Facilitator Guide
Module 8: Nutrition and Malnutrition

Objectives of the station
• Plan and develop measures to assess the nutritional status of populations displaced by disasters, and to ensure optimal nutritional status in such contexts.
• Implement feeding programs adapted to cultural characteristics and to the nutritional status of displaced populations.
• Identify the clinical symptoms of the different types of malnutrition.
• Determine the severity of malnutrition.
• Calculate the anthropometric indexes in infants and older children.
• Identify the clinical symptoms of iron deficiency anemia.
• Identify the clinical symptoms of micronutrient deficiencies.
• Give appropriate treatments for the different types and levels of malnutrition.
• Give appropriate management to prevent and treat micronutrient deficiencies.
• Classify the nutritional status according to the variables included in the IMCI guidelines.

Format of presentation
Discussion of clinical cases

Duration
60 minutes

Material
• Classroom or conference room with a sufficient number of chairs in a semicircular arrangement
• Enough blank sheets of paper, and pencils or pens for handing out to the participants.
• Scale for infants; scale for older children; measuring tape or similar
• Measuring tape and/ or specific tape for measuring brachial perimeter using color-coding
• Graphs with weight-for-height z-scores
• Clinical scenario(s)/ case(s) for facilitator
• Printed clinical scenario(s)/ case(s) for participants
• If information from clinical cases will be shown (photos, data, etc.):
  - Slides/ audiovisual material on clinical cases
- Slide equipment (projector, computer, etc.)

**Notes for the instructor**

Before starting the activity with each group, check that the material needed is available. Explain the educational objectives of the station.

During the whole activity the facilitator must encourage the participation of all students in the group, and coordinate the discussion of cases being discussed. If necessary, the facilitator can make questions directly to those students that do not participate spontaneously.

The instructor can use a board or flip chart to write the group’s conclusions for each problem that has been discussed or appoint a recorder from the group to do this. There is a common initial scenario for all cases or problems posed in the practice station. Students will have to solve each one of the situations and explain their diagnoses and interventions. Clinical situations must be used to perform the anthropometric measurement techniques if material needed is available.

**Initial Scenario**

You have been selected by the Secretariat of Health to deliver health care to refugees from a region of the country affected by severe drought and civil unrest between a rebel army and the government. Over 10,000 people have moved into a refugee camp. Many of these people lived in extreme poverty before coming to the camp. An elevated prevalence of malnutrition and specific shortages can be predicted. The information obtained regarding food products typically eaten by the affected population shows a predominance cassava in the daily diet, with a poor intake of dairy products, meat, fish and fresh fruit. Children in the camp are experiencing frequent respiratory and gastrointestinal infections.

**Case 1**

1) What information do you need to get from health professionals within the area to implement feeding programs in this population?

Response:

- Demographic data from the population living in the region affected by the disaster.
- Prevalence of malnutrition and specific deficiencies detected in the population before the disaster.
• Active previous feeding programs.
• Food products that were most frequently included in the diet before the disaster.
• Identification of most vulnerable populations (children less than 5 years old; children separated from their families or communities; pregnant or breast-feeding women; families economically supported by women; physically or mentally disabled individuals; chronically ill individuals; and elderly people).
• Immediate availability of food, and ready to feed therapeutic food (RUTF) as well as other necessary resources for the feeding process (fuel, kitchen tools, etc.).
• Cultural preferences regarding different food types.
• Safety guaranteed within the region and camps.
• Description of the previous general sanitary and vaccination status of the population.

2) How is the population’s current nutritional status determined?
Response:
The nutritional status in children less than 5 years old can be used to estimate the global nutritional status of the affected population, thus determining the population’s nutritional needs. Therefore, a rapid assessment can be performed measuring the middle upper arm circumference (MUAC) in a significant number of children 6 months to 5 years old.

3) What initial interventions may be applied?
Response:
• Encourage breast-feeding. WHO suggests mothers to breast-feed their children at least until they are 2 years old. This is even more important during disaster situations in which food resources are limited. Moreover, artificial feeding in infants during these situations require elements that are limited, such as fresh water, fuel, containers, clean areas to prepare bottles, as well as the continuous supply of artificial milk.
• Give nutritional supplements to vulnerable groups, particularly mothers who are breast-feeding.
• Provide safe, clean water and appropriate sanitation services.

4) What micronutrient deficiencies would you expect to find in the pediatric population?
Response:
• Poor meat, fish, and egg intake can be associated with iron deficiency (ferropenic anemia) and zinc deficiency.
• Patients may have signs of beriberi or peripheral neuropathy due to the predominance of cassava or polished white rice in their diet.
• No vegetables or fruits in a child’s diet can be associated with vitamin C and vitamin A deficiencies.
• It is also possible to observe calcium deficiency due to the lack of available dairy products.

Case 2
A 3 year old boy (insert name) comes to the clinic where you are seeing children. His mother says that her son drinks fluids only, and refuses to eat the porridge that she prepares for him. The patient has palmar pallor and his hair is reddish and sparse and he has a diffuse rash. His abdomen is distended with hepatomegaly. There is edema in both feet. MUAC is 110 mm. He has no respiratory or gastrointestinal symptoms or fever.

1) How would you classify this child’s nutritional status and why?
Response: Acute Severe malnutrition with severe anemia based on his bilateral pedal edema and MUAC <115 mm, and pallor of palms.

2) His weight is 7.9 kg, and his height is 80 cm so he has a W/H of 72%. Does this mean he does not have severe acute malnutrition?
Response: Despite the weight/height index of 72% not indicating severe malnutrition, the presence of edema and the MUAC <115 mm both indicate severe acute malnutrition.

3) What clinical signs suggest Kwashiorkor in this child?
Response: Edema, hair changes, rash, hepatomegaly.

4) What is the immediate next step?
Response: This patient should be given an appetite test to determine if he can be managed in the ATFC or must be admitted to the ITFC.
Scenario Continued:
The child has no interest in eating the RUTF that was provided during his appetite test so he is admitted to the ITFC. When he is admitted, an otitis media is diagnosed.

5) During the stabilization nutrition phase how many Kcal/kg/day should he receive and how often should he be fed. What other conditions should be considered?
Response:
• 100 Kcal/kg/day; meals every 3 hours (8 meals a day) of F25 product.
• Treat with antibiotics (amoxicillin) recognized otitis and any other bacterial infections (pneumonia, impetigo)
• Check for measles vaccination status
• Screen for signs of xerophthalmia Vitamin A deficiency
• Consider TB and HIV

6) In the ITFC he is improving and has a better appetite. After 7 days you decide to advance him to the transition phase. How should he be managed?
Response:
• On day 8 treat for intestinal worms mebendazole or Albendazole
• Give RUTF 130/kg/day in 6 meals per day for 1-5 days
• Iron supplements should not be given initially to avoid complications. Once the initial phase is over, 3 mg/kg per day of iron (plus 0.4 mg/day of folic acid) is given for 3 months. If possible, check progress using Hb level.

7) What criteria should be used to transfer the child to home and an ATFC?
Response:
• Return of appetite
• Ascending weight curve on 2 weight measurements
• Absence of edema
• No medical complications needing treatment

8) His mother brings him back to the ATFC weekly for follow up visits and he has been followed for 4 weeks. What criteria should be used to discharge him from the program?
Response:
Absence of edema for at least 1 week and
• MUAC>115 on 2 consecutive visits and
• W/H z score > -2 on 2 consecutive visits

Case 3
An 18-month-old girl (insert name) is brought to the health care center to be evaluated for cough. There are no danger signs and she has fast breathing (RR 56) but no chest indrawing. She is not febrile. She does not have diarrhea and there are no signs of dehydration and she does not have edema. Her weight is 7 kg, and her height is 73 cm. Both conjunctives are dry, and show gray spots. Her palms are slightly pale.

1) What is her W/H z score?
Response:
Between -2 and -3

2) What would you expect her MUAC to be?
Response:
Between 115 and 125 mm

3) What degree of malnutrition is documented and micronutrient deficiencies are likely?
Response:
The girl (name) presents with complicated moderate acute malnutrition (weight/height z score between -2 and -3) with, mild anemia suggesting iron deficiency and dry cornea/Bitot's spots suggesting vitamin A deficiency. She also has clinical pneumonia.

4) The girl (name) passes an appetite test taking ½ of a sachet well. How should she be managed?
Response:
• She should be admitted to an ATFC and be treated for her pneumonia with 5 days of amoxicillin
• She should be immunized against measles as her vaccination card does not document that she received this vaccination
• She should receive 100,000 IU of vitamin A
• She should be assessed for TB and HIV
• She should get 3 sachets a day of RUTF for 4-6 weeks
• After 1 week she should get therapy for worms medendazole or Abendazole
• After 1 week she should start on iron (3mg/kg/day) and multivitamin therapy for at least 3 months
• If there is a high prevalence of Bilharziosis/ shistosomiasis give praziquantel 40 mg/kg as a single dose.

Case 4
A 45-day-old female infant (insert name) is brought to the health care center. The infant was born via an uneventful vaginal delivery after a full-term gestation. Birth weight: 3,000 kg; birth height: 49 cm. She is exclusively breast-fed. Her mother is worried because she has to breast-feed her baby every 2 hours. Her current weight is 4,500 kg, and her height is 53 cm. Her physical exam is normal.

1) What is the diagnosis?
Response:
The nutritional status of the infant is normal. Height and weight are progressing well (increase in weight is close to 30 g/day).

2) What is the appropriate next step?
Response:
The mother should be reassured and counseled that the frequency of feedings is normal. The baby is well nourished, and does not require artificial milk. Assess breast-feeding technique. Counsel against the use of bottles and, if possible, of pacifiers. The latter, at least until breast-feeding is well established. Recommend that the mother eat as well as possible, and drink plenty of fluids. Prescribe a multivitamin supplement (vitamin A, C, and D). No prescription for ferrous sulphate is needed because the infant is breast-feeding exclusively, and human milk provides iron with high bioavailability.

Case 5
A 1 month old girl (insert name), who was born at home, comes to the clinic because her mother is having difficulty breastfeeding. She has been giving the baby broth to help her feed but she is too weak to suck. She is afebrile and has no cough or diarrhea. There are no signs of local infection. Her height is 50 cm and her weight is 2.350 Kg. Her birth weight was 2.300 kg. There is no edema of the feet.
1) What is (name’s) W/H z score?
Response:
Less than -3

2) What is your management plan?
Response:
Admit to an ITFC and breast feeding counseling to reestablish adequate nutrition. Support mother’s nutrition. Consider formula supplementation if available during transition back to exclusive breastfeeding.

3) What is the criteria for transfer home and to an ATFC?
Response:
Weight gain of 10-15 g/kg/day for 5 consecutive days without need for treatment of any serious bacterial infection.

4) When can (name) be discharged from the ATFC?
Response:
When she is breastfeeding well and her W/H z score is greater than -2 on 2 consecutive weekly visits and she is growing appropriately on her growth curve.

Case 6
A 4-year-old boy (insert name) is brought to the health care center. He was diagnosed with tuberculosis by means of a positive skin test, and has had contact with an infected adult; however, he has not been treated due to lack of medication. Upper arm circumference is 120 mm. He does not have a fever, cough, or diarrhea.

1) What is the nutritional status of (name)?
Response:
He has moderate acute malnutrition because his MUAC is between 115 and 125 mm.

2) The boy weighs 10.5 kg and his height is 91 cm. Weight/ height ratio is 75%.
What is his W/H z score?
Response:
His z score is between -2 and -3.
3) How should (name) be managed?

Response:

• (Name) should be admitted to an ATFC and receive 4 sachets a day of RUTF.
• If isonicid therapy against tuberculosis is started, it is necessary to guarantee that the patient is taking pyridoxine supplement or pyridoxine-rich food products (whole grains, nuts, meat, dairy products, and eggs), because isonicid is a pyridoxine-antagonist and can cause pyridoxine deficiency. If administration of drugs cannot be guaranteed, do not start therapy, as incomplete therapy can result in the emergence of antimicrobial resistance.
Auxiliary materials

WHO growth charts

**Weight-for-length GIRLS**
Birth to 2 years (z-scores)

**Weight-for-length BOYS**
Birth to 2 years (z-scores)
Weight-for-Height GIRLS
2 to 5 years (z-scores)

Weight-for-height BOYS
2 to 5 years (z-scores)