

# MALNUTRITION AND DIARRHEAL DISEASE

PATH developed these messages for use by anyone interested in communicating the impact of diarrhea on the health and development of children and families around the world. This is also a guide to communicating the value of a coordinated approach to diarrheal disease control and the proven, cost-effective solutions available today to save lives. These messages are comprehensive and not intended to be used all at once, but rather provide options for communicating to a variety of audiences and about a variety of related topics.

Good nutrition is essential for child growth, development, and immune system function to boost children's defenses against infectious diseases like diarrhea.\* But the children most vulnerable to diarrheal disease are often malnourished. The relentless cycle of malnutrition and diarrhea places a great burden on developing countries and on children, in particular. Addressing malnutrition within an integrated approach against diarrheal disease is key for protecting communities and helping children reach their full potential.

## THE BURDEN

Diarrheal disease remains a leading killer of children under five years of age worldwide. Among children who survive severe diarrhea, chronic infections can contribute to malnutrition. In turn, malnutrition makes children vulnerable to diarrhea infections. Diarrheal disease and malnutrition feed off each other in a vicious cycle that can lead to long-term consequences.

- 1 Dangerous diarrhea pathogens in their environment can make children sick over and over again. Half of all malnutrition cases are associated with repeated diarrheal episodes.
- 2 Each diarrheal episode worsens malnutrition, and malnourished children are more susceptible to diarrhea and other infections.

## Diarrhea and Malnutrition: A Relentless Loop



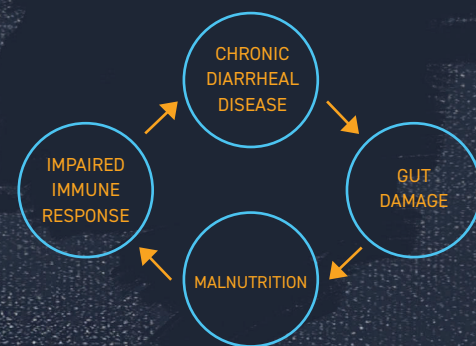
UNSAFE DRINKING WATER



LACK OF HYGIENE & SANITATION



PATHOGENS IN THE ENVIRONMENT



## THE CONSEQUENCES

Repeated diarrhea infections contribute to long-term gut damage that prevents nutrient absorption and immune system function, even when children eat healthy foods.

- ① Repeated ingestion of certain environmental pathogens, many of which cause diarrhea, leads to environmental enteropathy, a chronic condition that reduces the digestive system's ability to absorb nutrients.
- ① The brain and other vital organs require nutrients to feed their exponential growth during a child's first five years. When nutrients are depleted from repeated bouts of diarrhea, it can lead to irreversible physical and cognitive growth shortfalls that last a lifetime.
- ① Environmental enteropathy also disrupts the gut's immune response, compromising the protective power of oral vaccines.

Repeated diarrheal illnesses and malnutrition not only impact the child, but can push families and communities into poverty and keep them there.

- ① Malnutrition prevents children from growing to their fullest potential. Children who are cognitively and physically stunted are more likely to struggle in school, earn lower wages, and die early.
- ① The financial toll of repeated diarrhea episodes, including treatment costs and lost wages from already limited incomes, creates an additional burden on families.
- ① Malnutrition is a common manifestation of poverty.

## THE SOLUTIONS

An integrated approach to prevent and treat diarrheal disease is the only way to comprehensively address the vicious cycle of diarrhea and malnutrition. By raising awareness about integrated prevention and treatment solutions, we can save millions of children worldwide.

- ① Water, sanitation, and hygiene (WASH) and vaccines are crucial to halt the infections that contribute to chronic diarrheal disease, environmental enteropathy, the malabsorption of nutrients, and compromised immune function.
- ① Breastfeeding provides infants the vitamins and nutrients they need for optimal development and boosts important antibodies that reduce diarrheal disease and promote quicker recovery from diarrheal infections.
- ① Nutrition-based solutions incorporate optimal infant and young child feeding—exclusive breastfeeding in the first six months, continued breastfeeding, and nutritious, hygienically-prepared complementary foods through the child's first two years of life.

### \*PRIMARY RESOURCES:

Improving child nutrition: The achievable imperative for global progress. UNICEF

"Maternal and child undernutrition and overweight in low-income and middle-income countries." —*Lancet*

"Environmental enteropathy, oral vaccine failure and growth faltering in infants in Bangladesh." —*EBioMedicine*

"Environmental enteropathy: Critical implications of a poorly understood condition." —*Trends in Molecular Medicine*