

WHO/NHD/02/4(P)1
ORIGINAL: ENGLISH
DISTR: GENERAL

1. Introduction



WORLD HEALTH ORGANIZATION
DEPARTMENT OF NUTRITION FOR HEALTH AND DEVELOPMENT

TRAINING COURSE ON THE MANAGEMENT OF SEVERE MALNUTRITION

TRAINING COURSE ON THE MANAGEMENT OF SEVERE MALNUTRITION

INTRODUCTION



World Health Organization
Department of Nutrition for Health and Development

Training Course on the Management of Severe Malnutrition
was prepared by the
World Health Organization
Department of Nutrition for Health and Development (NHD), Geneva, Switzerland, and
Regional Office for South-East Asia (SEARO), New Delhi, India
in cooperation with the
Public Health Nutrition Unit of the
London School of Hygiene and Tropical Medicine, London, UK
through a contract with
ACT International, Atlanta, Georgia, USA.

© World Health Organization, 2002

This document is not a formal publication of the World Health Organization (WHO), and all rights are reserved by the Organization. The document may, however, be freely reviewed, abstracted, reproduced and translated, in part or in whole, but not for sale for use in conjunction with commercial purposes.

The views expressed in documents by named authors are solely the responsibility of those authors.

Cover photo: UNICEF/5877/Roger Lemoyne
Cover design for modules: minimum graphic
Illustrations for modules: Susan Kress

Acknowledgements

This field training course is the practical application of the WHO publication *Management of Severe Malnutrition: a manual for physicians and other senior health workers*, and WHO is grateful to all those involved in the production of this fundamental training course. WHO would particularly like to thank ACT International, USA, and especially Ms P. Whitesell Shirey for having developed the manuscript of the Training Course, together with Ms F. Johnson, who also acted as the course coordinator during the field testing. WHO acknowledges with all gratitude the substantial technical contribution and advice of Professor A. Ashworth-Hill from the London School of Hygiene and Tropical Medicine, who has also acted as one of the course facilitators. Special thanks are extended to Dr S. Khanum (former Regional Adviser for Nutrition and Food Safety, WHO Regional Office for South-East Asia in New Delhi), Department of Nutrition for Health and Development, for her technical contribution, comments and advice throughout the development of the training modules and also for organizing the field testing as a course director.

WHO also expresses its appreciation for helpful contributions from course facilitators during the field testing of the training modules, notably: Dr S. Aiyer, India; Dr T. Nu Shwe, Myanmar; Dr E. Poskitt, UK, Dr T. Ahmed, Dr S. Shakur, and Dr K. Jamil, Bangladesh, and all the course participants from Indonesia, Nepal, Bhutan, and Myanmar., and Bangladesh.

WHO expresses sincere gratitude to Professor J.C. Waterlow, UK, and to Professor A. Jackson, University of Southampton, UK, for their technical support and expertise during preparatory meetings held in London in November 1999 and September 2000.

Also acknowledged are contributions of WHO staff in the Department of Nutrition for Health and Development; Dr G.A. Clugston, Dr M. de Onis, and support from the Department of Child and Adolescent Health and Development.

WHO would like to thank the International Centre for Diarrhoeal Disease and Research, Bangladesh (ICDDR'B) for conducting the field testing of the training modules.

The financial support of the Governments of the United Kingdom of Great Britain and Northern Ireland (Department of International Development) and the Kingdom of The Netherlands towards the development and publication of this Training Course is also gratefully acknowledged.

CONTENTS

Importance of severe malnutrition as a health problem.....	1
Purpose of this training course.....	1
Course methods and materials	2
Learning objectives for modules.....	3
Objectives for clinical practice sessions	4
Annex: Equipment and supplies needed for a severe malnutrition ward.....	6

TRAINING COURSE ON THE MANAGEMENT OF SEVERE MALNUTRITION : INTRODUCTION

Importance of severe malnutrition as a health problem

Severe malnutrition is one of the most common causes of morbidity and mortality among children under the age of 5 years worldwide. Many severely malnourished children die at home without care, but even when hospital care is provided, case fatality rates may be high.

Severely malnourished children often die because doctors unknowingly use practices that are suitable for most children, but highly dangerous for severely malnourished children. With appropriate case management in hospitals and follow-up care, the lives of many children can be saved, and severe malnutrition wards can dramatically lower case fatality rates. In certain hospitals that have used these case management methods over a period of time, case fatality has been reduced from over 30% to less than 5%.

The World Health Organization has developed a manual that describes current case management practices for severely malnourished children. With your course materials, you have been given a copy of this manual, which is titled *Management of Severe Malnutrition: a manual for physicians and other senior health workers*. (Whenever you see a reference in this course to “the manual,” it means this manual.) This training course is consistent with the WHO manual and will refer often to the manual. This course will teach how to implement many of the guidelines in the manual.



Reading in the manual:

Open your manual now and read the Preface on page v.

Purpose of this training course

This course is designed for senior nurses and doctors in hospitals that have or plan to have severe malnutrition wards for children. The course will teach skills and knowledge specifically needed for management of severely malnourished children in hospitals. The course will not teach basic medical techniques that are taught in schools of medicine and nursing (such as how to insert an IV 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. In order to implement these practices, the severe malnutrition ward will need certain basic supplies and equipment. These required items are listed in the Annex to this *Introduction*.

Course methods and materials

This course uses a variety of methods of instruction, including reading, written exercises, discussions, role plays, video, and demonstrations and practice in a real severe malnutrition ward. Practice, whether in written exercises or on the ward, 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, structure role plays, etc.

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.

The modules in this course include:

- Introduction**
- Principles of Care**
- Initial Management**
- Feeding**
- Daily Care**
- Monitoring and Problem Solving**
- Involving Mothers in Care**

In addition to the modules, you should have the following course materials:

Management of severe malnutrition: a manual for physicians and other senior health workers

Photographs booklet

4 laminated reference cards:

- **Weight-for-height reference card**
- **F-75 reference card**
- **F-100 reference card**
- **Antibiotics reference card**

Sample Discharge Card

All other course materials, such as the video and blank recording forms, will be provided in your classroom as needed.

Learning objectives for modules

Each module and clinical practice session in this course will provide information and examples and allow you to practise skills necessary for managing severely malnourished children. The skills and information presented in each module are briefly outlined below:

Principles of Care

- Identifying the child with severe malnutrition:
 - Recognizing signs of severe malnutrition
 - Weighing and measuring children
 - Determining a standard deviation score (SD-score) based on the child's weight and length
- How the physiology of severe malnutrition affects care of the child
- Essential components of care
- Recipes for special feeding formulas (F-75 and F-100)
- Important things NOT to do and why
- Recommended admission and discharge policies for a severe malnutrition ward

Initial Management

- Identifying and managing the severely malnourished child with:
 - Hypoglycaemia
 - Hypothermia
 - Shock
 - Very severe anaemia
 - Corneal ulceration
 - Watery diarrhoea and/or vomiting
- Preparing ReSoMal
- Selecting appropriate antibiotics and calculating dosages
- Keeping a written record of initial findings and treatments

Feeding

- Preparing F-75 and F-100
- Planning feeding for a 24-hour period for a child who is:
 - taking F-75, or
 - adjusting to F-100 during transition, or
 - feeding freely on F-100.
- Measuring and giving feeds to children
- Recording intake and output
- Planning feeding for a ward

In addition this module will allow you to discuss ideas for training staff at your hospital to do feeding-related tasks.

Daily Care

- Handling a severely malnourished child appropriately
- Preparing and maintaining a weight chart (graph)
- Bathing a severely malnourished child
- Giving prescribed antibiotics and other medications and supplements
- Caring for the eyes
- Monitoring pulse, respirations, and temperature and watching for danger signs
- Completing and interpreting the Daily Care page, Monitoring Record, and Weight Chart of the CCP

Monitoring and Problem Solving

- Identifying problems by monitoring:
 - Individual patient progress, weight gain and care
 - Overall weight gain on the ward
 - Patient outcomes (such as recovery, referral, death)
 - Case-fatality rate for the ward
 - Case management practices
 - Food preparation, ward procedures, and hygiene
- Investigating causes of problems
- Determining solutions appropriate for causes
- Conducting a problem-solving session with a group

Involving Mothers in Care

- Encouraging involvement of mothers in hospital care, and
- Preparing mothers to continue good care at home, including proper feeding of the child and stimulation using play
- Giving complete discharge instructions

Objectives for clinical practice 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 ward(s)

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

Day 2: Clinical Signs

- Observe children with clinical signs of severe malnutrition
- Look for signs of severe malnutrition
- Weigh and measure children
- Look up weight-for-height SD scores
- Identify children who are severely malnourished

Day 3: Initial Management

- Observe initial management of severely malnourished children
- Identify clinical signs of severe malnutrition, hypoglycaemia, hypothermia, shock, dehydration
- Practise using dextrostix
- Practise filling a CCP during initial management
- Assist in doing initial management, if feasible, such as:
 - Taking rectal temperature
 - Giving bolus of glucose for hypoglycaemia
 - Warming child
 - Giving first feed

Day 4: Flexible half day

If desired, additional clinical practice may be included on this day. This may also be a suitable time to observe a teaching session with mothers or a play session.

Day 5: Initial Management and Feeding

- Observe and assist in doing initial management, if feasible, including:
 - Identify signs of possible dehydration in a severely malnourished child
 - Measure and give ReSoMal
 - Monitor a child on ReSoMal
 - Determine antibiotics and dosages
- Observe nurses measuring and giving feeds
- Practise measuring, giving, and recording feeds

Day 6: Feeding

- Review 24-Hour Food Intake Charts and plan feeds for the next day
- Determine if child is ready for F-100
- Continue to practise measuring, giving, and recording feeds

Day 7: Daily Care

- Keep CCPs on children observed and cared for
- Participate in daily care tasks, as feasible:
 - Measure respiratory rate, pulse rate and temperature
 - Administer eye drops, antibiotics, multivitamins; change eye bandages, etc.
 - Weigh child and record (on Daily Care page and on Weight Chart of CCP)
 - Observe and assist with bathing children (unless not feasible because of scheduling)
- Assist with feeding (continued practice)
- Monitor ward using checklist (if time allows)

Additional Objectives

- Observe teaching session with mothers
- Observe play session

ANNEX

Equipment and supplies needed for a severe malnutrition ward

Ward Equipment/Supplies

Dextrostix

Running water

Thermometers (preferably rectal and low-reading)

Child weighing scales (must be functioning correctly)

Items of known weight for checking scales

Board for measuring length

Pole of known length for checking accuracy

Stadiometer (to measure standing height)

Haemoglobinometer

Supplies for IV:

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

Sticky tape

Syringes (50 ml for feeds)

Syringes (2 ml for drugs, 5 ml for drawing blood, 10 ml)

Sterile needles

Eye pads

Bandages

Gauze

Supplies for blood transfusion:

Blood packs

Bottles

Syringes and needles

Other blood collecting materials

Blankets or wraps for warming children

Incandescent lamp or heater

Wash basin for bathing children

Safe, homemade toys

Clock

Calculator

For hygiene of mothers and staff

Toilet and hand washing facilities

Soap for hand washing

Place for washing bedding and clothes

Method for trash disposal

For reference and record keeping

Copy of *Management of severe malnutrition: a manual for physicians and other senior health workers* and relevant tables such as:

Weight-for-Height Reference Card

F-75 Reference Card

F-100 Reference Card

Antibiotics Reference Card

Suitable forms for record keeping, such as the CCP (Critical Care Pathway) or other forms requesting similar information (weight charts, monitoring records, etc.)
24-Hour Food Intake Charts

Kitchen Equipment/Supplies

Dietary scales able to weigh to 5 g

Electric blender or manual whisks

Large containers and spoons for mixing/cooking feed for the ward

Method of cooking

Feeding cups, saucers, spoons

Measuring cylinders (or suitable utensils for measuring ingredients and leftovers)

Jugs (1-litre and 2-litres)

Refrigeration

For making 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

Foods similar to those used in homes (for teaching/use in transition to home foods)

Pharmacy Equipment/Supplies

Pharmaceutical scales

WHO ORS for use in making ReSoMal (or commercial ReSoMal)

Mineral mix (prepared as in Appendix 4, page 53 of manual) or

Combined Mineral Vitamin Mix (CMV)

Electrolytes and minerals:

Potassium chloride

Tripotassium citrate

Magnesium chloride

Zinc acetate

Copper sulphate

Iron syrup (e.g., ferrous fumarate)

Multivitamin without iron

Folic acid

Vitamin A (high potency syrup or 100 000 / 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 (dextrose)

Ringer's lactate solution with 5% glucose*

0.45% (half-normal) saline with 5% glucose*

*If either of these is used, sterile potassium chloride (20 mmol/l) should be added if possible.

0.9% saline (for soaking eye pads)

Sterile water for diluting
Vaccines (BCG, OPV, DPT, and Measles)

Drugs (See formulations listed on Antibiotics Reference Card)

Amoxicillin
Ampicillin
Benzylpenicillin
Chloramphenicol
Cotrimoxazole
Gentamicin
Metronidazole
Nalidixic acid

Mebendazole, albendazole and/or other drugs for treatment of worms
(as on page 32-33 of manual)

Tetracycline or chloramphenicol eye drops
Atropine eye drops

For skin

Gentian violet
Potassium permanganate
Zinc-boric ointment
Petroleum jelly ointment
Nystatin ointment or cream (for Candidiasis)
Paraffin gauze (tulle gras)

Laboratory resources accessible if needed

TB tests (x-ray, culture of sputum, Mantoux)
Urinalysis
Stool culture
Blood culture
Cerebrospinal fluid culture

For further information, please contact:

Department of Nutrition for Health and Development
World Health Organization
20, Avenue Appia
CH-1211 Geneva 27, Switzerland

Fax: +41 22 791 4156

Website: <http://www.who.int/nut/publications>