

Combating Malnutrition: What Can Be Done?



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Undernutrition continues to be a public health crisis that kills millions of children each year. In addition to this tragic loss of life, in countries where there are great numbers of undernourished, the costs to society are high. Undernourishment under the age of two results in life-long consequences, including increased risk of death, disease, and poor cognitive development; lower school performance; reduced productivity; and increased risk of chronic disease later in life (Allen, 2001; Barker, 1998). Reduced cognitive ability—measurable in lower scores on IQ tests—leads to reduced productivity and earnings in adulthood. In addition, a society's health care system can become overburdened due to excess health expenditures related to undernutrition.

There are simple and cost-effective interventions that can prevent and treat undernutrition. However, not all approaches are effective against all types of undernutrition. Investments in the interventions that address the right kinds of undernutrition will maximize impact on preventing child deaths, or reducing loss of national productivity. This brief outlines the most prevalent forms of undernutrition in developing countries, the most cost-effective approaches to addressing them, and then matches each type of undernutrition to a correct approach.

There are two main forms of undernutrition: protein-energy malnutrition (PEM) and micronutrient deficiencies (see Table 1). These forms of undernutrition can be mild, moderate, or severe. More than 50 percent of childhood deaths are associated with undernutrition. However, the vast majority of these deaths are linked to mild and moderate cases of malnutrition, as opposed to severe undernutrition (Pelletier, 1995).

Protein-energy malnutrition

Protein-energy malnutrition (PEM), strictly defined, refers to deficiency of protein and other energy-yielding macronutrients (i.e., carbohydrates and fat). However, in practice, it essentially refers to body size measured by the so-called “growth indices.”

These indices provide standards for identifying PEM in an individual and for quantifying it in a population.

PEM is expressed as either acute or chronic malnutrition, which are classified as mild, moderate, or severe in comparison with international references. However, the etiologies of these two conditions are different. A child suffering from acute undernutrition is currently starving due to a lack of food or severe illness (e.g., diarrhea, pneumonia, AIDS), making her or him too thin (wasted) in relation to height. A child suffering from chronic undernutrition is experiencing, or has experienced, long-term or cumulative poor health and/or suboptimal diet, resulting in poor growth and short (stunted) height for her or his age. Wasting is determined through comparison with international reference standards of weight (kilograms) divided by height (centimeters); stunting is determined through comparison with international height standards for the child's age.

Wasting is far less common than stunting. Nonetheless, wasted children are in danger because in its severe forms it is associated with a very high risk of death. Stunting increases the risk of death as well, although to a lesser extent. Despite stunting having a lower mortality risk than severe wasting, however, more children die of less severe



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forms of malnutrition because the number affected is so much greater (Pelletier, 1995). In some countries more than half of children under the age of five are stunted.

Underweight, or low weight in relation to age, also is used to describe PEM, and it can reflect either or both acute or chronic undernutrition—without distinguishing between the two (Gibson, 2005). Usage of this less-precise term persists because weight is much easier to measure than height, and because growth monitoring programs rely on weight gain to detect and respond to growth failure before malnutrition develops.

Effective preventive and curative interventions

Prevention programs can address both stunting and acute malnutrition, but curative interventions address only acute malnutrition. Prevention programs focus on the “1000 days” from pregnancy through the second year of life because during this time growth and development are most rapid, infants and young children are most vulnerable to malnutrition, and stunting and that is not corrected will be largely irreversible later in life, resulting in cognitive and behavioral deficits, and lower adult productivity (Alderman et al. 2006).

Importantly, preventive intervention at the population or community level has a greater impact in reducing under-

nutrition prevalence than does treating undernourished individuals once they have become malnourished (Ruel et al., 2008). Nonetheless, when wasting is common—especially severe wasting—curative programs are essential to save the lives of children because the opportunity for prevention is past.

Except in times of crisis, curative interventions for wasting should be integrated with preventive interventions utilizing social and behavioral change communications to promote essential nutrition actions (ENA)¹ by mothers and other caregivers that are known to promote and protect growth. Unless mothers and caregivers practice these ENA neither wasting nor stunting rates will change. New cases of undernutrition simply will replace those who have been cured.

The following table provides a guide to preventive and curative interventions according to the types of malnutrition that they address, as well as the costs involved. All of the interventions described should be integrated into, and supervised by health services. For further guidance in the development and implementation of nutrition programming, visit <http://www.coregroup.org/component/content/article/119> for the “Nutrition Program Design Assistant” provided by the CORE group.

¹The Essential Nutrition Actions: Immediately from birth, exclusive breastfeeding for the first six months of life; continued breastfeeding with age-appropriate complementary feeding from six months to two years; ensuring adequate intake (including supplementation) of vitamin A, iron, and iodine.

Table I. Matching interventions to nutrition problems

| Type of Undernutrition | Preventive | | Curative/Recuperative | |
|----------------------------|--|---|---|---|
| | Intervention | Cost | Intervention | Cost |
| Acute • Moderate | Social and behavioral change communications, promoting infant and young child feeding practices and essential nutrition actions (ENA) Implementation mechanisms • Home visits to counsel mothers • Peer support groups ² to counsel mothers and build peer support for behavior change • Care groups: ³ A peer support strategy providing nutrition education through trained community volunteers • Growth monitoring and promotion (GMP)-: Monthly weight-gain monitoring to detect faltering growth identifies children with problems; improvements in weight-gain provide feedback to mother on success, as well as reinforce new practices | Nutrition counseling: \$6.12/child/year (Waters et al., 2006) GMP: \$0.11–9.26 per child per year (Griffiths et al., 1997) | Positive Deviance/Hearth (not appropriate for high food-insecurity settings) • Positive deviance inquiry in each community to determine successful feeding strategies practiced by “positive deviant” families with well-nourished children • “Hearth” nutrition education and rehabilitation sessions monthly for one year or more in each community | \$0.06–2.00/child/Hearth (McNulty, 2009) (Hearth monthly for one year or more) |
| | • Severe | Effective community-based preventive interventions typically prevent most severe cases (Mason et al.) | • Community management of acute malnutrition (CMAM)- using ready-to-eat therapeutic food (RUTF) for uncomplicated cases with appetite • Hospital-based therapeutic care for complicated or anorexic cases | \$200/child (Horton, 2010) |
| Chronic | Social and behavioral change communications (with food supplements depending on food security context) promoting infant and young child feeding practices and ENA. See above for details. | See above | | |
| Underweight | Social and behavioral change communications promoting infant and young child feeding practices and ENA. See above for details. | | Positive Deviance/Hearth (see above) If individual child fails to gain weight adequately for more than two months, or if severely underweight, refer to health services for assessment. | |

² LINKAGES Project. *Training of Trainers for Mother-to-Mother Support Groups*. Washington, DC: LINKAGES Project; 2003. Available at: <http://www.linkagesproject.org/media/publications/Training%20Modules/MTMSG.pdf>.
³ Laughlin M. *A Guide to Mobilizing Community-Based Volunteer Health Educators: The Care Group Difference*. Baltimore, MD: World Relief; 2004. Available at: <http://www.k4health.org/toolkits/pc-mnh/care-group-difference-manual-guide-community-based-volunteers-health-educators>.
⁴ Griffiths M, Dickin K, Favin M. *Promoting the Growth of Children: What Works. Nutrition Toolkit Module, Number 4*. Washington, DC: World Bank; 1996. Available at: <http://go.worldbank.org/CKQ154B1P0>.
⁵ Food and Nutrition Technical Assistance-2 (FANTA-2) Project. *Training Guide for Community-based Management of Acute Malnutrition*. Washington, DC: FANTA-2; 2008. Available at: <http://fanta-2.org/>; and Valid International. *Community-based Therapeutic Care: A Field Manual*. Oxford, United Kingdom: Valid International; 2006.

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