts from earlier days.
- Observe food preparation.

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

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

**Case 2 – Lennox**

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

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

**Answers to Exercise C, page 28**

**Aruni**

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

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

This is a good average daily weight gain, so Aruni’s name should be listed in the ‘Good’ column of the Weight Gain Tally Sheet.
**Kodeh**
Kodeh’s average daily weight gain from 13/4 to 19/4 was 4.66 g/kg:
\[
32.6 \div 7 = 4.66 \text{ g/kg}
\]
This is a poor average daily weight gain, so Kodeh’s name should be listed in the ‘Poor’ column of the Weight Gain Tally Sheet.

**Sohna**
Sohna’s average daily weight gain from 13/4 to 19/4 was 6.15 g/kg:
\[
43.07 \div 7 = 6.15 \text{ g/kg}
\]
This is a moderate average daily weight gain, so 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 (4 out of 20) have poor weight gain. So, yes, there is a problem with weight gain on this ward.

2. Common factor: 3 of the 4 children with poor weight gain are not with a mother.

3. 20% of the children (4 out of 20) on the ward have poor weight gain (< 5 g/kg/day). Three of these 4 have no mother at the hospital with them.

4. The common factors do suggest a possible cause. Without special attention from a mother, these children may not be encouraged to eat. To investigate the cause, it will be important to observe feedings on the ward. It would also be a good idea to see if all of the children with moderate or good weight gain have mothers with them, and if the mothers help with feeding.

   A separate problem investigation should be done for Lalita.

**Answers to Exercise D, page 33**

**Possible answers to questions for discussion**

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

2. **Vijay.** In the Emergency Room, Vijay was given IV albumin and a diuretic for low albumin and oedema (incorrect and dangerous case management). Vijay died 23 hours after admission. At death, his potassium level was low, his albumin high and his oedema had increased from moderate (++) to severe (+++).
**Luca.** Luca was found dead at 4:00 on day 3. Milk curds were coming out of her mouth. She had been vomiting during the day. Possibly she choked on her vomit.

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

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

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

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

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

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

**Answers to short answer exercises, page 43**

1. \( \frac{5}{32} = 0.156 = 15.6\%, \) poor

2. \( \frac{3}{98} = 0.031 = 3.1\%, \) acceptable

3a. \( \frac{2}{28} = 0.071 = 7.1\%, \) moderate

3b. \( \frac{4}{36} = 0.111 = 11.1\%, \) poor

3c. The case-fatality rate is worse. It has gone from moderate to poor. This is a problem.
### Answers to Exercise F1, page 57

#### Table: Monitoring, Problem Solving and Reporting

<table>
<thead>
<tr>
<th>SITE (circle one)</th>
<th>Outpatient Care</th>
<th>Inpatient Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONTH</td>
<td>January 1–28, 2010</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>SEX OF NEW CASES ADMITTED (Children 6–59 months)</th>
<th>MALE</th>
<th>FEMALE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

*Infants < 6 months, children ≥ 5 years, adolescents and adults (B4) are tallied and monitored separately, for planning purposes.
## Answers to Exercise F2, page 61

<table>
<thead>
<tr>
<th>SITE</th>
<th>IMPLEMENTED BY</th>
<th>FMOH</th>
<th>Other:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Unit</td>
<td>MONTH / YEAR</td>
<td>Outpatient Care</td>
<td></td>
</tr>
<tr>
<td>Locality</td>
<td>TYPE (circle one)</td>
<td>Inpatient Care</td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>ESTIMATED TARGET POPULATION &lt; 5 y with SAM**</td>
<td>(WFH &lt; -3 z-score)</td>
<td>(MUAC &lt; 115 mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOTAL at START of month (A)</th>
<th>New cases with SAM</th>
<th>Old cases with SAM</th>
<th>TOTAL ENTRIES (D)</th>
<th>Discharged children 6–59 months</th>
<th>TOTAL DISCHARGES (E)</th>
<th>Referred cases</th>
<th>TOTAL EXITS (G)</th>
<th>TOTAL at END of month (H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children 6–59 m</td>
<td>Oedema (B1)</td>
<td>MUAC &lt; 115 mm (B2)</td>
<td>WFH &lt; -3 z-score (B3)</td>
<td>Other age groups (&lt; 6 m, ≥ 5 y) (B4)</td>
<td>(B=1+B2+B3)</td>
<td>Returned defaulter (C1)</td>
<td>(D=B+C1+C2)</td>
<td>Discharged Cured (E1)</td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td>7</td>
<td>2</td>
<td>(D)</td>
<td>12</td>
<td>0</td>
<td>1</td>
<td>13</td>
</tr>
</tbody>
</table>

**C1: Returned defaulter = defaulted while in treatment and returned within 2 months to continue treatment
C2: Discharged Cured = met discharge criteria
C3: Discharged Died = died while in treatment
C4: Discharged Defaulted = absent for 2 consecutive weeks in Outpatient Care/2 days in Inpatient Care
C5: Discharged Non-recovered = did not meet discharge criteria after 4 months in Outpatient Care/2 months in Inpatient Care

<table>
<thead>
<tr>
<th>TARGETS for overall CMAM</th>
<th>CHILDREN 6–59 months</th>
<th>Sphere minimum standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>% (E1/E * 100)</td>
<td>% (E2/E * 100)</td>
<td>% (E3/E * 100)</td>
</tr>
<tr>
<td>Cure rate</td>
<td>Death rate</td>
<td>Default rate</td>
</tr>
<tr>
<td>&gt; 75%</td>
<td>&lt; 10%</td>
<td>&lt; 15%</td>
</tr>
</tbody>
</table>

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

**Note:** Infants < 6 months, children ≥ 5 years, adolescents and adults (B4) could be tallied and monitored separately, for planning purposes.
Answers to Exercise G, page 61: Inpatient Management Records

INITIAL MANAGEMENT

**SIGN OF SAM**
- Severe wasting?
  - Yes
  - No
- Bilateral Pitting Oedema?
  - +
  - ++
- Derma-riatic? (Hair / + + +)
- Weight (kg): 6.5
- Height / length (cm):__
- W/H score: [MUNAC (mm): NOT APPLICABLE]

**TEMPERATURE**
- °C auxiliary / rectal
  - if auxiliary > 35.5° or rectal < 35.5°, actively warm child. Check temperature every 30 minutes.

**BLOOD GLUCOSE** (mmol/l):
- if < 3 mmol/l, and thirst, give 50 ml 10% glucose or sucrose (oral or NG). If oral or NG is given, add 10% glucose IV (5 ml x kg (child’s weight) = ml). If thirst and no 50 ml before NG.
- Time glucose given: Oral or NG

**HAEMOGLOBIN** (g/dl) or Packed Cell Vol (PCV): Blood type:
- if Hb < 4 g/dl (or Hb 4-6 g/dl AND respiratory distress), transfuse 10 ml/kg whole blood (or 5-7 ml/kg packed cells) slowly over 3 hours. Amount:
- Time started:
- Time ended:

**EYE SIGNS**
- Noise
  - Left
  - Right
- Breast’s spots
  - Plus or minus:
- Corneal clouding
  - Corneal ulceration

**ORAL DOSES VITAMIN A**
- < 6 months: 50,000 IU
- 6-12 months: 100,000 IU
- > 12 months: 200,000 IU

**MEASLES**
- Yes
  - No
  - Vaccination upon admission: Yes
  - No
  - [Record on Outcome page]

**FREQUENT**
- Begin feeding with F-75 as soon as possible.
- If child is rehydrated, reweigh before determining amount to feed. New weight: ___ kg.
- Amount for 2-hourly feedings: ___ ml F-75* Time first feed:
  - * if hypoglycaemic, feed ½ this amount every half-hour for first 2 hours; continue until blood glucose reaches 1 mg/dl.
  - Record all feeds on 24-Hour Food Intake Chart page.

**ANTIBIOTICS** (Drug/Route)
- Dose/Frequency/Duration

**MALARIA TEST** (Type/Date/Outcome):
- Antimalarial:
  - Dose/Frequency/Duration
  - Time of 1st Dose

**HIV TEST** (Type/Date/Outcome):
- If + HIV test, give cotrimoxazole:
  - Dose/Frequency/Duration
  - Time of 1st Dose
**TRAINING COURSE ON INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION**
Children 6–59 Months with SAM and Medical Complications

---

**COMMENTS/OUTCOME**

**COMMENTS**

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

**TRAINING GIVEN TO PARENTS/ CAREGIVERS**

Mother was counselled to continue breastfeeding.

**IMMUNISATIONS**

<table>
<thead>
<tr>
<th>Vaccination</th>
<th>At birth</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG*</td>
<td>At birth</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Polio</td>
<td>At birth</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td>At 14 weeks</td>
</tr>
<tr>
<td>Penta**</td>
<td>—</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td>At 14 weeks</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>—</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td>—</td>
</tr>
<tr>
<td>Measles</td>
<td>—</td>
<td>At 9 months</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

* BCG: bacille Calmette-Guérin vaccine

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

**REFERRAL, FOLLOW-UP OR DISCHARGE INSTRUCTIONS**

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

**PATIENT OUTCOME**

**Referral to Outpatient Care Site:**

Date:

Comment:

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

- Discharged 5/7/10
- Discharge weight ≥ 15% weight gain: Yes No
- Early departure or defaulting after 2 days' absence (Discharged defaulted)
- Non-recovery after 2 months in treatment (Discharged non-recovered)
- Death (Discharged died)

**Comment:**

- Discharge weight ≥ 15% weight gain: Yes No
- MUAC: mm
- Weight: kg
- Height: cm
- Number of days after admission (circle): < 1 1–3 days 4–7 days > 7 days
- Time of death: Day Night
- Apparent cause(s) of death: Had child received IV fluids? Yes No

---

**Date of admission:** June 12, 2010

**Hospital ID number:**

---

**Page 6 of 6**
**TRAINING COURSE ON INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION**  
Children 6–59 Months with SAM and Medical Complications

---

### INITIAL MANAGEMENT

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

**SIGNS OF SAM**  
- Severe wasting? **Yes**  
- Bilateral Pitting Oedema? **Yes**

**Dermatosis?**  
- **0**  
- **++**  
- **+++** (raw skin, fissures)

**Weight (kg):**  
- **2**

**Height / length (cm):**

**Temperature:**
- **38°C** (oral / rectal)

---

**BLOOD GLUCOSE (mmol/L):**
- **4**  
*If no test available, treat for hypoglycaemia.*

**HAEMOGLOBIN (Hb) (g/dL):**  
- **7**

**ORAL DOSES VITAMIN A:**
- Treatment dose on days 1, 2, 15:
  - **50,000 IU**
- Prevention dose on week 4 or upon discharge:
  - **100,000 IU**

**FEEDING:**

- Begin feeding with F-75 as soon as possible.
- If child is rehydrated, reweigh before determining amount to feed. New weight:

**Amount for 3-hour feedings:**  
- **ml**

**TIME:**
- **First feed:**

**HYDRATION SIGNS:**
- Amount taken (ml):
  - **F-75**
  - **F-75**

**HIV TEST (Type/Date/Outcome):**
- **Yes**

**MALARIA TEST (Type/Date/Outcome):**
- **Negative**

**COMMENTS:**

- If + HIV test, give efavirenz treatment.

---

**FANTA-2**  
**June 2011**

---

**DIARRHOEA:**

- Water for diarrhea? **Yes**
- If diarrhoea, circle signs present:
  - Lethargic
  - Thirsty
- Number of days with diarrhoea:

**FEEDING:**

- Begin feeding with F-75 as soon as possible.
- If child is rehydrated, reweigh before determining amount to feed. New weight:

**Amount for 3-hour feedings:**  
- **ml**

**TIME:**
- **First feed:**

**HYDRATION SIGNS:**
- Amount taken (ml):
  - **F-75**
  - **F-75**

**HIV TEST (Type/Date/Outcome):**
- **Yes**

**MALARIA TEST (Type/Date/Outcome):**
- **Negative**

**COMMENTS:**

- If + HIV test, give efavirenz treatment.

---

**LABORATORY FINDINGS:**

- WBC:
- Platelets:
- ESR:
- Creatinine:
- Na:
- K:
- CO2:
- pH:

**FEEDING:**

- Begin feeding with F-75 as soon as possible.
- If child is rehydrated, reweigh before determining amount to feed. New weight:

**Amount for 3-hour feedings:**  
- **ml**

**TIME:**
- **First feed:**

**HYDRATION SIGNS:**
- Amount taken (ml):
  - **F-75**
  - **F-75**

**HIV TEST (Type/Date/Outcome):**
- **Yes**

**MALARIA TEST (Type/Date/Outcome):**
- **Negative**

**COMMENTS:**

- If + HIV test, give efavirenz treatment.

---

**TRAINING COURSE ON INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION**  
Children 6–59 Months with SAM and Medical Complications

---

**INPATIENT CARE TRAINING MATERIALS | MODULE 6. MONITORING, PROBLEM SOLVING AND REPORTING | FANTA-2 | JUNE 2011**
**TRAINING COURSE ON INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION**  
Children 6–59 Months with SAM and Medical Complications

<table>
<thead>
<tr>
<th>Immunisation Card Available?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circle vaccination already received. Complete the immunization schedule below, sign for any vaccination given in inpatient Care and complete the Road to Health card. (Provide a Road to Health card if not yet received).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vaccination</th>
<th>At birth</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG*</td>
<td>At birth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polio</td>
<td>At birth</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td>At 14 weeks</td>
</tr>
<tr>
<td>Penta**</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td>At 14 weeks</td>
<td></td>
</tr>
<tr>
<td>Rotavirus</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles</td>
<td>At 9 months</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**PATIENT OUTCOME**

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

Comment: **Nyala**

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

<table>
<thead>
<tr>
<th>Discharge based on 15% weight change</th>
<th>Discharged cured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early departure or defaulting after 2 days absence (Discharged defaulted)</td>
<td>MUAC: mm</td>
</tr>
<tr>
<td>Non-recovery after 2 months in treatment (Discharged non-recovered)</td>
<td>Weight: kg</td>
</tr>
<tr>
<td>Death (Discharged died)</td>
<td>Height: cm</td>
</tr>
<tr>
<td>Number of days after admission (circle):</td>
<td>Time of death: Day Night</td>
</tr>
<tr>
<td>&lt; 3</td>
<td>3-5 days</td>
</tr>
<tr>
<td>Apparent cause(s) of death:</td>
<td>Had child received IV fluids? Yes No</td>
</tr>
</tbody>
</table>

**REFERRAL, FOLLOW-UP OR DISCHARGE INSTRUCTIONS**

**FATMA was referred to OTASH HEALTH CENTRE IN NYALA LOCALITY, SOUTH DARFUR**

- The locality nutrition office was contacted to follow up.
- Continue with treatment in outpatient care.
**TRAINING COURSE ON INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION**  
Children 6–59 Months with SAM and Medical Complications

---

### INITIAL MANAGEMENT

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

**SIGNS OF SAM**
- Severe wasting?
- Bilateral Pitting Oedema?
- Dermatosis?
- Weight (kg):
- Weight / Height (cm):
- MUAC (mm):
- Temperature:
- Blood Glucose (mmol/l):
- Haemoglobin (Hb) (g/dl):
- EYE SIGNS:
- Oral Doses Vitamin A:
- Measures:
- FEEDING:
- Amount for 2-hourly feedings:

**SIGNS OF SHOCK**
- Tachypnoea
- Cold hands
- Slow capillary refill (> 2 seconds)
- Weak or fast pulse

**TIME GLUCOSE**
- Time:
- Resp. rate:
- Pulse rate:

**DIARRHOEA**
- Watery diarrhoea?
- Blood in stool?
- Vomiting?

**NUMBERS OF DAYS WITH DIARRHOEA**
- Number of days with diarrhoea:

**RECOMMENDATIONS**
- For up to 10 hours, give ReSoMal and F-75 orally* in alternate hours. Monitor every hour. Amount of ReSoMal to offer**:
- 5 to 10 ml x ___ kg (child's wt) = ___ ___ ml ReSoMal

---

<table>
<thead>
<tr>
<th>Antimicrobial</th>
<th>Dose/Frequency/Duration</th>
<th>Time of 1st Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td><em><strong>None</strong></em></td>
<td></td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Malaria Test</th>
<th>Type / Data / Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimalarial</td>
<td>Dose / Frequency / Duration</td>
</tr>
<tr>
<td><em><strong>None</strong></em></td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>HIV Test</th>
<th>Type / Data / Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td><em><strong>None</strong></em></td>
<td></td>
</tr>
</tbody>
</table>

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*In case of suspected hypertonic dehydration, see Operational Guide or CHAM Manual Appendix, page 183.

**If respiratory and pulse rates are slower after 1 hour, repeat same amount IV fluids for second hour; then alternate ReSoMal and F-75 for up to 10 hours as in right section of chart below. If no improvement on IV fluids, reconstitute whole fresh blood. (See 'Haemoglobin' section at left.) Give maintenance IV fluids (6 ml/kg/hr) while waiting for blood.

---

*Give ReSoMal orally (or, if child is unconscious or too ill to take the ReSoMal orally, give by NGT).

**Stop ReSoMal if any sign of over-hydration: increasing pulse and resp. rates, engorging jugular veins, increasing oedema, puffing of eyelids.
Name: YHONA
Sex: M
Age: 1/2

Date of admission: 12 July 10
Time: 10:30 AM
Hospital ID number: ________

COMMENTS/OUTCOME

YHONA's mother on referral was 100 mm with good appetite. YHONA was referred to OPC to continue.

REFERRAL, FOLLOW-UP OR DISCHARGE INSTRUCTIONS

YHONA's mother and child should report at the Kirari Health Centre for outpatient care on 23/7/10. RUTF provided for 7 days.

TRAINING GIVEN TO PARENTS/ CAREGIVERS

- Appropriate complementary feeds
- RUTF provided

IMMUNISATIONS

<table>
<thead>
<tr>
<th>Vaccination</th>
<th>At birth</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG*</td>
<td>At birth</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Polio</td>
<td>At birth</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td>At 14 weeks</td>
</tr>
<tr>
<td>Penta**</td>
<td>—</td>
<td>At 6 weeks</td>
<td>At 10 weeks</td>
<td>At 14 weeks</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>—</td>
<td>—</td>
<td>At 10 weeks</td>
<td>—</td>
</tr>
<tr>
<td>Measles</td>
<td>—</td>
<td>—</td>
<td>At 9 months</td>
<td>—</td>
</tr>
</tbody>
</table>

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

PATIENT OUTCOME

Referred to outpatient care site: Kirari Health Centre
Date: 20 July 10

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

- Discharge based on 15% weight change (Discharged cured)
- Early departure or defaulting after 2 days' absence (Discharged defaulted)
- Non-recovery after 2 months in treatment (Discharged non-recovered)

- Death (Discharged died)

Discharge weight ± 15% weight gain: Yes No
MUAC: ________ mm
Weight: ________ kg
Height: ________ cm

Number of days after admission (circle):
< 1 1–3 days 4–7 days > 7 days
Time of death: Day Night
Apparent cause(s) of death: Had child received IV fluids? Yes No
TRAINING COURSE ON INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION
Children 6–59 Months with SAM and Medical Complications

84
COMMENTS/OUTCOME

COMMENTS

REFERRAL, FOLLOW-UP OR DISCHARGE INSTRUCTIONS

PATIENT OUTCOME

Referral to Outpatient Care Site:

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

Discharge based on 15% weight change
(Discharged cured)

Early departure or defaulting after 2 days' absence
(Discharged defaulted)

Non-recovery after 2 months in treatment
(Discharged non-recovered)

Death
(Discharged died)

Date:

Discharge weight ≥ 15% weight gain: Yes No

MUAC: ______ mm

Weight: ______ kg

Height: ______ cm

Number of days after admission (circle):
< 1 1–3 days 4–7 days > 7 days

Time of death: Day Night

Apparent cause(s) of death:

Had child received IV fluids? Yes No

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

IMMUNISATIONS

Immunisation card available? Yes No

Circle vaccination already received. Complete the immunization schedule below, sign for any vaccination given in Inpatient Care and complete the Road to Health card.
(Provide a Road to Health card if not yet received).

Vaccination

At birth

First

Second

Third

BCG*

At birth

—

—

—

Polio

At birth

At 6 weeks

At 10 weeks

At 14 weeks

Penta**

—

At 6 weeks

At 10 weeks

At 14 weeks

Rotavirus

—

At 6 weeks

At 10 weeks

—

Measles

—

At 9 months

—

—

**INITIAL MANAGEMENT**

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

**SIGNALS OF SAM**

- Severe wasting?
  - Yes
  - No
- Bilateral Pitting Oedema
  - 0
  - +
  - ++
  - +++

**Weight (kg):**

- 7.4

**WTH t-score:**

- – 3
- +
- ++
- +++

**TEMPERATURE:**

- 37.7°C

If axillary < 35°C or rectal < 35.5°C, actively warm child. Check temperature every 30 minutes.

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

- If < 4 mmol/l, give 50 ml/kg of 10% glucose or sucrose (oral or NG). Yes No

- If < 3 mmol/l and lethargic, unconscious or convulsing, give sterile 10% glucose IV:
  - 5 ml x kg (child’s weight) = ___ ml. Then give 50 ml bolus 5%.
  - Time glucose given: Oral NG IV

**HAEMOGLOBIN (Hb) (g/dl):**

- (or Packed Cell Vol (PCV): Blood type:

**EYE SIGNS**

- (Left)
  - (Right)

- Poor or Inflammation:
  - Corneal clouding:
  - Corneal ulceration:

**OSe INFECTIONS**

- if inflammation, give vitamin A and azithromycin immediately. Record on Daily Care page. If no inflammation, give vitamin A preventive dose on week 6 or upon discharge.

**ORAL DOSES VITAMIN A**

- 6 months: 50,000 IU
- 6-12 months: 100,000 IU
- **Preventive dose on week 6 or upon discharge:** 200,000 IU

**MEASLES**

- Yes No Vaccination upon admission: Yes No (Record on Outcome page)

**FEEDING**

- Begin feeding with F-75 or as soon as possible.

- If child is rehydrated, reweigh before determining amount to feed. New weight: ___ kg

- Amount for 2-hour feedings: ___ ml F-75

- Time first fed:

- *If hypoglycemic, feed % of this amount every half hour for first 2 hours. Continue until blood glucose reaches 3 mg/l.*

- Record all feeds on 24-Hour Food Intake Chart page.

**ANTIBIOTICS**

- (Drug/Dose)

- Doxycycline
  - 45-90 mg/kg/day

**MALARIA TEST (Type/Date/Outcome):**

- Antimalarial:

- HIV TEST (Type/Date/Outcome):

- If + HIV test, give cotrimoxazole:

**SIGNS OF SHOCK**

- Lethargic/unconscious
- Cold hands
- Slow capillary refill (>3 seconds)
- Weak or fast pulse

- If lethargic or unconscious, plus cold hands, plus either slow capillary refill or weak or fast pulse, give oxygen.

- Give IV glucose as described under blood glucose (left).

- Then give IV fluids: Amounts IV fluids per hour, 15 ml x ___ kg (child’s wt) = ___ ml

- Start: Monitor every 10 minutes
- Resp rate:
- Pulse rate:

- **2** hr
- **Monitor every 10 minutes**

**DIARRHOEA**

- Watery diarrhoea? Yes No
- Blood in stool? Yes No
- F:

- Number of days with diarrhoea:

- If diarrhoea, circle signs present:
  - Skin pinch goes back slowly
  - Lethargic
  - Thirsty
  - Restless/irritable
  - Dry mouth/tongue
  - No tears
  - Sunken eyes

- For up to 10 hours, give ReSoMal and F-75 orally* in alternate hours. Monitor every hour. Amount of ReSoMal to offer**:
  - 5 to 10 ml x ___ kg (child’s wt) = ___ ml ReSoMal

- * Give ReSoMal orally (or, if child is unconscious or too ill to take the ReSoMal orally, give by NG).

- ** Stop ReSoMal if signs of hydration: Passing urine, moist tongue, making noises, not thirsty.

- Stop ReSoMal if any sign of over-hydration: Increasing pulse and resp. rates, engorged jugular veins, increasing oedema, puffing of eyelids.
Name: Selma
Sex: M
Age: 2

COMMENTS/OUTCOME

Another ran away with child on the morning of 21/7/10. Child was having severe diarrhoea on departure.

REFERRAL, FOLLOW-UP OR DISCHARGE INSTRUCTIONS

Outpatient care nutrition officer requested to follow up child on 24/7/10.

PATIENT OUTCOME

Referral to Outpatient Care Site: 
Date: 
Comment: 
In case of treatment in Inpatient Care until full recovery and/or discharge, indicate outcome:

<table>
<thead>
<tr>
<th>Discharge based on 15% weight change</th>
<th>Discharge weight ≥ 15% weight gain: Yes No</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Discharged cured)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Early departure or defaulting after 2 days' absence</th>
<th>Discharged defaulted</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Discharged defaulted)</td>
<td>23/7/10</td>
</tr>
</tbody>
</table>

| Non-recovery after 2 months in treatment | Weight: ___ kg |
| (Discharged non-recovered)               | Height: ___ cm     |

| Death (Discharged died)                  | Number of days after admission (circle): |
|                                        | < 1 1-3 days 4-7 days > 7 days |
|                                        | Time of death: Day Night |

<table>
<thead>
<tr>
<th>Apparent cause(s) of death:</th>
<th>Had child received IV fluids? Yes No</th>
</tr>
</thead>
</table>

IMMUNISATIONS

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

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

 TRAINING GIVEN TO PARENTS/ CAREGIVERS

No
# CMAM Site Tally Sheet for Children 6–59 Months with SAM

<table>
<thead>
<tr>
<th>SITE (circle one)</th>
<th>Outpatient Care</th>
<th>Inpatient Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMUNITY, ADMINISTRATIVE UNIT, LOCALITY, STATE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MONTH</th>
<th>July 2010</th>
<th>July 11-17</th>
<th>July 18-24</th>
<th>July 25-31</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL start of week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(A) Total start of week</td>
<td>?</td>
<td>Start of Month:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| New Cases SAM Children 6–59 months (Oedema) |
| (B1) |

| New Cases SAM Children 6–59 months (MUAC < 115 mm) |
| (B2) |

| New Cases SAM Children 6–59 months (WFH < -3 z-score) |
| (B3) |

| New Cases SAM other age groups: infants < 6 m, children ≥ 5 y, adolescents, adults* |
| (B4) |

| TOTAL NEW ADMISSIONS |
| (B) (B=B1+B2+B3) |

| Old Cases SAM: Returned defaulters (Children 6–59 months) |
| (C1) |

| Old Cases SAM: Referred from Outpatient Care or Inpatient Care (Children 6–59 months) |
| (C2) |

| TOTAL ENTRIES |
| (D) (D=B1+B2+B3+C1+C2) |

| Discharged Cured (Children 6–59 months) |
| (E1) (1 cured case was < 6 m) |

| Discharged Died (Children 6–59 months) |
| (E2) |

| Discharged Defaulted (Children 6–59 months) |
| (E3) |

| Discharged Non-Recovered (Children 6–59 months) |
| (E4) |

| TOTAL DISCHARGES (Children 6–59 months) |
| (E) (E=E1+E2+E3+E4) |

| Referred to Outpatient Care or Inpatient Care (Children 6–59 months) |
| (F1) |

| Referred to higher care level (Children 6–59 months) |
| (F2) |

| TOTAL EXITS (Children 6–59 months) |
| (G) (G=E+F1+F2) |

| Total end of week (Children 6–59 months) |
| (H) (H=A+D-G) |

**SEX OF NEW CASES ADMITTED (Children 6–59 months)**

<table>
<thead>
<tr>
<th>MALE</th>
<th>FEMALE</th>
</tr>
</thead>
</table>

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

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**TRAINING COURSE ON INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION**

Children 6–59 Months with SAM and Medical Complications