Breaking the Vicious Cycle of Illness and Malnutrition

Mothers around the world recognize that a child who is sick will have little or no appetite. Even a subtle change in eating or breastfeeding habits may be an early sign for a mother (grandmother, sibling, or other caregiver) that a child is not well. In developing countries, where the incidence of child illness is high and feeding practices may be poor, loss of appetite—or *anorexia*—is just one factor that can contribute to a vicious cycle of illness and malnutrition.

During illness a child may be too weak to eat, have trouble swallowing, or find it difficult to breastfeed because of a cough or blocked nose. Inefficient absorption of nutrients, loss of energy stores, and dehydration due to vomiting or diarrhea must be overcome. Even during a short illness, child growth often falters.

Repeated bouts of common illnesses—such as diarrhea, respiratory infections, malaria, or measles—undermine the overall nutritional status of infants and young children, which in turn undermines their immunity. Deficiencies in key micronutrients such as vitamin A and zinc weaken the body’s protective mechanisms against infection. In a single year the average child under 5 years old may be sick with diarrhea five times and experience acute respiratory infections (ARI) more than six times. For some children, *recovering* can be an almost continuous battle.

A cycle of illness and malnutrition can be deadly for vulnerable children, particularly those under two. *Appropriate feeding both during and after illness is critical not only for recovery from a current illness but to prevent a child from succumbing to this vicious cycle over time.*

Approximately half of all children who die from common illnesses would survive if they were properly nourished. The strength of this connection varies by disease as shown in box 1. Severely malnourished children are not the only ones in danger, although they are at highest risk. Eighty percent of nutrition-related deaths occur among mildly or moderately underweight children.

### Box 1. Child Deaths Attributable to Underweight

<table>
<thead>
<tr>
<th>Disease</th>
<th>Attributable %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diarrheal Disease</td>
<td>61 percent</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>52 percent</td>
</tr>
<tr>
<td>Malaria</td>
<td>57 percent</td>
</tr>
<tr>
<td>Measles</td>
<td>45 percent</td>
</tr>
<tr>
<td>All under five deaths</td>
<td>53 percent</td>
</tr>
</tbody>
</table>

More than 80 percent of malnutrition-related deaths occur in children who are mildly or moderately underweight.

*Source: Caulfield, 2004*

Optimal Behaviors

Optimal feeding during and after illness is a cluster of behaviors that includes *quantity* of food, *quality* of food, *frequency* of feeds, *duration* of attention, and *care.* These behaviors present challenges for both the family and the health provider. At the same time, illness is an important *moment of opportunity* for providing support to improve feeding practices (box 2).
During illness:

- **Continue feeding and increase fluids**
  
  *For a child under 6 months old:*
  - Breastfeed more frequently and longer at each feed
  - Give frequent, small feeds
  - Give nutrient-dense foods that are soft, varied, and the child’s favorite foods
  - Give mashed or soft foods if the child has trouble swallowing (do not dilute foods or milk)
  - Feed the child slowly and patiently; encourage the child to eat but do not force

*For a child 6–24 months old:*
- Breastfeed more frequently and longer at each feed, increase fluid intake, and offer food
- Give frequent, small feeds
- Give nutrient-dense foods that are soft, varied, and the child’s favorite foods
- Give mashed or soft foods if the child has trouble swallowing (do not dilute foods or milk)
- Feed the child slowly and patiently; encourage the child to eat but do not force

During recovery:

- Increase the amount of food after illness until the child regains weight and is growing well
- Continue to feed frequently: give an extra meal every day or snacks; be responsive to the recovering child’s increased hunger

*Micronutrient supplements* also play a key role in nutrition during and after illness. Health providers should follow the protocols for Integrated Management of Childhood Illness (IMCI).

**Quantity is Challenging**

During illness the challenge (and the optimal behavior) is to continue feeding. Sick children frequently reject or eat only small quantities of food offered to them. Health care providers should assure that mothers do not withhold foods or liquids.

During recuperation, children often have hearty appetites and will be eager to eat more food than usual. Children should be encouraged to eat more at every meal, and given an extra “meal” each day (or extra snacks in between meals) for at least two weeks.

A sick child is usually at least mildly dehydrated due to fever or diarrhea. Any breastfed child should be breastfed frequently. A child who is not exclusively breastfed should be given plenty to drink every 1–2 hours. Boiled water, coconut or rice water, yogurt drinks, and other nutritious liquids should be given rather than sodas or artificially sweetened fruit juices.

**Box 2. Illness Can Be a “Moment of Opportunity”**

Illness can be an important *moment of opportunity* for talking to mothers about how they feed a child in general, and for trying something different that will help the child *resist disease*. Mothers have heightened concern about their children’s appetites and the importance—even special powers—of specific foods during illness. Their concern can make them more receptive to changing feeding practices at this time.

A child with frequent diarrhea is particularly likely to suffer from generally poor feeding practices. Some programs have used this “moment” and mothers’ concerns about diarrhea to introduce new complementary foods that help a child “resist disease” or “recover rapidly.”

Illness can facilitate a switch to exclusive breastfeeding for a child under 6 months who has been receiving mixed feeding. The mother should be advised that as her infant recovers and continues to suckle frequently, the supply of breastmilk will increase and that other liquids should gradually be decreased and stopped. If a mother has stopped breastfeeding the infant, it is also possible to re-establish breastfeeding over time, depending on how recently the mother stopped breastfeeding.

Nutrition education is usually delivered during well child visits. However, the child who is sick has the most urgent need for nutritional support. Both provider and mother should be motivated to use this moment well.

At the same time, the message to increase fluids (or to give “soft, easy-to-digest food”) can divert attention from the importance of getting calories into a child. Local practices such as giving herbal teas—and possible health worker focus on rehydration—can make a mother think normal food is inappropriate. Any message to rehydrate a child should be accompanied by the message to give a complete diet as soon as possible.
Optimal Behaviors

The common indicator to measure optimal feeding during illness and recuperation is the relative amount of food and liquids given to the child during illness. The Demographic and Health Survey (DHS) asks: “During this last illness, did you give your child more than usual, the same, or less fluids/foods than usual?” However, a mother’s response to this question may reveal little about whether practices are helpful or harmful. The mother who gives “less” may be actively withholding food or may have an anorexic child or one who has trouble eating. A sick child is unlikely to actually eat “more” during illness—so the mother who gives this answer may be giving frequent but more diluted feeds.

Quality is Important

Breastmilk—the perfect food during and after illness. Breastmilk is energy rich, nutrient rich, and hygienic. Breastmilk provides extraordinary benefits to a child who is ill. Children who are sick continue to breastfeed even when they will not take other food or animal milk. One study in Guatemala showed that children who were normally given solid foods but not breastfed at the time of illness reduced their energy intake by about 30 percent during acute diarrhea. Children of the same age who were still breastfed only reduced their energy intake by about 7 percent.

Illness is a key moment for emphasizing the special qualities of breastmilk and helping mothers improve their practices. The more frequent feeding and attention required during illness also makes this an opportune time to help a mother (re)establish exclusive breastfeeding for a child under 6 months old who has been receiving mixed feeding.

If a breastfed baby cannot suck properly due to illness, the mother should express milk and continue to feed the child with a spoon and/or cup (see Facts for Feeding Low Birthweight Babies). If a breastfed baby is hospitalized, mother and baby should be kept together.

Energy- and nutrient-rich foods. Children 6 months of age and older need energy-rich and nutrient-rich foods during and after illness to regain strength. These foods include meat, poultry, fish, eggs, and milk when possible. In some countries complementary foods are watery and lacking in calories and nutrients. The WHO/PAHO Guiding Principles for Complementary Feeding of the Breastfed Child set standards that can be used to develop locally appropriate feeding recommendations. The local “food box” created as part of the IMCI protocol recommends specific available foods for young children of different ages. Formative research can also identify simple changes that will enhance the usual complementary foods in ways that are acceptable during illness. These changes may include adding dry milk powder to porridges or other foods or adding ground-nuts, extra fat, and/or sugar or honey. Suggested changes should be easy and tested with mothers.

Frequency and Care in Feeding are Crucial

Frequency of feeding is as important as the quality of feeds. A sick child cannot absorb food well and must be fed more often than usual. A key practice during illness is many small feeds.

For the child under 6 months, frequent breastfeeding (including at night) is important. For the older child, special care is critical. Box 3 outlines aspects of care during feeding.

Box 3. Nutrition is About Care

Many important behaviors during and after illness are about neither amount nor quality of food given, but about some aspect of “care” during feeding.

During illness

- Give frequent small feeds
- If a breastfeeding infant is too weak to suckle, the mother can express her milk and feed it from a spoon or cup
- Coax the older child to eat; be patient but persistent; offer foods the child likes, to overcome lack of appetite
- Hold the child on your lap or keep him or her sitting up; (Do not feed a child lying down; this can cause choking)
- If a child vomits, wait ten minutes and continue offering fluids or food
- Do not force a child to eat

During recuperation

- Continue to feed frequently – give an extra meal every day or extra snacks for two weeks. The child may now seem hungry; be responsive
- Get the help/support of siblings or grandparents who normally feed the child
Counseling should emphasize **coaxing** a child to eat and the importance of giving small amounts throughout the day. A mother needs to feel confident that she can get her child to eat, and that even if her child has diarrhea or is vomiting, her persistence and care will make a difference. At the same time, a child should never be forced to eat.

**Recuperation Takes Time**

*Duration* is an important aspect of nutritional care. Increased attention to feeding should continue for 2 or more weeks following illness. Feeding *during recuperation* is critical to help the child “catch up” from nutritional losses. Feeding during this time requires different practices and attitudes, and may even involve different family members than feeding *during illness*.

Older infants and young children continue to need high quality food such as meat, fish, liver, eggs, milk, and oil to meet the requirements for catch-up growth. Extra food is needed until the child has regained any weight lost and is growing well again. One rule of thumb is to give a child an extra meal every day for at least 2 weeks.

While mothers often offer their children special foods during illness, they rarely do so once danger seems past. Local customs rarely highlight the recovery period. Once a child has recovered from illness, responsibility for feeding the child may also revert to siblings or a grandmother. Health care providers are not consulted during recuperation, making reminders difficult. The message “give additional food following illness” is therefore particularly challenging.

**The Role of Local Beliefs**

Many cultures hold strong beliefs about the appropriateness of different foods during illness. These beliefs usually have their roots in an understanding of the nature of illness or the balance of qualities in the human body. Most mothers receive their advice about feeding sick children from family members who may base their recommendations on such beliefs. Traditional healers may recommend giving or withholding special foods or liquids. Research on local beliefs should include all who provide advice to mothers, including traditional healers and trained providers.

**Beliefs about Withholding Food/Liquids**

The belief that all food should be withheld during illness is most common for diarrhea. Prevalence varies in different regions and is particularly strong in South Asia where over 80 percent of mothers believe a child with diarrhea should not be given anything. Withholding fluids during diarrhea is common, despite years of promoting oral rehydration salts (ORS). A study in rural Nigeria found that 60 percent of mothers would reduce fluids for a child with diarrhea. The belief that breastmilk should be withheld during illness is less common. However, a study in rural Bangladesh found that 22 percent of mothers said they stopped breast-feeding when their children had diarrhea.

Health providers may also not be up to date on current guidelines. Some believe in “resting the gut” when a child has diarrhea, or in withholding milk. They may advise mothers to delay feeding, dilute foods, or avoid giving milk.

Withholding of food or liquids of any kind is less common during ARI, malaria, or measles than during diarrheal episodes.

**Classifications of Foods and Illnesses**

Beliefs about the connections between foods and illnesses may vary according to relatively small geographic areas or by ethnic group, just as “normal” feeding practices for children do. Classification of both diseases and foods as either “hot” or “cold” is common in various parts of the world. Cold foods are thought to aid recovery during a “hot” disease but to be harmful during a “cold” disease—and vice versa.

In South Asia, for example, “cold” foods typically include rice, curd, yogurt, and citrus fruits. These are considered appropriate during diarrhea, which is a “hot” disease. They may be restricted during a cough or an illness with a rash. “Hot” foods (ginger, honey, lentils, egg, and meats) are thought appropriate during those illnesses. Although in a study in Pakistan only 10 percent of women said they believed in hot and cold concepts and more than half were not sure what these meant, 70–80 percent consistently classified certain foods as hot or cold. A large proportion of health providers also placed some value in these designations.
Other classification systems for disease and/or food may be based on the perceived presence or absence of blood or water. For example, in Mali sugar and groundnuts are thought to cause bloody diarrhea.

Wherever beliefs about the appropriateness of different foods during illness are common, specific recommendations about nutritious foods should emphasize those that mothers already consider acceptable.

Messages and Challenges for Different Illnesses

This section provides more detailed information about feeding in relation to major childhood diseases. Box 4 lists tips for counseling mothers and other caregivers during and after illness.

Diarrheal Disease

The association between poor nutrition and childhood mortality is particularly strong for diarrhea and deserves special emphasis. Children are at greatest risk between the ages of about 6 to 11 months—the period when semi-solid foods are introduced. Growth curves often dip sharply during this period.

Mothers may withhold fluids and food during diarrhea because of the apparent logic of “less in, less out.” Other harmful practices include purges and enemas. Communication messages should address these practices directly.

Counseling on breastfeeding is critical for the young child with diarrhea. A child under 6 months old with diarrhea is likely not to be exclusively breastfed. For all children, continued breastfeeding during acute diarrhea significantly reduces the duration of an episode. This message should be used to encourage mothers to continue or increase the frequency of breastfeeding.

The majority of deaths associated with diarrhea are due to dehydration. WHO recommends three treatment plans according to the degree of dehydration, the child’s age, and the normal feeding pattern (box 5). In general, a child with no dehydration should receive additional fluids and continued feeding to speed recovery. A child with signs of moderate dehydration should first be rehydrated, followed by normal feeding. All children with diarrhea should receive zinc supplements for 10–14 days.

Box 4. Tips for Counseling and Communication

Feeding challenges during illness vary from child to child. Good counseling begins with questions to understand these challenges, and then negotiation with the caregiver to find out what practices will be feasible. Good counseling also includes reinforcement of any positive feeding behaviors.

Base counseling on questions about the child’s “normal diet.” Ask what the child’s normal food/liquids are. Then ask what and how much is being given now. (If food is being withheld, is it because the child has no appetite or because of the mother’s beliefs about food and illness?)

Ask if the infant/child is breastfeeding or having any problems breastfeeding. This is an important moment to improve breastfeeding behaviors. If the child is under 6 months old and is getting mixed feeds, explain how the mother can breastfeed more frequently and gradually eliminate other foods/liquids.

Assure the mother that frequent small feeds are best for her child. Withholding liquids or foods is dangerous.

Ask about special foods. The common concept of giving special foods during illness is a valuable message “hook.” The health provider can ask the mother of a child over 6 months old what special foods her child likes, and then encourage her to give these while the child is sick, if appropriate.

Make the message specific. Specific messages—whether about quality or quantity of food—are much more likely to be adopted than generic ones. Messages can be simple, such as a small change in the usual recipe or getting the help of a family member to coax the child to eat more often.

Emphasize the need for extra food during recovery. During diarrhea, messages about giving zinc for about two weeks fit well with messages about feeding during recuperation.

Reinforce the message with take-home reminders. Feeding instructions on a prescription form make the messages seem more important and remind family members that special feeding and foods are important. Cards or leaflets can be illustrated with special foods or changes in local recipes.
Messages and Challenges for Different Illnesses

Box 5. Fluids and Foods During Diarrheal Illness

WHO advises different strategies for giving fluids and foods during diarrheal illness, according to the presence/degree of dehydration and a child’s age and normal feeding pattern.

Diarrhea with no dehydration

**Infant under 6 months old**

- *If exclusively breastfed* - breastfeed frequently and longer at each feed. Give additional clean water or ORS to prevent dehydration.
- *If not breastfed* - give the normal milk or formula at least every three hours. Give additional clean water or ORS.
- *If receiving mixed feeding* - breastfeed more frequently and longer at each feed. Give other liquids with a cup and spoon, not a bottle.

**Child over 6 months old**

- Breastfeed frequently and longer at each feed.
- Give more fluids than usual to prevent dehydration.
- When possible, give “home fluids” that normally contain salt (e.g., soup, rice water, and yogurt drinks). Dangerous fluids to avoid during diarrhea include drinks sweetened with sugar such as commercial sodas, commercial fruit juices, and sweetened tea. Fluids with stimulant, diuretic, or purgative effects (such as coffee or some medicinal teas) should also be avoided.
- Continue to give normal food. Do not dilute usual foods. Continued feeding speeds recovery of intestinal function and the ability to digest and absorb nutrients. If the child is not yet being given semi-solid foods, the mother should be counseled to begin soon after the diarrhea stops.

Diarrhea and moderate dehydration

A child with signs of dehydration should be rehydrated, preferably with packaged ORS according to weight and age (see WHO Guidelines Plan B). Use a clean spoon or cup. Rehydration may take four hours or longer.

**In addition:**

- For an infant under 6 months old, continue breastfeeding during rehydration whenever the child wants.
- For a non-breastfed infant under 6 months old, give 100-200 ml of clean water during rehydration; then resume full strength milk or formula.
- For an older child, continue breastfeeding whenever the child wants. Begin feeding after the initial four-hour rehydration period.

Severe dehydration

A child with severe dehydration requires intravenous treatment and should be hospitalized.

Rehydration. The gold standard for rehydration is packaged ORS. Administering ORS can be challenging. It may take four or more hours to rehydrate a child, giving ORS by cup or spoon. Caregivers often give too little—administering it like a medicine. Understanding the concept of rehydration is critical. Most mothers want a product that stops diarrhea, and health providers often feel pressured to provide such products. Use of antidiarrheals (which can be harmful) is high in all regions; but ORS use is only around 20 percent in countries with high child mortality, despite decades of promotion.

WHO now recommends a newly formulated low osmolarity ORS product that does reduce stool volume and duration of illness. Good marketing, and packaging the product with zinc, may help improve use.

Rehydration with food-based fluids such as thin rice gruel that is “normally salty” is as effective as giving standard ORS. Proper administration of food-based oral rehydration therapy (ORT) can also be less challenging than administration of packaged ORS—perhaps because it is not so similar to a medicine. Studies of ORT based on staples (maize, millet, wheat, sorghum, rice, and potato) have shown substantial reduction in stool output compared with the standard ORS product. These recipes also have the advantage of providing some nutrients during the immediate period of rehydration.
Foods during diarrhea. A child with diarrhea should be fed a normal diet as soon as possible. A child treated at a health center should be given food before being sent home, to emphasize the importance of feeding.

**The message to “give fluids” must be paired with an equally strong message to give nutritious food.**

Foods should be well cooked and mashed or ground to make them easy to digest, but not diluted. Fermented foods are also easy to digest. Fats and oils provide energy. Meat, fish, or egg should be given if available. Foods rich in potassium, such as bananas, are very beneficial.

Some foods reduce stool output and duration of diarrhea more than others. This benefit should be mentioned to mothers when promoting specific foods. Often the most effective foods turn out to be traditional ones. In Pakistan, *khitchri*, a common complementary food of rice, lentils, and cottonseed oil, speeds recovery from diarrhea. A study in Bangladesh compared children fed a rice-based diet cooked with either green bananas or pectin. After 3 days, 59 percent of children given the banana recipe had recovered as had 55 percent of those fed the pectin recipe—in contrast to 15 percent of children fed only rice. The banana and pectin diets also significantly reduced the amount of stool and vomiting.

**Three Types of Diarrhea.** Most diarrhea episodes fall into the category of *acute watery diarrhea*, which also includes cholera. A child with watery diarrhea usually regains appetite once rehydrated. *Dysentery* (bloody diarrhea) requires antibiotics; a child with bloody diarrhea will have a poor appetite until fully recovered.

About 45 percent of deaths are associated with *persistent diarrhea*, or watery diarrhea that goes on for more than 2 weeks. Antibiotics are not effective. The family must be attentive to feeding over a period of many days. Children with persistent diarrhea are often given food that is too watery. Mothers should be counseled on the importance of giving small, energy- and nutrient-rich feeds at least 6 times a day.

A child with persistent diarrhea may have some trouble digesting lactose in animal milk. Yogurt, if available, should be given in place of any animal milk usually taken by the child. Otherwise the usual milk should be mixed with cereal. Milk should not be diluted. Breastmilk does not cause lactose intolerance, and a child with persistent diarrhea should be breastfed frequently.

**Zinc.** Zinc reduces both the severity and duration of diarrhea, prevents recurrence, and restores appetite during diarrhea as well as during other illnesses. In 2004 WHO and UNICEF issued new joint recommendations on diarrhea management including supplementation with zinc. Zinc may be packaged with ORS or given separately. Mothers should be counseled on the importance of completing the full 10–14 days of supplements.

Both zinc supplements and optimal feeding behaviors require extended care. Zinc helps the health care provider focus on the concept of continued attention over time in order to restore a child’s strength and prevent future illness.

With the current interest in zinc, some nutritionists are worried about the potential “medicalization” of diarrhea treatment if zinc distracts policy makers, providers, and families from the important and difficult food issues associated with treating diarrhea. The new zinc protocols should be used to provide updates on the full range of diarrhea treatment practices, including messages about feeding.

Other Common Childhood Illnesses

Table 1 on the next page provides information about common feeding challenges during and after illness due to ARI (or pneumonia), measles, malaria, and HIV and AIDS.
### Table 1. Special Considerations and Messages for Four Illnesses

<table>
<thead>
<tr>
<th>Illness</th>
<th>Challenges/ Special Considerations</th>
<th>Key Practices/ Messages</th>
</tr>
</thead>
</table>
| **Acute Respiratory Infection (pneumonia)** | • Even mild ARI may cause stuffy nose or cough, creating problems for breastfeeding  
• Highest incidence is among the very young, making any difficulties with breastfeeding important to address  
• Child of any age may aspirate food while coughing | • Provider should counsel mother that breastfeeding requires more time, patience, and confidence than usual  
• If a breastfed child is unable to suckle properly, provider should explain how to express milk and feed with cup and spoon  
• Feed child sitting up; give small feeds slowly |
| **Measles** | • Child may have severe diarrhea as well as respiratory problems accompanied by high fever  
• Child may have sores inside the mouth | • Keep child hydrated  
• Give soft, mashed foods that are not spicy  
• Provider should give the child vitamin A according to WHO protocol |
| **Malaria** | • Child will suffer from high fevers  
• Anemia is common  
• Child with severe illness may have convulsions, respiratory distress, and hypoglycemia  
• Traditional healers may advise herbal teas; certain foods may be avoided  
• Providers focus on messages regarding drug compliance and signs of severity | • Encourage fluids  
• Give frequent, small feeds as soon as possible  
• Provider should provide/prescribe appropriate anti-malarial. If the child is anemic, screen for iron deficiency and only provide iron supplement (with food) if confirmed. Give anti-helminitics according to WHO protocol |
| **HIV/AIDS (for infants <6 months on full replacement feeding)** | • As part of determining what method of feeding is acceptable, feasible, affordable, sustainable, and safe (AFASS), the mother may have elected not to breastfeed her child during the first 6 months of life, or to discontinue breastmilk after 6 months. Lack of breastfeeding makes the child vulnerable to frequent illness. | • Provider should counsel on hygienic preparation of milk/formula  
• During diarrhea, give yogurt-based drinks if possible. Mix animal milk with cereal; do not dilute the milk |
| **HIV/AIDS (for the child who is symptomatic)** | • A symptomatic child may have 50–100 percent greater energy requirements  
• Child may suffer frequently from thrush, fever, diarrhea, or vomiting  
• Child’s medications may cause loss of appetite or changes in taste that make it difficult to eat | • If child is breastfeeding, continue breastfeeding  
• Feed frequently to ensure adequate intake  
• If child has thrush, avoid spicy, salty, or sticky foods, or strong citrus fruits and juices that may irritate mouth sores  
• Avoid sugary foods; these encourage yeast  
• During recuperation from an illness, give energy-dense, micronutrient-rich foods |

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1 This box does not provide treatment advice for any illness—only messages regarding fluids and feeding.

### Resources


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Visit [www.linkagesproject.org](http://www.linkagesproject.org) for other publications on infant feeding.

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