# Malnutrition

## Antibiotic Rx & Recipes

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# Malnutrition

If a child is malnourished it means they lack the essential nutrients needed to sustain normal growth, energy, and health.

Malnutrition can disturb brain development in children.

Malnutrition weakens the immune system which leaves a child vulnerable to infections.

Infections in a malnourished child can kill.

Malnourishment is a contributing factor in ⅓ of all deaths in children under 5.

# Managing Malnutrition

Consists of two phases;

1. **Stabilisation Phase:** stabilise the child's condition. Treat acute medical issues and give nutrition in a way that the disturbed metabolic body will start functioning again.

2. **Rehabilitation Phase:** Help the child regain normal body weight quickly

# Cause of Collapse in Severely Malnourished Children

Severe infection (sepsis)

Severe Dehydration

Hypoglycaemia

Heart Failure, often due to severe anemia

# Signs of Infection

Signs of an infection, such as fever, are often absent in severely malnourished children because their immune system is so weakened.

What to look for :

- Lethargy
- Hypothermia
- Hypoglycaemia

# Antibiotic Use

**If no complications or specific signs of infection:**

Oral *co-trimaxazole* for 5 days

Child Under 8 kg - 120 mg - 2 times daily

8-15 kg - 240 mg - 2 times daily

**If a child is lethargic, hypothermic, or hypoglycaemic ( severely ill)**

*Gentamicin* 7.5mg/kg IM or IV once daily for 7 days (calculate carefully, usually between 15 - 60 mg) **and;**

*Ampicillin* 50 - 100 mg/kg/day IM or IV divided into **3 doses for 2 days - then change** to Oral *amoxicillin* or *ampicillin* for 5 days

Under 8 kg - 250 ( 500 mg) - 2 times daily;

# Antibiotic Use

If a child does not improve after 48 hours:

Reassess and add *chloramphenicol* 50 mg (-100) mg/kg IM or IV divided into 3 - 4 doses for 4 days

If the child is severely malnourished, *chloramphenicol* given by mouth may not be absorbed well and an injection might be better.

Under 8 kg - 62.5 - 125 mg - 3 times daily

8-15 kg - 125-250 mg - 3 times daily

# Dehydration and Diarrhea

**Signs of dehydration in severely malnourished children:**

- Dry mucous membranes
- Sunken fontanelle
- Reduced or absent urine output
- Altered consciousness, collapsed or fast pulse (may also be signs of sepsis or other severe illness)

**If Diarrhea is severe and not improving with good nutritional treatment:**

Give metronidazole 40 mg/kg 3 times daily for 7 days.

Under 8 kg - 50 -100 mg - 3 times daily

8 -15 kg - 100 - 200 mg - 3 times daily

# Treatment for Dehydration

**Give rehydration fluids orally** ( IV dangerous because it can over-hydrate and lead to heart failure and death)

**Use special ½ strength oral rehydration solution (ORS)**

Take one package ORS. Mix with 2 Litres ( 8 cups) of clean water instead of 1 litre.

Add 2 large tablespoons sugar (50g)

If possible, add 4 g potassium chloride

If you do not have access to ORS, use wheat salt solution (WSS) and prepare with one pinch of salt instead of two.

# Hypoglycaemia

**Prevention:** Feed a severely malnourished child every 2 hours. If you suspect hypoglycaemia mix 3.5 tablespoons clean water with 1 rounded tablespoon of sugar and feed to child.

**Treatment:** If a child is collapsed or has a disturbed conscious give a glucose IV. Take 1 ml/kg of a 50% glucose solution (or 2 ml/kg of 25% glucose solution). Prepare with a 10% glucose solution and give this as IV over 15 minutes.

**How to prepare 10% glucose solution:** mix 50% solution with 4x the amount of sodium chloride 0.9% or water for injection. OR; mix 25% glucose with 1.5 times the amount of sodium chloride 0.9% or water for injection.

# Anemia Management

1. Oral Folic Acid - 5mg - Once a day for 1 month
2. Do Not give iron (ferrous sulphate) for the first two weeks of treatment. Iron increases the risk of infection in severely malnourished children.

Start after the 2nd week of treatment:

Ferrous Sulphate 10 - 25 mg/kg/day for 3 months

Child under 8 kg - 50 mg - 1 (-2) times daily

8-15 kg - 100 mg - 2 times daily

3. Blood Transfusion - only give if there is indication of heart failure **with shock** due to anemia. Then, give 10 ml/kg whole blood over several hours (slowly)

# Vitamin and Mineral Deficiencies

Give **Vitamin A** to all children even if there are no clinical signs of deficiency.

First does the day you see the child, one the following day, and one after one week. Repeat one dose after 4 months.

Under 6 months - 50,000 Units

7-12 months - 100,000 Units

Over 1 year - 200,000 Units

If the family understands that food is more important than medicines, you may give multivitamins for 1 month. Try to find one that contains minerals, especially *zinc* and *copper*.

# Nutritional Management

If too much protein and energy food is given too early a child;s system will not be able to process it and he may develop heart failure.

## Children under 6 Months

Breastfeeding first choice - if not possible give **high energy milk mix 100 kcal/kg.** Divide this into 2-3 hourly feedings.

## Children over 6 months

Give child small portions of **Super-Flour every 2 hours**. Feeding has to continue overnight to avoid hypoglycaemia.

**Using high energy milk :** F-75 is specially mixed to meet the child's needs without overwhelming the body's systems in the initial stage of treatment. Use of F-75 prevents deaths. F-75 contains 75 kcal and 0.9 g protein per 100 ml. F-100 is for playing catch up once the child has stabilized and needs to gain weight.

# High Energy Milk

| Alternatives | Ingredient | Amount for F-75 | Amount for F-100 |
|---|---|---|---|
| **If you have dried skimmed milk** | Dried skimmed milk | 25 g | 80 g |
| | Sugar | 100 g | 50 g |
| | Vegetable oil | 30 g | 60 g |
| | Mineral mix* | 20 ml | 20 ml |
| | Water to make 1000 ml | 1000 ml** | 1000 ml** |
| **If you have dried whole milk** | Dried whole milk | 35 g | 110 g |
| | Sugar | 100 g | 50 g |
| | Vegetable oil | 20 g | 30 g |
| | Mineral mix* | 20 ml | 20 ml |
| | Water to make 1000 ml | 1000 ml** | 1000 ml** |
| **If you have fresh cow's milk, or full-cream (whole) long life milk** | Fresh cow's milk, or full-cream (whole) long life milk | 300 ml | 880 ml |
| | Sugar | 100 g | 75 g |
| | Vegetable oil | 20 g | 20 g |
| | Mineral mix* | 20ml | 20ml |
| | Water to make 1000 ml | 1000 ml** | 1000 ml** |

# Super Flour

| Alternatives | Ingredient | Amount for F-75 | |
|---|---|---|---|
| **If you have dried skimmed milk** | Dried skimmed milk | 25 g | |
| | Sugar | 70 g | |
| | Cereal flour | 35 g | |
| | Vegetable oil | 30 g | |
| | Mineral mix* | 20ml | |
| | Water to make 1000 ml | 1000 ml** | |
| **If you have dried whole milk** | Dried whole milk | 35 g | |
| | Sugar | 70 g | |
| | Cereal flour | 35 g | |
| | Vegetable oil | 20 g | |
| | Mineral mix* | 20 ml | |
| | Water to make 1000 ml | 1000 m/** | |
| **If you have fresh cow's milk, or full-cream (whole) long life milk** | Fresh cow's milk, or full-cream (whole) long life milk | 300ml | |
| | Sugar | 70 g | |
| | Cereal flour | 35 g | |
| | Vegetable oil | 20 g | |
| | Mineral mix* | 20 ml | |
| | Water to make 1000 ml | 1000 ml** | |

# Super Flour Recipe

Super flour is a nutritious mixture made from 3 kinds of cereals

- maize
- wheat
- pulse

Recipe

- 2 parts pulse (lentils, grams, peas, etc.)
- 1 part whole grain ( maize / rice)
- 1 part of an additional whole grain (wheat, millet or buckwheat)

# Super Flour Recipe

Preparation

- Pulses and grains need to be cleaned, roasted well (separately) and ground into fine flour
- The flour is stirred into boiling water and cooked for a short time
- The flour can then be stored in an airtight container for 1-3 months