

MODULE 1 INTRODUCTION



**Training Course on
Inpatient Management of
Severe Acute Malnutrition**
(Adapted from the 2002 WHO *Training
course on the inpatient management of
severe acute malnutrition*)

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

March 2012

This modified version of the 2002 World Health Organisation's *Training Course on Inpatient Management of Severe Acute Malnutrition (SAM)* is the practical application of the 2010 MOH/GHS *Interim National Guidelines for Community-Based Management of Severe Acute Malnutrition in Ghana*. The training course was modified by the MOH/GHS SAM Support Unit in collaboration with the MOH/GHS Regional SAM Support Teams. USAID/Ghana, FANTA-2 Bridge project, UNICEF/Ghana and WHO/Ghana provided technical and financial support to review and modify the training course. This revised training course is made possible by the generous support of the American people through the support of USAID/Ghana and the Office of Health, Infectious Diseases, and Nutrition, Bureau for Global Health, United States Agency for International Development (USAID), under terms of Cooperative Agreement No. AID-OAA-A-11-00014, through the FANTA-2 Bridge, managed by FHI 360.

Illustrations for modules: Susan Kress



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This modified version of the training materials for the course on inpatient management of severe acute malnutrition (SAM) is the practical application of the 2010 Interim *National Guidelines for CMAM in Ghana* (February 2010).

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Acronyms and Abbreviations

ACT	Artemisinin-Based Combination Therapy
AFASS	Affordable, Feasible, Appropriate, Sustainable, and Safe
AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
AWG	Average Daily Weight Gain
BMI	Body Mass Index
CCP	Critical Care Pathway
cm	Centimetre(s)
CMAM	Community-Based Management of Acute Malnutrition
CMV	Combined Mineral and Vitamin Mix
CWC	Child Welfare Clinic
dl	Decilitre(s)
ER	Emergency Room
F-75	Formula 75 Therapeutic Milk
F-100	Formula 100 Therapeutic Milk
FANTA-2	Food and Nutrition Technical Assistance II Project (FHI360)
g	gram(s)
GHS	Ghana Health Service
Hb	Haemoglobin
HFA	Height-for-Age
HIV	Human Immunodeficiency Virus
IgA	Immunoglobulin A
IGF-1	Insulin Growth Factor-1
IM	Intramuscular
IMNCI	Integrated Management of Neonatal and Childhood Illness
IU	International Unit(s)
IV	Intravenous
IYCF	Infant and Young Child Feeding
kcal	Kilocalorie(s)
kg	Kilogram(s)
L	Litre(s)
LOS	Length of Stay
M&R	Monitoring and Reporting
MAM	Moderate Acute Malnutrition
mg	Milligram(s)
ml	Millilitre(s)
mmol	Millimole(s)
MOH	Ministry of Health
mOsmol	Milliosmol(s)
MUAC	Mid-Upper Arm Circumference
NG	Nasogastric
NGO	Nongovernmental Organisation
NGT	Nasogastric Tube

OPD	Outpatient Department
ORS	Oral Rehydration Solution
PCV	Packed Cell Volume
PLHIV	People Living with HIV
PMTCT	Prevention of Mother-to-Child Transmission of HIV
QI	Quality Improvement
ReSoMal	Rehydration Solution for Malnutrition
RUTF	Ready-to-Use Therapeutic Food
SAM	Severe Acute Malnutrition
SD	Standard Deviation(s)
SFP	Supplementary Feeding Programme
TB	Tuberculosis
UNICEF	United Nations Children’s Fund
UNSCN	United Nations System Standing Committee on Nutrition
USAID	United States Agency for International Development
WFA	Weight-for-Age
WFH	Weight-for-Height
WFP	World Food Programme
WHO	World Health Organisation
WHZ	Weight-for-Height Z-Score
µg	Microgram(s)
>	Greater Than
≥	Greater Than or Equal To
<	Less Than
≤	Less Than or Equal To
%	Percent

The Importance of Severe Acute Malnutrition as a Health Problem

Severe acute malnutrition (SAM) is one of the most common causes of morbidity and mortality among children under 5 years of age worldwide. Many children under 5 with SAM die at home without care or present to a hospital too late and with medical complications.

Children with SAM often die because physicians unknowingly use practices that are suitable for most children, but highly dangerous for children with SAM. With appropriate case management for SAM in Inpatient Care and additional treatment in Outpatient Care, the lives of many children can be saved and mortality associated with SAM can be drastically reduced to less than 10%.

The World Health Organisation (WHO) developed a manual in 1999 that describes case management practices for children with SAM entitled *Management of severe malnutrition: a manual for physicians and other senior health workers*. WHO, with support of a group of experts (the WHO Nutrition Guidance Expert Advisory Group [NUGAG]), is in the process of updating this manual; therefore, for the purposes of this training, a copy of the 1999 manual will not be shared.

Instead, this training course uses the Interim *National Guidelines for CMAM in Ghana* (February 2010) and job aids for Inpatient Care as references. These materials reflect the latest WHO guidance through various publications since 2006¹. The seven training modules and the set of job aids for Inpatient Care are the major tools to use during this training course.



Open the Interim *National Guidelines for CMAM in Ghana* now and read its introduction on pages 1–7.

¹ WHO, UNICEF, and United Nations System Standing Committee on Nutrition (UNSCN). 2006. Proceedings of the WHO, UNICEF, and SCN Informal Consultation on Community-Based Management of Severe Malnutrition in Children. *Food and Nutrition Bulletin* 27(3): Supplement. <http://foodandnutritionbulletin.org/FNB/index.php/FNB/article/viewFile/1181/1201>; WHO, UNICEF, World Food Programme (WFP), and UNSCN. 2007. *Joint statement on the community-based management of severe acute malnutrition*. www.who.int/nutrition/topics/Statement_community_based_man_sev_acute_mal_eng.pdf; WHO and UNICEF. 2009. *WHO child growth standards and the identification of severe acute malnutrition in infants and children: A Joint Statement by the World Health Organisation and the United Nations Children's Fund*. www.unicef.org/nutrition/files/stmt_child_growth_sam_final.pdf.

Purpose of this Training Course

This training course is designed for physicians and nurses in hospitals that provide Inpatient Care for the management of SAM with medical complications. Dieticians and nutritionists will also benefit from this course.

The course covers all aspects of case management of children 6–59 months of age with SAM and medical complications in Inpatient Care until the condition of the child is stabilised and the child can continue treatment in Outpatient Care. The training course also provides guidance on the treatment of infants 0–6 months with SAM in **Module 4, Feeding**. While the training course focuses on Inpatient Care, case management participants are introduced to the other components of the Community-Based Management of Acute Malnutrition (CMAM) approach to understand the linkages and are prepared to collaborate with colleagues involved in the other components of care.

The course teaches skills and knowledge specifically needed for the management of children 6–59 months with SAM with poor appetite and/or medical complications in Inpatient Care. The course does not teach basic medical techniques that are taught in schools of medicine and nursing (such as how to insert an intravenous [IV] drip or take a blood sample).

It is expected that participants will return to their hospitals and begin to implement the case management practices described in this course. To implement these practices, staff working in Inpatient Care for the management of SAM should develop an action plan. An example of an action plan will be discussed in **Module 6, Monitoring, Problem Solving, and Reporting**. Certain basic supplies and equipment are required for these practices; they are listed in **Annex A** of this module and in **Annex 32** of the Interim *National Guidelines for CMAM in Ghana*.

Training Course Methods and Materials

This training course uses a variety of methods of instruction, including reading, written exercises, discussions, role-plays, videos, demonstrations, and practice in a real Inpatient Care site. Practice, whether in written exercises or at the Inpatient Care site, is considered a critical element of instruction.

Small groups of participants are led and assisted by ‘facilitators’ as they work through the course modules (booklets that contain units of instruction). The facilitators are not lecturers, as in a traditional classroom. Their role is to answer questions, provide individual feedback on exercises, lead discussions, and structure role-plays.

To a great extent, participants work at their own pace through the modules, although in some activities, such as role-plays and discussions, the small group will work together.

This inpatient management of SAM training course has seven modules:

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

The course director, facilitators, and clinical instructor will use the:

- **Course Director Guide**
- **Facilitator Guide**
- **Clinical Instructor Guide**

In addition to the seven modules (and three guides), the following materials will be used:

- **Photographs booklet**
- **Videos**
 1. Transformations
 2. Emergency Treatment
 3. Teaching Home Feeding
 4. Malnutrition and Mental Development
- **Slides:** Overview of CMAM
- **Reference:** *Interim National Guidelines for CMAM in Ghana*
- **Set of laminated job aids** (see **Annex A** of this module)
- **Laminated wall charts** (see **Annex A** of this module)
- **A set of Forms and checklists** (see **Annex A** of this module)

- **Other documents**

- Support reading (see **Annex C**)
- Terminology for CMAM (see **Annex D**)
- List of Outpatient Care sites with a catchment area and the names of CMAM health facility focal persons (developed per Inpatient Care site)

Note on keeping the training materials up to date: The training materials cover all case management practices and are consistent with the promising practices adopted and promoted by the Ministry of Health (MOH) and Ghana Health Service (GHS), which are summarised in the Inpatient Care job aids and described in the Interim *National Guidelines for CMAM in Ghana*. It is expected that with new emerging evidence the MOH/GHS will adapt treatment protocols and promote new practices and therefore regularly update the job aids. Training materials might also need to be updated to reflect changes in the job aids.

Learning Objectives for the Case Management Training

Each module and clinical session in this course provides information and examples and allows you to practise skills necessary for managing children with SAM with poor appetite and/or medical complications in Inpatient Care. The skills and information presented in each module are outlined below by module section.

Module 2, Principles of Care

- Define SAM
- Recognise Clinical Signs of SAM
- Weigh and Measure the Child
- Identify the Child with SAM
- Recommended Criteria for Managing SAM
- How the Physiology of SAM Affects Care of the Child
- Overview of the Essential Components of Care
- Recommended Criteria for Referral and Discharge

Module 3, Initial Management

- Identify and Manage a Child with SAM and Medical Complications
- Prepare Rehydration Solution for Malnutrition (ReSoMal)
- Select Appropriate Antibiotics and Calculating Doses
- Test and Treat for Malaria, HIV, and Tuberculosis
- Keep a Written Record of Initial Findings and Treatments

Module 4, Feeding

- Prepare F-75 and F-100 and Learn about RUTF
- Plan Feeding and Record a Child's Intake and Output for a 24-Hour Period
- Measure and Give Feeds to Children
- Record Intake and Output
- Plan Feeding for Inpatient Care

Module 5, Daily Care

- Handle a Child with SAM and Medical Complications
- Care for the Skin and Bathe the Child
- Give Prescribed Antibiotics and Other Medications and Supplements
- Care for the Eyes
- Conduct and Observe the Appetite Test When the Child's Condition Stabilises
- Monitor Pulse, Respirations, and Temperature, and Watch for Danger Signs
- Continue Care at Night
- Prepare and Maintain a Weight Chart

Module 6, Monitoring, Problem Solving, and Reporting

- Use a Process to Identify and Solve Problems on Case Management
- Monitor and Solve Problems with an Individual Patient
- Monitor Overall Weight Gain in Inpatient Care during the Rehabilitation Phase
- Monitor Patient Outcomes
- Monitor Case Management Practices and Procedures
- Solve Problems
- Monitor and Report on Inpatient Care

Module 7, Involving Mothers in Care

- Encourage the Involvement of Mothers
- Involve Mothers in Comforting, Feeding, and Bathing Children
- Teach Groups of Mothers about Feeding and Care
- Prepare the Child and Mother to Continue Treatment and Feeding at Home
- Teach Mothers the Importance of Stimulation and How to Make and Use Toys
- Give Advice on Referral to Outpatient Care, Continued Treatment at Home, and Follow-Up Visits
- Make Special Arrangements for Referral to Outpatient Care, Follow-Up in Case of Defaulting, or if Early Discharge is Unavoidable
- Support Infant and Young Child Feeding
- Link with Community Initiatives for the Prevention of Undernutrition

Additional Objective

- Improve the Quality of Care: **Module 4, Feeding and Module 6, Monitoring, Problem Solving, and Reporting** encourage you to discuss ideas for improving feeding-related tasks and the quality of care in your hospital without requiring external resources, after you return from this course.

Objectives for Clinical Sessions

Each clinical session has specific objectives for observation and practice. The course schedule is designed so that participants learn about skills in the modules before practising those skills in a clinical session.

Day 1: Tour of Inpatient Care

- Observe the admissions area.
- Observe the emergency treatment area.
- Observe how the SAM ward or area is organised.
- Observe the kitchen area.
- Observe any special areas for play, health education, etc.

Day 2: Clinical Signs and Anthropometric Measurements

- Observe children with clinical signs of SAM.
- Look for signs of SAM and medical complications.
- Measure mid-upper arm circumference (MUAC).
- Look up target weight for discharge.
- Identify children with SAM, review admission criteria, and discuss treatment in Inpatient Care and referral to Outpatient Care.

Day 3: Initial Management

- Observe the initial management of SAM in children.
- Identify clinical signs of SAM and medical complications: hypoglycaemia, hypothermia, shock, dehydration, severe anaemia and corneal ulceration.
- Practise using dextrostix.
- Practise filling out a CCP during initial management.
- Assist in conducting initial management, if feasible.
 - Check for signs of shock: cold hands with slow capillary refill or weak or fast pulse.
 - Take rectal temperature.
 - Give a bolus of glucose for hypoglycaemia.
 - Warm the child.
 - Give the child's first feed.

Day 4: Initial Management and Feeding

- Observe and assist in conducting initial management, if feasible.
 - Identify signs of possible dehydration in a child with SAM.
 - Measure and give ReSoMal.
 - Monitor a child on ReSoMal.
 - Determine antibiotics and doses.

- Practise testing the appetite with RUTF (for a child who shows appetite and is clinically well and alert).
- Practise conducting the supplemental suckling technique, if possible.
- Observe nurses (and nutritionists) measuring and giving feeds.
- Practise measuring, giving, and recording feeds.
- Review 24-Hour Food Intake Charts and plan feeds for the next day.
- Determine if child is ready for RUTF or F-100. Practise testing the appetite with RUTF (continued).
- Prepare F-75, F-100, and ReSoMal, and learn the contents of RUTF.
- Practise measuring, giving, and recording feeds (continued).

Day 5: Daily Care and Monitoring Quality Care

- Keep CCPs on the children who are observed and cared for in Inpatient Care.
- Participate in daily care tasks, as feasible.
 - Measure pulse rate, respiratory rate, and temperature.
 - Administer eye drops, antibiotics, and other drugs and supplements.
 - Change eye bandages and other procedures related to the care of the eye
 - Weigh the child and record weight (on the Daily Care and Weight Chart pages of the CCP).
 - Look up target weight for discharge and mark on it on the Weight Chart.
 - Observe and assist with bathing children.
- Assist with feeding (continued).
- Monitor the quality of care using the appropriate checklist.

Day 5: Referral between Inpatient Care and Outpatient Care

- Observe nurses conducting an Outpatient Care session.
- Review the criteria for managing SAM in Outpatient Care.
- Review referral from Outpatient Care to Inpatient Care using the Outpatient Care action protocol.
- Practise using the referral card/form from Inpatient Care to Outpatient Care.
- Practise measuring MUAC, weighing children, assessing bilateral pitting oedema, and conducting the appetite test.

Day 5: Additional Objectives

- Observe a health and nutrition education session and a cooking session with mothers.
- Observe a play session.

Annex A. Equipment and Supplies for the Inpatient Management of Severe Acute Malnutrition

Ward Equipment/Supplies

- Running water
- Thermometers (axillary or rectal)
- Child weighing scales (and an item of known weight for checking scales)
- Infant weighing scales with 10 g precision (and an item of known weight for checking scales)
- MUAC tapes
- Adult beds with mattresses
- Bed sheets
- Insecticide-treated bed nets
- Blankets or wraps for warming children
- Incandescent lamp or heater
- Wash basin for bathing children
- Potties
- Safe, homemade toys
- Clock
- Calculator

Pharmacy Equipment/Supplies

- Oral rehydration solution (ORS) for use in making ReSoMal (or commercial ReSoMal)
- Combined mineral and vitamin mix (CMV)
- RUTF
- If available, pre-packaged F-75 and F-100
- Iron syrup (e.g., ferrous fumarate)
- Folic acid
- Vitamin A (Retinol 100,000 and 200,000 IU capsules)
- Glucose (or sucrose)
- IV fluids: one of the following, listed in order of preference:
 - Half-strength Darrow's solution with 5% glucose
 - Ringer's lactate solution with 5% glucose*
 - Half-normal (0.45%) saline with 5% glucose*

* If either of these is used, add sterile potassium chloride (20 mmol/L) if possible.
- Normal (0.90%) saline (for soaking eye pads)
- Sterile water for diluting
- Vaccines as per the national Expanded Programme of Immunisation
- Glucometre/Dextrostix
- Haemoglobinometer
- Supplies for IV fluid administration:
 - Scalp vein (butterfly) needles, gauge 21 or 23
 - Heparin solution, 10–100 units/ml
 - Poles or means of hanging bottles of IV fluid

- Tubing
- Bottles or bags
- Paediatric nasogastric tubes (NGTs)
- Sticky tape
- Syringes of multiple sizes: 50 ml for feeds, 10 ml, 5 ml for drawing blood, 2 ml for drugs
- Sterile needles
- Eye pads
- Bandages
- Gauze
- Supplies for blood transfusion:
 - Blood packs
 - Bottles
 - Syringes and needles
 - Other blood collecting materials

Drugs

- Amoxicillin
- Ampicillin
- Benzylpenicillin
- Gentamicin
- Chloramphenicol
- Ceftriaxone
- Cefotaxime
- Ciprofloxacin
- Cloxacillin
- Cotrimoxazole
- Mebendazole and/or albendazole
- Tetracycline eye ointment
- Chloramphenicol eye drops
- Atropine 1% eye drops
- Paracetamol
- Antimalarial: artemisinin-based combination therapy (ACT)
- Metronidazole
- Nalidixic acid

For Skin

- Nystatin
- Benzyl benzoate
- Whitfield's ointment
- Gentian violet
- Paraffin gauze
- Potassium permanganate
- Zinc oxide ointment
- Petroleum jelly ointment

Laboratory Resources

- Malaria diagnostic test
- HIV Tests
- Tuberculosis tests (x-ray, culture of sputum, Mantoux)
- Urinalysis
- Stool routine examination and culture
- Blood culture
- Cerebrospinal fluid culture
- Full blood count
- Sickling test

Hygiene Equipment/Supplies for Mothers and Staff

- Toilet, hand-washing, and bathing facilities
- Soap for hand washing
- Place for washing bedding and clothes
- Method for trash disposal

Kitchen Equipment/Supplies

- Dietary scales able to weigh to 5 g
- Electric blender or manual whisks
- Large containers and spoons for mixing/cooking food for the ward
- Cooking stove
- Feeding cups, saucers, and spoons
- Measuring cylinders (or suitable utensils for measuring ingredients and leftovers)
- Jugs (1-L and 2-L)
- Refrigeration (if possible)
- Ingredients to make F-75 and F-100:
 - Dried skimmed milk, whole dried milk, fresh whole milk, or long-life milk
 - Sugar
 - Cereal flour
 - Vegetable oil
 - Clean water supply
- Food for mothers
- Foods similar to those used at home (for teaching transition to homemade complementary foods)

Reference

- Interim *National Guidelines for CMAM in Ghana*

Set of Laminated Job Aids

- Admission Criteria for the Management of Severe Acute Malnutrition in Children under 5
- Discharge Criteria for the Management of Severe Acute Malnutrition in Children under 5
- Weight-for-Height/Length Reference Tables

- Guidance Table to Identify Target Weight for Discharge from Management of Severe Acute Malnutrition for Children 6–59 Months
- Danger Signs for the Management of Severe Acute Malnutrition in Children under 5 in Inpatient Care
- Routine Medicine Protocols and Vaccines for Children under 5 with SAM in Inpatient Care
- Antibiotics for Children with SAM in the Inpatient Care
- Specific Formulation and Body Weight Ranges for Antibiotics for SAM in Inpatient Care
- Other Medicine Protocols and Vaccines for Children under 5 with SAM in Inpatient Care
- F-75 Reference Tables
- F-100 Reference Table
- F-100-Diluted Reference Tables
- RUTF Reference Table for Children 6–59 Months with SAM in Inpatient Care
- RUTF Appetite Test
- Entry and Exit Categories for Monitoring the Management of Severe Acute Malnutrition in Children 6–59 Months

Laminated Wall Charts

- 10 Steps for Management of SAM in Children 6–59 Months in Inpatient Care
- Admission and Discharge Criteria for the Management of Severe Acute Malnutrition in Children under 5
- Emergency Treatment for the Management of SAM in Inpatient Care
- F-75 Reference Tables
- F-100 Reference Table
- F-100-Diluted Reference Tables
- Guidance Table to Identify Target Weight for Discharge from Management of Severe Acute Malnutrition for Children 6–59 Months
- RUTF Reference Table for Children 6–59 Months with SAM in Inpatient Care

Forms and Checklists

- 24-Hour Food Intake Chart
- Checklist for Monitoring Food Preparation
- Checklist for Monitoring Hygiene
- Checklist for Monitoring Inpatient Care Procedures
- Critical Care Pathway (CCP) Chart
- Daily Inpatient Care Feeds Chart
- Health Facility Monthly Report Form for the Management of SAM
- Health Facility Tally Sheet for the Management of SAM
- Referral Form from Inpatient Care to Outpatient Care
- Weight Gain Tally Sheet

Other Documents

- Support reading (see **Annex C**)
- Terminology for CMAM (see **Annex D**)
- List of Outpatient Care sites with catchment areas and the names of CMAM health facility focal persons (developed per Inpatient Care site)

Annex B. Slide Presentation: Overview of Community-Based Management of Acute Malnutrition




Overview of Community-Based Management of Acute Malnutrition (CMAM)

Learning Objectives

- Identify the concepts and principles of CMAM
- Describe recent innovations and evidence
- Identify the components of CMAM
- Develop an appreciation for the issues related to implementing CMAM
- State global commitments related to CMAM

2

What is CMAM?



3

Community-Based Management of Acute Malnutrition (CMAM)

- Community-based approach to treating severe acute malnutrition (SAM)
 - Most children with SAM without medical complications treated as outpatients at accessible, decentralised sites
 - Children with SAM and medical complications treated as inpatients
 - Community outreach for community involvement and early detection and referral of cases

4

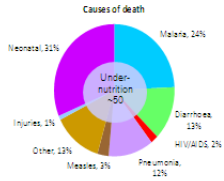
What is undernutrition?

- A consequence of a deficiency in nutrients in the body
- Types of undernutrition?
 - Acute malnutrition: wasting and bilateral pitting oedema
 - Stunting
 - Underweight
 - Micronutrient deficiencies
- Why focus on acute malnutrition?

5

Undernutrition and Child Mortality

54% of child mortality associated with underweight



Severe wasting is an important cause of these deaths (difficult to estimate)

Proportion associated with acute malnutrition often grows dramatically in emergency contexts

6

Recent History in the Management of SAM

- Traditionally, children with SAM treated in centre-based care: Nutritional Rehabilitation Centres (NRCs) or Therapeutic Feeding Centres (TFCs)
- Some of the centre-based care models follow WHO's *Management of severe malnutrition: a manual for physicians and other senior health workers* (1999)

7

Centre-Based Care for Children with SAM

- What is a TFC/NRC?
- Advantages and disadvantages of a TFC/NRC?

8


Challenges of Centre-Based Care: Overcrowding, Cross-Infection, Staff Workload Increases



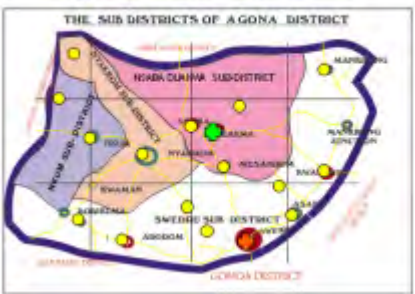
Principles of CMAM

- Maximum coverage and access
- Timeliness
- Appropriate medical and nutrition care
- Care for as long as needed

Maximise Impact by Focussing on Public Health

<p>Population level impact (coverage)</p> <p>Early presentation</p> <p>Access to services</p> <p>Compliance with treatment</p>		<p>Individual level impact (cure rates)</p> <p>Efficient diagnosis</p> <p>Effective clinical protocols</p> <p>Effective service delivery</p>
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Agona East and West



Bringing Treatment into the Local Health Facility and the Home



Timeliness: Early versus Late Presentation



Timeliness (continued)



- Find children before SAM becomes serious and medical complications arise
- Good community outreach is essential
- Screening and referral by community volunteers

Appropriate Medical Treatment and Nutrition Rehabilitation Based on Need



Care as Long as it is Needed

- Services to address SAM can be integrated into routine health services of health facilities.
- Treatment for SAM is available as long as there is a need, if supplies are present.
- Additional support to health facilities can be added during certain seasonal peaks or during a crisis.

17

New Innovations Making CMAM Possible

1. Ready-to-use therapeutic food (RUTF)
2. New classification of acute malnutrition
3. Acceptance of assessment of wasting via mid-upper arm circumference (MUAC)

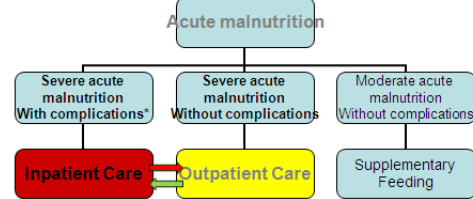
18

RUTF

- Produced commercially by Nutriset in France ('Plumpy'nut®) and locally in e.g., Democratic Republic of Congo, Ethiopia, Malawi, Niger, and Zambia
- Lipid-based RUTF ingredients:
 - Peanuts (ground into a paste)
 - Vegetable oil
 - Powdered sugar
 - Powdered milk
 - Vitamin and mineral mix (special formula)
- Additional formulations of RUTF are being researched

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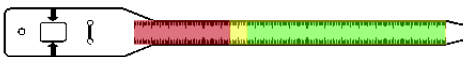
New Classification for Acute Malnutrition



*Medical complications: Anorexia or no appetite, intractable vomiting, convulsions, lethargy or not alert, unconsciousness, lower respiratory tract infection, high fever, severe dehydration, severe anaemia, hypoglycaemia, or hypothermia

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Acceptance of MUAC for Assessment



- Community-level identification
- Transparent and understandable measure
- Can be used by community-based outreach workers and volunteers for case-finding

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Components of CMAM

1. Community outreach
2. Outpatient care for the management of SAM without medical complications
3. Inpatient care for the management of SAM with medical complications
4. Programmes that address moderate acute malnutrition (MAM)

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1. Community Outreach

- Key individuals in the community promote CMAM activities
- Understanding of CMAM and treatment of SAM
- Understanding of cultural practices, barriers, and systems
- Dialogue on barriers to uptake
- Community case-finding and referral



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Community Outreach and Screening



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2. Outpatient Care

- Target group: children with SAM WITHOUT medical complications AND with good appetite
- Activities: Weekly or biweekly visits to the Outpatient Care site for specialised medical treatment, anthropometry measurement, and nutritional rehabilitation
- Continued nutritional rehabilitation with RUTF

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Clinical Admissions for Outpatient Care



Outpatient Care: Medical Examination



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Outpatient Care: Systematic Medication



- Amoxicillin
- Antimalarial
- Vitamin A
- Anthelmintic
- Measles vaccination

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Outpatient Care: Appetite Test



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3. Inpatient Care

- SAM with medical complications or no appetite
- Medical treatment according to WHO and/or national protocols
- Return to Outpatient Care after medical complication is resolved



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4. Programmes that Manage MAM



- Target group: MAM
- Activities:
 - Routine medication
 - Dry supplementary food rations
 - Basic preventive health care and immunisation
 - Health and nutrition education and counselling

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Relationship between Outpatient Care and Inpatient Care

- **Complementarity:** Inpatient Care for the management of SAM with medical complications until the medical condition is stabilised and the medical complication is resolving
- **Different priorities**
 - Outpatient Care component prioritises coverage and access
 - Inpatient Care component prioritises clinical care

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Global Commitment for CMAM

- **WHO consultation** (November 2005): agreement by WHO to revise SAM guidelines to include Outpatient Care and endorse MUAC as an entry criterion for programmes
- **UNICEF accepted CMAM globally** (2006)
- **WHO, UNICEF, WFP, and UNSCN *Joint statement on the community-based management of severe acute malnutrition*** (June 2007): Support for national policies, protocols, trainings, and action plans for adopting the approach
- **WHO and UNICEF joint statement on the use of MUAC as an id**

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Commitment for CMAM in Ghana

- MOH/GHS adopted the CMAM approach to manage SAM.
- Partners WHO/Ghana, UNICEF/Ghana, and USAID/Ghana are collaborating in the integration, quality improvement, and scale-up of CMAM in Ghana.

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Annex C. References for Support Reading

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- WHO, UNICEF, WFP, and UNSCN. 2007. *Community-based management of severe acute malnutrition: A Joint Statement by the World Health Organization, the World Food Programme, the United Nations System Standing Committee on Nutrition and the United Nations Children's Fund*. <http://www.who.int/nutrition/publications/severemalnutrition/978-92-806-4147-9/en/index.html>.

Annex D. Terminology for CMAM

Acute malnutrition	Acute malnutrition is a form of undernutrition. It is caused by a decrease in food consumption and/or illness, resulting in bilateral pitting oedema or sudden weight loss. It is defined by the presence of bilateral pitting oedema or wasting (low MUAC or low weight-for-height [WFH]).										
Anthropometry	Anthropometry is the study and technique of human body measurement. It is used to measure and monitor the nutritional status of an individual or population group.										
Appetite	Appetite is the decisive criterion for participation in outpatient care. An appetite test is done at admission and at all Outpatient Care follow-on sessions to ensure that a child can eat RUTF. If the child has no appetite, he or she must receive treatment in Inpatient Care.										
Cascade training	Cascade training is a process in which an experienced trainer trains health care providers with limited experience and expertise who, in turn, pass on that knowledge and skills to other practitioners with less experience and expertise. These practitioners then train other practitioners with less experience and expertise, etc., etc., etc. Note that the knowledge and skills tend to get diluted as a result of the training that occurs later in the process being conducted further and further from the initial training. As a result, cascade training is not recommended as a training method.										
Bilateral pitting oedema	<p>Bilateral pitting oedema—also known as nutritional oedema or oedematous malnutrition—is a sign of SAM. It is caused by an abnormal infiltration and excess accumulation of serous fluid in connective tissue or in serous cavities. Bilateral pitting oedema is verified when thumb pressure applied on top of both feet for three seconds leaves a pit (indentation) in the foot after the thumb is lifted.</p> <p>The grades of bilateral pitting oedema are:</p> <table border="1"> <thead> <tr> <th>Grade</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>Absent or 0</td> <td>No bilateral pitting oedema</td> </tr> <tr> <td>Grade +</td> <td>Mild: Both feet/ankles</td> </tr> <tr> <td>Grade ++</td> <td>Moderate: Both feet, plus lower legs, hands, or lower arms</td> </tr> <tr> <td>Grade +++</td> <td>Severe: Generalised bilateral pitting oedema, including both feet, legs, arms, and face</td> </tr> </tbody> </table>	Grade	Definition	Absent or 0	No bilateral pitting oedema	Grade +	Mild: Both feet/ankles	Grade ++	Moderate: Both feet, plus lower legs, hands, or lower arms	Grade +++	Severe: Generalised bilateral pitting oedema, including both feet, legs, arms, and face
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Grade +++	Severe: Generalised bilateral pitting oedema, including both feet, legs, arms, and face										

CMAM	<p>CMAM refers to the management of acute malnutrition through:</p> <ol style="list-style-type: none"> 1) Inpatient Care for children with SAM and medical complications and for all other age groups with SAM, regardless of medical complications 2) Outpatient Care for children 6–59 months with SAM without medical complications 3) Community outreach for community assessment, community mobilisation, early and active case detection, and referral for treatment 4) Services or programmes for the management of MAM in children 6–59 months that might be provided depending on the context
Community outreach	Community outreach for CMAM includes community assessment, community mobilisation, active case-finding and referral, and case follow-up.
Community referral	Community referral is the process of identifying children with acute malnutrition in the community and sending them to a health facility for CMAM.
Community volunteer	A community volunteer is a person who conducts outreach for community mobilisation, screening, referral, and follow-up in the community. He or she can receive an incentive, but no remuneration.
Coverage	<p><i>Geographical coverage</i> refers to the availability of CMAM (i.e., geographical access) through the decentralisation and scale-up of CMAM. <i>Geographical coverage</i> can be defined as the ratio of health facilities with CMAM to the total number of health facilities per district, region, or area at a particular time.</p> <p><i>Treatment coverage</i> refers to the access and service uptake of CMAM (access and use).</p> <p><i>Treatment coverage</i> can be defined as the ratio of children with SAM in treatment to the total number of children with SAM in the community at a particular time.</p>
Coverage ratio	Coverage ratio is expressed as the ratio of children with SAM in the community under treatment to the total number of children with SAM identified in the community at a particular time.
Essential or basic health care package	An essential or basic health care package is a set of services provided at health facilities, as mandated by the national health policy. The package varies based on the health facility type (e.g., hospital, health centre, or health post).
F-75	Formula 75 (75 kcal/100 ml) is the milk-based diet recommended by WHO for the stabilisation of children with SAM in Inpatient Care.

F-100	Formula 100 (100 kcal/100 ml) is the milk-based diet recommended by WHO for the rehabilitation of children with SAM after stabilisation in Inpatient Care. Its current principal use in CMAM services is for children with SAM in transition or children who remain in Inpatient Care until full recovery (e.g., children with severe mouth lesions who cannot swallow RUTF) or in the absence of RUTF. F-100-Diluted is used for the stabilisation and rehabilitation of infants under 6 months in Inpatient Care.
GAM	GAM is a population-level indicator referring to overall acute malnutrition defined by the presence of bilateral pitting oedema or wasting defined by WFH < -2 z-score (WHO Child Growth Standards). GAM is the combination of moderate and severe acute malnutrition (GAM = MAM + SAM).
Health care	Health care is the prevention, treatment, and management of illness and the preservation of mental and physical well-being through the services offered by health care providers. Health care embraces all the goods and services designed to promote health, including preventive, curative, and palliative interventions, whether directed to individuals or to populations.
Health care provider	A health care provider is a medical, nursing, and allied health professional, including a community health worker.
Health care system	A health care system is the organised delivery of health care.
Health system	A health system consists of all structures, resources, policies, personnel, services, and programmes involved in the promotion, restoration, and maintenance of health.
Height-for-age (HFA) index	The HFA index is used to assess stunting. It shows how a child's height compares to the height of a child of the same age and sex in the WHO Child Growth Standards. This index reflects a child's long-term growth pattern.
Inpatient management of SAM with medical complications	This refers to service/programme for the inpatient management of SAM for children 6–59 months with SAM and medical complications and all other age groups with SAM, regardless of medical complications. Inpatient Care is provided in a hospital or health facility with 24-hour care capacity.
In-service training	In-service training prepares health professionals to provide, e.g., CMAM, by developing specific knowledge and skills according to their job qualifications while accounting for prior learning and work experience. It includes theoretical and practical training, e.g., learning visits, classroom training, on-the-job training, tutoring or mentoring, and refresher training sessions.
Integration of CMAM	Integration of CMAM refers to the incorporation of the management of acute malnutrition into the national health system. It assumes that the health care system has the capacity and competence for providing, strengthening, adapting, and maintaining quality and effective Inpatient Care, Outpatient Care, management of moderate acute malnutrition (MAM), and community outreach with minimal external support.

Kwashiorkor	Kwashiorkor is an acute form of childhood protein-energy malnutrition characterised by oedema, irritability, anorexia, ulcerating dermatoses, and an enlarged liver with fatty infiltrates.
Malnutrition	Malnutrition occurs when an individual's dietary intake is not balanced with his or her nutritional needs. Malnutrition includes both undernutrition and overnutrition .
Management of illness	Management of illness is the detection and referral for diagnosis, treatment, treatment follow-up, and prevention of adverse events, e.g., relapse of illness, death.
Marasmic kwashiorkor	Marasmic kwashiorkor is the simultaneous condition of severe wasting (marasmus) and kwashiorkor.
Marasmus	See Severe wasting .
Medical complications in the presence of SAM	<p>Medical complications in the presence of SAM that indicate the need to refer a child to Inpatient Care are: anorexia or poor appetite, convulsions, high fever, hypoglycaemia or hypothermia, intractable vomiting, lethargy or not alert, lower respiratory tract infection, severe anaemia, severe dehydration, eye signs of a vitamin A deficiency, and unconsciousness. Other cases needing Inpatient Care are: severe bilateral pitting oedema, marasmic kwashiorkor, and infants under 6 months with SAM.</p> <p><i>Note: Infants 6 months or older with SAM who weigh less than 4 kg are also treated in Inpatient Care following the same treatment protocol as infants under 6 months.</i></p>
Micronutrient deficiencies	Micronutrient deficiencies are a consequence of reduced micronutrient intake and/or absorption in the body. The most common forms of micronutrient deficiencies are related to iron, vitamin A, and iodine deficiency.
Moderate acute malnutrition (MAM)	<p>MAM, or moderate wasting, is defined in children under 5 by a MUAC ≥ 11.5 cm and < 12.5 cm or a WFH ≥ -3 z-score and < -2 z-score (WHO Child Growth Standards).</p> <p>Moderate wasting can be used as a population-level indicator, defined as WFH ≥ -3 z-score and < -2 z-score (WHO Child Growth Standards).</p>
Moderate wasting	See Moderate acute malnutrition (MAM) .
MUAC indicator	<p>Low MUAC is an indicator for wasting, used for a child 6–59 months. MUAC < 11.5 cm indicates severe wasting, or SAM. MUAC ≥ 11.5 cm and < 12.5 cm indicates moderate wasting, or MAM.</p> <p>MUAC is a better indicator than WFH of mortality risk associated with acute malnutrition.</p>
Nutritional oedema	See Bilateral pitting oedema .

Oedematous malnutrition	See Bilateral pitting oedema .
Outpatient Care management of SAM without medical complications	This refers to a service/programme for Outpatient Care management of SAM for children 6–59 months with SAM without medical complications through the provision of routine medical treatment and nutritional rehabilitation with RUTF. Children attend Outpatient Care at regular intervals (usually once a week) and continue receiving treatment at home until weight recovery is achieved (usually 2 months).
Outreach worker for CMAM	An outreach worker is a community health worker, health extension worker (paid), or community volunteer (unpaid) who identifies and refers children with acute malnutrition from the community to CMAM and follows up with the children in their homes when required.
Overnutrition	Overnutrition occurs when the body has more nutrients than it needs. Overnutrition conditions include both overweight and obesity.
Pre-service training	Pre-service training is conducted at a teaching institution as part of the curriculum for a professional qualification. It can be at the pre-graduate, post-graduate, or diploma level (e.g., in medical or nursing schools). It includes theoretical and practical training. Practical training sessions can be, e.g., simulations, demonstrations, learning visits, internships, and mentoring.
Ready-to-use therapeutic food (RUTF)	RUTF is an energy-dense, mineral- and vitamin-enriched food specifically designed to treat SAM. RUTF has a similar nutrient composition to F-100. RUTF is a soft, crushable food that can be consumed easily by children from the age of 6 months without adding water. Unlike F-100, RUTF is not water-based, meaning that bacteria cannot grow in it and that it can be used safely at home without refrigeration and in areas where hygiene conditions are not optimal. It does not require preparation before consumption. Plumpy'nut® is an example of a commonly known lipid-based RUTF. BP-100™ is an example of a commonly known non-lipid-based RUTF.
Referral	A referral is a child who moved to a different component of the management of SAM (e.g., from Outpatient Care to Inpatient Care or vice versa) or for other medical treatment but who has not left the SAM treatment.
Routine health Services	Routine health services refer to services provided at health facilities, depending on staff capacity and facility resources. These services include the essential or basic health care package and other services.
Scale-up	Scale-up involves the expansion of services (e.g., from the initial phase to the programme phase, as part of a strategy to expand geographical coverage to the targeted area or nationally).
Self-referral	Self-referral occurs when mothers/caregivers bring children to the Outpatient Care or Inpatient Care site without a referral from an outreach worker (e.g., community health worker or volunteer).

Severe acute malnutrition (SAM)	<p>SAM is defined in children under 5 by the presence of bilateral pitting oedema or severe wasting (MUAC < 11.5 cm or a WFH < -3 z-score [WHO Child Growth Standards]). A child with SAM is highly vulnerable to illness and has a high mortality risk.</p> <p>SAM can also be used as a population-based indicator defined by the presence of bilateral pitting oedema or severe wasting (WFH < -3 z-score [WHO Child Growth Standards]).</p>
Severe wasting	<p>Severe wasting is a sign of SAM. It is defined by a MUAC < 11.5 cm or a WFH < -3 z-score (WHO Child Growth Standards).</p> <p>Severe wasting is also called marasmus. The child with severe wasting has lost fat and muscle and appears very thin (e.g., signs of ‘old man face’ or ‘baggy pants’ [folds of skin over the buttocks]).</p>
Sphere Project or Sphere Standards	<p>The Sphere Project Humanitarian Charter and Minimum Standards in Disaster Response is a voluntary effort to improve the quality of assistance provided to people affected by disaster and to enhance the accountability of humanitarian agencies in disaster response. Sphere has established Minimum Standards in Disaster Response (often referred to as the Sphere Standards) and indicators to describe the level of disaster assistance to which all people have a right. See http://www.sphereproject.org (April 2011 version).</p>
Stunting	<p>Stunting reflects chronic undernutrition. It is defined by an HFA < -2 z-score (WHO Child Growth Standards). Stunting is a result of prolonged or repeated episodes of undernutrition starting before birth. This type of undernutrition is best addressed through preventive maternal health programmes aimed at pregnant women, infants, and children under 2. Programme responses to stunting require longer-term planning and policy development.</p>
Training-of-trainers (TOT)	<p>TOT is a process in which an experienced trainer both expands the knowledge and skills of health care providers already experienced in the subject matter and trains them in adult training. These health providers then, in turn, pass on that expanded knowledge and skills to practitioners with less experience and expertise in the subject matter, perhaps in multiple trainings. Note that the knowledge and skills tend not to get diluted because the training remains the responsibility of trained trainers. As a result, TOT is recommended as a training method.</p>
Transition of programmes	<p>Transition refers to the process leading up to hand-over of a health service that was set up in parallel with a national health system, including planning and preparation for the gradual transfer of roles and responsibilities, until hand-over is complete, e.g., hand-over of a temporary nongovernmental organisation (NGO)-led emergency intervention to the MOH.</p>
Undernourishment	<p>Undernourishment is a population-level indicator that compares caloric availability per capita with minimum caloric requirements.</p>

Undernutrition	Undernutrition is a consequence of a lack of nutrients caused by inadequate dietary intake and/or disease. It encompasses a range of conditions, including acute malnutrition, chronic malnutrition, and micronutrient deficiency. The different forms of undernutrition that can appear isolated or in combination are acute malnutrition (bilateral pitting oedema and/or wasting), stunting, underweight (combined form of wasting and stunting), and micronutrient deficiencies.
Underweight	Underweight is a composite form of undernutrition that includes elements of stunting and wasting. It is defined by a weight-for-age (WFA) < -2 z-score (WHO Child Growth Standards). This indicator is commonly used in growth monitoring and promotion and child health and nutrition programmes aimed at the prevention and treatment of undernutrition.
Wasting	Wasting is a form of acute malnutrition. It is defined by a MUAC < 12.5 cm or a WFH < -2 z-score (WHO Child Growth Standards).
Weight-for-age (WFA) index	The WFA index is used to assess underweight. It shows how a child's weight compares to the weight of a child of the same age and sex in the WHO Child Growth Standards. The index reflects a child's long-term growth pattern and current nutritional status.
Weight-for-height (WFH) index	The WFH index is used to assess wasting. It shows how a child's weight compares to the weight of a child of the same length/height and sex in the WHO Child Growth Standards. The index reflects a child's current nutritional status.