

# ALGORITHM FOR MANAGEMENT OF MALNUTRITION IN CHILDREN 6 MONTHS–14 YEARS OLD

ASK	LOOK AND FEEL	CRITERIA	CLASSIFICATION	TREATMENT/CARE
<p><b>Ask mother or caregiver or refer to records:</b></p> <ol style="list-style-type: none"> <li>Has the child lost weight in the past month/since the last visit?</li> <li>Has the child had:               <ol style="list-style-type: none"> <li>A cough for more than 21 days? (This may be a result of HIV-related chronic lung disease such as lymphocytic interstitial pneumonia [LIP] or bronchiectasis.)</li> <li>Active tuberculosis (TB) (on treatment)?</li> <li>Diarrhoea for more than 14 days?</li> <li>Another chronic opportunistic infection (OI) or malignancy?</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li><b>Look for severe visible wasting:</b> <ul style="list-style-type: none"> <li>Loss of muscle bulk on arms, shoulders, buttocks, and thighs, with visible rib outlines</li> <li>Sagging skin on buttocks</li> </ul> </li> <li><b>Check for oedema</b> (swelling) in both feet or base of spine.</li> <li><b>Measure child's weight (kg) and height (cm)</b> and find weight for height (WFH) using 2006 WHO child growth standards.</li> <li><b>Measure mid-upper arm circumference (MUAC).</b></li> <li><b>Look at the shape of the curve on the growth chart.</b> <ul style="list-style-type: none"> <li>Has the child lost weight since the last visit? (Measure again to confirm current weight.)</li> <li>Is the growth curve flattening?</li> <li>Is the child gaining weight?</li> </ul> </li> </ol> <p style="text-align: center;">           Weight loss             Growth curve flattening             Weight gain  </p>	<p><b>Bilateral pitting oedema +++</b> (both feet and/or legs are swollen, and the skin remains indented when pressed with the thumb)</p> <p><b>OR</b></p> <p>WFH &lt; -3 z-score</p> <p><b>OR</b></p> <p>BMI for age</p> <p>10–14 years: ≤ -3 z-score</p> <p><b>OR</b></p> <p>MUAC</p> <p>6–59 months: &lt; 11.5 cm            5–9 years: &lt; 13.5 cm            10–14 years: &lt; 16.0 cm</p> <p><b>AND</b></p> <p>Does not pass an appetite test</p>	<p><b>Severe acute malnutrition (SAM)</b></p> <p><b>With medical complication</b> (WFH &lt; -4 z-scores, shock, anorexia, intractable vomiting, convulsions, lethargy, lower respiratory tract infection, high fever, severe anaemia or dehydration, hypoglycaemia, hypothermia, pneumonia, TB) or <b>no appetite</b></p>	<p><b>Inpatient treatment</b></p> <p><b>Follow Nutrition Care Plan C1 (red).</b></p>
		<p>6–59 months: WFH or BMI for age between -3 and -2 z-scores</p> <p><b>OR</b></p> <p>MUAC</p> <p>6–59 months: ≥ 11.5–&lt; 12.5 cm            5–9 years: ≥ 13.5–&lt; 14.5 cm            10–14 years: ≥ 16.0–&lt; 18.5 cm</p>	<p><b>Moderate/mild malnutrition (MAM)</b></p> <p><b>Poor weight gain</b></p>	<p><b>Follow Nutrition Care Plan B (yellow).</b></p>
		<p>Weight gain parallel to or higher than median growth curve</p> <p>WFH ≥ -2 z-score</p> <p><b>OR</b></p> <p>MUAC ≥ 12.5 cm</p>	<p><b>Normal</b></p> <p><b>Growing appropriately</b></p>	<p><b>Follow Nutrition Care Plan A (green).</b></p>
		<p>Chronic lung disease, TB, persistent diarrhoea, or other chronic opportunistic infection or malignancy</p>	<p><b>Condition with increased nutritional needs</b></p>	<p><b>Follow Nutrition Care Plan B (yellow).</b></p>

# Nutrition Care Plan C1: Inpatient Care of Children with SAM and Medical Complications

## 1. Stabilisation phase (4–7 days)

- Admit and treat all complications according to WHO and Integrated Management of Childhood Illness (IMCI) protocol.
- Provide all medications as recommended in the national Integrated Management of Acute Malnutrition (IMAM) Guidelines.
- Counsel caregiver on **HIV testing** and refer child for testing if status is unknown) and ART assessment.
- If child is **on ART and losing weight**, refer as needed for counselling on ART adherence, drug-related side effects (e.g., vomiting, abdominal pain, diarrhoea, poor appetite, taste changes), opportunistic infections (e.g., diarrhoea, TB), immune reconstitution syndrome, late ART-related side effects (lactic acidosis signs such as abdominal pain, vomiting, or fast breathing), treatment failure if on ART > 6 months (check CD4), and lipodystrophy.
- Encourage mother to continue breastfeeding a child still on the breast, between and before every meal and on demand.
- Begin phased feeding of **F-75 therapeutic milk** based on weight according to Annex 20 of the national IMAM Guidelines. If the child is not too ill to eat, feed small regular feeds (e.g., 43 ml/kg every 3 hours or 8 feeds of 43 ml/kg each per day. If the child is too ill to eat or has oedema, feed less food more frequently, e.g., 11 ml/kg every 2 hours. Demonstrate and support sip feeding when necessary
- If child is dehydrated, use **ReSoMal** to rehydrate according to national IMAM guidelines.
- Give a first dose of vitamin A according to age if child has not received a dose in the past month.
- Test and treat for malaria following IMCI protocol.
- Check Child Health Passport for immunizations and complete if necessary (especially for measles).

## 2. Transition phase

- If child has no serious medical complications and bilateral pitting oedema is subsiding, give an appetite test on day 2–3 of treatment by offering ready-to-use therapeutic food (RUTF) by weight according to the table below. Most children with good appetite will eat the required amount in less than 15 minutes.

<b>Child's weight (kg)</b>	3.0–4.0	4.0–6.9	7.0–9.9	10.0–14.9	15.0–29.0
<b>Amount of 92 g sachet</b>	$\frac{1}{8}$ – $\frac{1}{8}$	$\frac{1}{8}$ – $\frac{1}{8}$	$\frac{1}{8}$ – $\frac{1}{2}$	$\frac{1}{2}$ – $\frac{1}{3}$	1

- If child passes the appetite test, transition to RUTF and/or F-100 therapeutic milk. Give RUTF in the amounts in the table below, according to weight. Continue number, timing, and volume of feeding as in the stabilisation phase. Give child drinking water with RUTF and between feeds.

Weight (kg)	3.5–3.9	4.0–5.4	5.5–6.9	7.0–8.4	8.5–9.4	9.5–10.4	10.5–11.9	12.0–13.5	> 13.5
Sachets/day	1.5	2	2.5	3	3.5	4	4.5	5	Based on 200 kcal/kg/day

- If child cannot eat the food (e.g., because of anorexia or vomiting), continue with F-75 as in the stabilisation phase, fed by nasogastric tube if necessary. When the child finishes 50% of the RUTF, gradually reduce and then stop the F-75 and give RUTF and safe water only.
- Monitor weight gain (child should gain approximately 5 g/kg/day).
- If child develops complications, return to stabilisation phase and provide appropriate medical care.
- If child is not eating RUTF, give ferrous sulphate tablets following MOHSS protocol.
- Deworm child with Albendazole (200 mg for children 12–23 months old and 400 mg for children > 24 months old) if not done in the past 6 months.
- If child is HIV positive or born to an HIV-positive mother, provide Cotrimoxazole according to national ART guidelines.

## 5. Transition to Nutrition Care Plan C2 (Outpatient)

### When:

- All medical complications are treated and stabilised.
- Oedema subsides from +++ to ++ or + or none.
- Child has **appetite** and can eat at least 75% of RUTF at each meal in a day.
- Child continues to gain weight (> 5 g/kg/day).
- Caregiver is willing and able to provide home management and bring the child to the clinic for review every 2 weeks.
- **Clinic has enough RUTF in stock to give caregiver for 2 weeks** (see table below).

### Number of sachets for 2 weeks, by child's weight

Weight (kg)	3.5–3.9	4.0–5.4	5.5–6.9	7.0–8.4	8.5–9.4	9.5–10.4	10.5–11.9	12.0–13.5	> 13.5
# of sachets	22	28	36	42	50	56	64	70	Based on 200kcal/kg/day

**Then:**

- Refer child to an outpatient therapeutic program (OTP) for weekly follow-up.
- If the child does not have access to an OTP for weekly follow-up, finish inpatient treatment (2–6 weeks) until WFH is  $-1$  z-score or  $\geq 5$  percent of the admission weight if admitted using MUAC.

## Nutrition Care Plan C2: Outpatient Care of Children with SAM and No Complications

### 1. First visit

- Take a medical history and do a physical examination.
- Give child an appetite test by offering RUTF by weight according to the table below. Most children with good appetite will eat the required amount in less than 15 minutes.

<b>Child's weight (kg)</b>	3.0–4.0	4.0–6.9	7.0–9.9	10.0–14.9	15.0–29.0
<b>Amount of 92 g sachet</b>	$\frac{1}{8}$ – $\frac{1}{8}$	$\frac{1}{8}$ – $\frac{1}{8}$	$\frac{1}{8}$ – $\frac{1}{2}$	$\frac{1}{2}$ – $\frac{1}{3}$	1

- Supply **RUTF** for 2 weeks according to child's weight (see table below).

#### Number of sachets for 2 weeks, by child's weight

<b>Weight (kg)</b>	3.5–3.9	4.0–5.4	5.5–6.9	7.0–8.4	8.5–9.4	9.5–10.4	10.5–11.9	12.0–13.5	> 13.5
<b># of sachets/day</b>	1.5	2	2.5	3	3.5	4	4.5	5	Based on 200kcal/kg/ day
<b># of sachets for 2 weeks</b>	22	28	36	42	50	56	64	70	

- Advise caregiver to let child finish the daily ration each day before giving any other food. If mother is breastfeeding, advise her to give RUTF after breastmilk. Advise caregiver to give child safe drinking water after the RUTF and not to mix RUTF with liquids, which can help bacteria growth. Stress that RUTF is a medicine vital for the child's recovery and should not be shared.
- Treat with Amoxicillin according to IMCI guidelines.
- Counsel caregiver on HIV testing and refer for testing if the child's status is unknown and for ART assessment.
- Make appointment for child to return in 2 weeks for a medical check-up, appetite test, and supply of RUTF.

### 2. Second visit

- On second week of treatment, **deworm** child with Albendazole (oral) (200 mg for children 12–23 months old and 400 mg for children > 24 months old) if not done in the past 6 months.
- Treat any medical complications according to MOHSS recommendations

- If child has not received vitamin A in the past 6 months, give a dose of **vitamin A** according to the child's age. (50,000 IU for children < 6 months old, 100,000 IU for children 6–<12 months old, and 200,000 IU for children 1–5 years old).
- Check Child Health Passport for immunizations and complete if necessary (especially for measles).
- If child was not treated for malaria during inpatient management of SAM, test and treat for malaria according to national treatment protocol.
- Counsel caregiver on HIV testing and refer for testing if child's status is unknown and ART assessment.
- If child is on ART and losing weight, refer as needed for counselling on ART adherence, ART-related side effects (e.g., vomiting, abdominal pain, diarrhoea, poor appetite, taste changes), opportunistic infections (e.g., diarrhoea, TB), immune reconstitution syndrome, late ART-related side effects (late acidosis signs such as abdominal pain, vomiting, or fast breathing), treatment failure if on ART > 6 months (check CD4), and lipodystrophy.
- Supply RUTF for 2 weeks according to the child's weight.
- Counsel caregiver to encourage the child to eat home foods, but only after the child finishes the entire day's RUTF ration.
- Instruct caregiver to return in 2 weeks, bringing back the empty RUTF packets so they can be counted to assess how much the child has eaten.

### **3. Transition to Nutrition Care Plan B when child**

- Has WFH or BMI for age < -2 z-score
- Has had no oedema for 2 consecutive weighings
- Has appetite
- Continues to gain weight (> 5 g/kg/day).
- Can eat home foods
- Is clinically well and alert and has no medical complications

### **4. Refer child to a medical or clinical officer immediately if child**

- Is not gaining weight ( $\geq 5$  g/kg/day) or has lost weight for more than 2 consecutive weighings
- OR**
- Has worsening oedema
- OR**
- Has a deteriorating medical condition

## Nutrition Care Plan B: Outpatient Care of Children with MAM

### 1. Clinical management

- Take a **medical history** and do a **physical examination**. Check for treatable conditions and/or refer child for treatment or inpatient care when indicated.
- Counsel caregiver on **HIV testing** and refer for testing if child's status is unknown and ART assessment.
- If child is **on ART and losing weight**, refer as needed for counselling on ART adherence, drug-related side effects (e.g., vomiting, abdominal pain, diarrhoea, poor appetite, taste changes), opportunistic infections (e.g., diarrhoea, TB), immune reconstitution syndrome, late ART-related side effects (late acidosis signs such as abdominal pain, vomiting, or fast breathing), treatment failure if on ART > 6 months (check CD4), and lipodystrophy.
- **Deworm** child with Albendazole (200 mg for children 12–23 months old and 400 mg for children > 24 months old) if not done in the past 6 months.
- If child has not had **vitamin A** in the past 6 months, give 50,000 IU if child is < 6 months old, 100,000 IU if child is 6–12 months old, or 200,000 IU if child is > 12 months old.
- **Assess for anaemia** (palm pallor) and refer cases of severe anaemia for treatment as per IMCI guidelines.

### 2. Nutrition management

- Assess the adequacy and quantity of the child's food intake, the energy density of the food, and food access. Counsel caregiver appropriately. Counsel caregiver on how to improve the child's diet from household food and to give the child enough home food to provide 20%–30% percent more energy than the daily requirements of a healthy child of the same age (table 1).

Age (years)	ADDITIONAL energy needed	Examples of foods to give IN ADDITION to meals and snacks appropriate for the child's age
6–11 months	120–150 kcal/day	2 tsp. margarine or oil and 1–2 tsp. sugar added to porridge 3 times a day
12–23 months	160–190 kcal/day	1 extra cup of milk plus 2 coffee cups of <i>mahangu</i> /maize porridge 1 slice of bread with peanut paste
2–5 years	200–280 kcal/day	1 extra cup of milk plus 2 coffee cups of <i>mahangu</i> /maize porridge 1 slice of bread with peanut paste

Age (years)	ADDITIONAL energy needed	Examples of foods to give IN ADDITION to meals and snacks appropriate for the child's age
6–9 years	260–380 kcal/day	2 extra cups of milk plus 2 coffee cups of <i>mahangu</i> /maize porridge ½ child's handful of <i>ofukwa</i> or other nuts 1 slice of bread with peanut paste
10–14 years	340–400 kcal/day	1 adult handful of <i>mahangu</i> /maize paste 1 adult handful of <i>ofukwa</i> or other nuts 6 slices of bread with peanut paste

- Provide **fortified blended flour (FBF)** rations of 100–200 g/day to last for 2 weeks, according to the table below. Demonstrate to the caregiver how to use the FBF at home.

Age	g of FBF/day	g of FBF/month
6–59 months	100	3,000
6–9 years	150	4,500
10–14 years	200	6,000

- If child is symptomatic and losing weight, counsel caregiver to feed enough to provide 50%–100% additional energy (60–200 kcal/day), depending on the child's age, and most essential micronutrients. These meals should be small, contain fruits and vegetables, and be distributed throughout the day. Examples of foods that provide 60–200 kcal/day are 1 cup of milk or 1 mug of porridge (*okatete*) with groundnut paste, eggs or mopani worms *in addition to* regular meals and snacks.

#### 4. **FOLLOW-ON management**

- Assess child's appetite, eating patterns, and weight after 2 weeks.
- Educate caregiver on how to **improve the child's diet from household food**.
- Give child a **daily micronutrient supplement** with 1 RDA of vitamins and minerals according to doctor's prescription, unless FBF provides sufficient micronutrients.
- Counsel caregiver to 1) get the child weighed every month, 2) feed the child three meals a day plus snacks, 3) improve the home diet by preparing a variety of local foods, increasing energy density of porridge by adding nuts, mopani worms, sugar, eggs or milk, and giving

favourite foods, 4) manage HIV-related symptoms such as oral thrush, loss of appetite, nausea, anaemia, and diarrhoea through diet, 5) manage possible drug-food interactions, and 5) maintain good sanitation and hygiene, especially safe drinking water.

- Complete immunizations if necessary (especially for measles).
- Refer child for assessment if child has not gained weight for 3 or more months **OR** continues to lose weight for 2 or more months.
- Make appointment for review after 1 month to monitor changes in appetite, eating patterns, and weight.

**5. Transition to Nutrition Care Plan A when child**

- Has WFH  $\geq -2$  z-score for two consecutive weighings  
**AND**
- Has gained 10% of weight  
**AND**
- Has no clinical signs of symptomatic disease  
**AND**
- Is clinically well and alert

## Nutrition Care Plan A for Children with Normal Nutritional Status

- Refer child for HIV testing if status is unknown.
- Check mother's health (and need for ART) and care of other children.
- **If child is HIV positive**, find out whether he/she is on ART, adhering to treatment, and managing diet-related symptoms well. If not, **counsel** caregiver as needed.
- Counsel caregiver to feed the child enough to provide most essential micronutrients and 10% additional energy to meet the additional energy requirements caused by HIV infection (see table below). The food should be given in small meals distributed throughout the day.

Age	Regular meals and snacks		Foods to give IN ADDITION to meals and snacks appropriate for the child's age to provide 10% more energy
6–11 months	Continue to breastfeed (or replacement feed if AFASS criteria are met).	<p><b>6 months:</b> Breastmilk (or other milk if AFASS) plus soft porridge or well-mashed food 2 times per day</p> <p><b>7–8 months:</b> Breastmilk (or other milk if AFASS) plus at least 2/3 cup (250 ml) of mashed food 3 times per day</p> <p><b>9–11 months:</b> Breastmilk (or other milk if AFASS) plus finely chopped or mashed food 3 times per day plus 1 snack</p>	<p>1 mug of porridge or snack per day</p> <p>2 tsp. margarine or oil and 1–2 tsp. sugar added to porridge to increase energy density</p>
12–23 months	Continue to breastfeed (or replacement feed if AFASS criteria are met).	3 meals (at least 1 full cup) of chopped or mashed family foods plus 2 snacks per day	<p>1 mug of porridge or snack per day</p> <p>2 tsp. margarine or oil and 1–2 tsp. sugar added to porridge to increase energy density</p>
2–5 years	3 meals plus 2 snacks per day		<p>1 mug of porridge or snack a day</p> <p>1 cup of full cream milk or <i>oshikandela</i>, <i>omaere</i>, or <i>oshikundu</i></p>

6–9 years	3 meals plus 2 snacks per day	1 mug of porridge or snack a day 1 cup of full cream milk or <i>oshikandela</i> or <i>omaere</i> , or <i>oshikundu</i> 1 mashed average-size sweet potato
10–14 years	3 meals plus 2 snacks per day	1 mug of porridge or snack a day 1 cup of <i>oshikandela</i> , <i>omarere</i> , or <i>oshikundu</i>

- Counsel caregiver to 1) feed child a variety of foods from all the food groups, 2) get the child weighed monthly, 3) continue normal MCH follow-up (including immunizations, deworming, and micronutrient supplementation), 4) increase the energy density of the home diet, 5) manage symptoms and medicine-related side effects through diet, 6) maintain good sanitation and hygiene, especially safe drinking water, 7) manage child's diarrhoea at home following MOHSS protocol, and 8) seek prompt treatment of illnesses.
- Counsel caregiver on continued breastfeeding or replacement feeding and on complementary feeding according to national guidelines and age of child.
- If child has not received **vitamin A** within the past 6 months, give supplements every 6 months (50,000 IU for children < 6 months old, 100,000 IU for children 6–<12 months old, and 200,000 IU for children 1–5 years old).
- **Deworm** child with Albendazole (oral) (200 mg for children 12–23 months old and 400 mg for children > 24 months old) if not done in the past 6 months and repeat every 6 months thereafter.
- Make sure child has received all immunizations following MOHSS protocols.
- **Review child's progress every month.** Tell caregiver to return earlier if problems arise.

