

## Moderate malnutrition: do we know how to manage it?

Prepared from 'Proceedings of the WHO/UNICEF/United Nations High Commissioner for Refugees Consultation on the Management of Moderate Malnutrition in children under 5 years of age'<sup>1</sup>

There are no recent international guidelines for the management of moderate malnutrition in spite of the fact that it:

- Increases the risk of death from common diseases and may result in severe acute malnutrition and/or severe stunting (both life-threatening conditions).
- Is likely to be associated with more nutrition-related deaths than severe malnutrition.

**Moderate malnutrition** (see Figure 1) includes all children with:

- moderate wasting: weight-for-height between  $-2$  and  $-3$  z scores of the WHO growth standards<sup>2</sup> *or*
- moderate stunting: height-for-age between  $-2$  and  $-3$  z scores.

Most of these children will be moderately underweight: weight-for-age between  $-2$  and  $-3$  z scores.

This paper summarised some of the findings from a WHO consultation on the management of moderate malnutrition. The overall conclusion is that more data are needed before international guidelines can be finalised. Some important findings and suggestions from the consultation are listed below.

## 1. Nutrient content of diets for moderate malnutrition

- Nutrient intakes must be sufficient to allow wasted children to make lean tissue (e.g. muscle) and stunted children to increase height and lean tissue. There is evidence that, with high-quality diets, catch-up height can occur in children older than 2 years and even in adolescents. But there is no evidence that other stunting-related deficits, such as cognitive deficits, can be corrected.
- Diets should have a nutrient density equivalent to F100, a low anti-nutrient content and provide enough energy to support the desired rate of weight gain.
- Wasted and stunted children will make excess fat if their diets provide too much energy but not enough of the nutrients needed to make lean tissue.
- For stunted non-wasted children height gain should be associated with just enough weight gain to maintain a healthy weight-for-height
- Diets should provide:
  - about 12-15% of energy from proteins. Higher protein intakes increase renal solute load and may decrease appetite.
  - at least 30% of energy from fat.

### Nutrient needs of moderately malnourished HIV+ children compared with moderately malnourished HIV- children

- The energy needs are higher by 20-30%.
- Percentage of energy from protein is the same.
- Micronutrient intakes are the same.
- Vitamin A supplementation and zinc supplements for children with diarrhoea are the same.

## 2. Diets for moderate malnutrition

Diets should:

- Include animal-source foods (e.g. meat, fish, milks, eggs).
- Be low in anti-nutrients (e.g. phytates) and fibre. Blended flours prepared with dehulled legumes are preferable to those with whole legume flour.
- Be low in salt.

Home-based processing such as fermentation, malting and soaking can improve nutrient availability and reduce the effects of anti-nutrients. Children fed diets with a high solute load (e.g. some high-energy diets) need to drink extra water. Breastmilk has a low solute load and should be given in preference to water when possible. Iron content of fortified foods should be at a level to prevent iron deficiency.



Figure 1. A malnourished toddler is given nutrient-rich Plumpy'Nut at Touching Tiny Lives, a non-profit organisation serving vulnerable children in Mokhotlong, Lesotho. (Credit: Touching Tiny Lives, Mokhotlong).

## 3. Food supplements for moderate malnutrition

Most feeding programmes for moderately malnourished children supply fortified blended foods (and oil and sugar). However diets based on blended foods may:

- Be high in anti-nutrients, particularly phytates.
- Provide no milk, which is important for growth.
- Contain too few micronutrients (even if fortified).
- Have a high bulk and viscosity (which limit intake).

There are plans by various agencies to:

- Increase the energy density and change the proportion of energy from fat.
- Add milk products.
- Dehull soybeans.
- Improve the fatty acid and micronutrient contents.

## 4. Dietary counselling for moderate malnutrition

- Relevant practical counselling can be effective in preventing and managing moderate malnutrition. However carers of moderately malnourished children usually receive the same dietary advice as carers of healthy children.
- Caregivers of moderately malnourished children need a reinforced approach that includes demonstrations, home visits and/or group meetings – advice should specifically reinforce the *quantity* of foods needed and promote age-appropriate friendly feeding practices.
- Infections and poverty are closely linked to moderate malnutrition so dietary counselling should be integrated with primary health care and community development programmes.

## References

1. Proceedings of the WHO/UNICEF/United Nations High Commissioner for Refugees Consultation on the Management of Moderate Malnutrition in children under 5 years of age.<sup>1</sup>  
*In Food and Nutrition Bulletin 30:3 pS464-474. 2009.*
2. WHO Child Growth Standards  
<http://www.who.int/childgrowth/standards/en>