

# **Nutritional Guideline for Tuberculosis (TB) Patients**

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## Introduction

Nutritional status is one of the most important determinants of resistance to infection. The wasting commonly found in patients with active TB is most likely the result of a combination of factors, including decreased appetite and subsequent food intake, and increased losses and altered metabolism associated with the inflammatory and immune response.

Effect of TB on the nutritional status are severe weight loss (loss of lean and fat mass), altered protein metabolism, micronutrient Deficiencies (such as Vitamins A, D, E, C; minerals zinc, selenium) and anaemia. Good nutritional status has an impact on “quality of life” and the ability to return back to normal life.

This guideline provides protocol for effective treatment of acute undernutrition which can easily be followed by health staff in provision of outpatient and inpatient care to the patients. This guideline will help to improve the case management and outcome among patients.

Nutritional support within TB programs may include the following components:

1. Nutritional assessment to determine nutritional status and necessary referrals or intervention
2. Nutrition education and counseling on symptom-management and improved dietary intake during and after TB treatment and microbial cure
3. Targeted micronutrient supplementation (e.g., vitamin B6)
4. Food support for treatment of malnutrition in TB patients
5. Food support as a safety net program to increase treatment adherence

### **1. Nutritional assessment to determine nutritional status and necessary referrals or intervention.**

#### *Nutrition screening of TB patients*

1. Take the weight and height of all patients except in pregnant women on the first visit
2. Calculate the Body Mass Index (BMI)
  - a.  $BMI = \text{Weight in kgs} / (\text{height in meters})^2$
3. Determine the nutritional status of the adult male, non pregnant women as follows:

<b>Classification</b>	<b>BMI (kg/m<sup>2</sup>) Principal cut-off points</b>
Severe undernutrition	< 16.0
Moderate undernutrition	16.0-16.99
Mild undernutrition	17.0-18.49
Normal	18.5-24.9
Overweight or obese	>=25.0

4. In children between 5-18 years use the BMI for age and sex charts to determine the nutritional status and for children below 5 years the weight for height growth chart provided by the Ministry of Health.

5. If weight and height can not be measured (ex- elderly with kyphosis) and in pregnant women, measure Mid Upper Arm Circumference (MUAC) to determine the current nutritional status
- MUAC < 19cm - Severe Undernutrition
  - MUAC 19-21.9cm - Moderate Undernutrition

**Treatment plan:**

It depends on the current nutritional status. Table below provides the management plan and the criterias for discharge from the particular programme. It is recommended to eat 5-6 meals per day. The 5-6 meals should also include the suggested **special diet**.

Nutritional status	Management plan	Discharge criteria
severe under nutrition	<ul style="list-style-type: none"> <li>TB patients with severe undernutrition need an extra <b>1200kcal</b> of energy per day.</li> <li>Suggested <b>special diet</b> in addition to normal diet per day</li> </ul> <p>Chicken egg fresh cooked - 1  Supplementary food - 100g  Rice parboiled cooked - 2 cups  Nuts (peanut / cashew etc.) - 60g</p> <p>It provides <b>1200kcal and 60g protein.</b></p>	<p>Once patients achieve a;</p> <ul style="list-style-type: none"> <li>BMI of 16, or</li> <li>MUAC 19cm (if BMI can not be taken, or with pregnant women), or</li> <li>W/H <math>\geq</math> - 3SD (if adolescents)</li> </ul> <p>They should be transferred to the schedule of treatment of moderate undernutrition</p>
Moderate under nutrition	<ul style="list-style-type: none"> <li>TB patients with moderate undernutrition need extra <b>700kcal</b> of energy</li> <li>Suggested <b>special diet</b> in addition to normal diet per day</li> </ul> <p>Chicken egg fresh cooked - 1  Supplementary food - 50g  Rice parboiled cooked - 1 cup  Nuts (peanut / cashew etc.) - 45g</p> <p>It provides <b>718kcal and 32g protein.</b></p>	<p>Once patients achieve a;</p> <ul style="list-style-type: none"> <li>BMI of 17, or</li> <li>MUAC 22cm (if BMI can not be taken, or with pregnant women), or</li> <li>W/H <math>\geq</math> -2SD (if adolescents)</li> </ul> <p>they should be transferred the Normal BMI schedule</p>
Normal BMI	TB patients with normal BMI need extra	Follow up continuously till they take

	<p>energy of <b>200kcal</b> and a total protein intake of approximately <b>75 - 100 g</b> per day.</p> <ul style="list-style-type: none"> <li>• Suggested special diet in addition to normal diet per day</li> </ul> <p>Chicken egg fresh cooked - 1 Peanut / cashew etc.) - 25g</p> <ul style="list-style-type: none"> <li>• It provides <b>215kcal and 13g protein.</b></li> </ul>	treatment
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### Outpatient follow up

- Patients should usually be followed up monthly. In the case of severe undernutrition fortnightly followup is recommended.
- It is also important to plot their weight gain as it gives a clear picture of progress made.
- Outpatient follow up should be coordinated with other clinic visits.
- If patients fail to gain weight within the first 2-4 weeks, reassess them.
- All patients who are not responding after three months should be reviewed by a Chestphysician.

### 2. Nutrition education and counseling on symptom-management and improved dietary intake during and after TB treatment and microbial cure

Nutrition education and counselling should be provided using the Food based dietary guidelines published by the Ministry of Health.

### 3. Targeted micronutrient supplementation (e.g., vitamin B6)

- A good multivitamin and mineral supplement providing 50% -150% of the recommended daily allowance, is needed since it will be most unlikely that a person with TB will be able to meet the increased requirements for vitamins and minerals with diet alone due to a poor appetite.
- All TB patients treated with Isoniazid should be given Vitamin B6

### 4. Food support for treatment of undernutrition in TB patients

Following food items can be used as supplementary food for severe and moderate under nutrition TB patients.

- Thripasha or any other available supplementary food