Environmental Enteropathy

Links to Nutrition

Studies suggest that diarrhea accounts for only 5% to 20% of malnutrition; and a recent review suggests that maternal and pre-natal causes contribute about another 20%. The remaining 60%-75% of stunting is likely attributable to Environmental Enteropathy (EE), potentially making it the most important contributor to children’s nutritional outcome.

EE is characterized by damage to the intestinal lining resulting in malabsorption of nutrients, absorption of toxins, and chronic inflammation. This contributes to stunting, anemia and increased susceptibility to infections. In a seminal study from the Gambia, investigators found that among 400 young children, 50% had evidence of EE at 6 months of age, 96% at 10 months, and that every child had EE at some time during her life. Repeated laboratory testing found children affected by EE more than 75% of the time. Overall, 43% of stunting was attributed to EE.

The cause of EE is chronic exposure to fecal pathogens (bacteria) from both humans and animals. Global analyses have found a correlation between rates of open defecation and stunting. Exposure to animal feces also contributes and is more common; for example:

- Soil samples taken around households in Zimbabwe found that 60-80% were contaminated with fecal bacteria.
- Observations of young children found frequent hand-to-mouth behaviors including eating chicken feces.
- A study from Malawi found stunting significantly associated with evidence of EE and exposure to animals.

Building on Existing Experience

Although no solutions have yet been documented for EE, CARE is in a strong position through Nutrition at the Center (N@C) to contribute to finding answers. Bringing together Water, Sanitation and Hygiene (WASH) and Nutrition teams and building on CARE’s experience using community participatory strategies to solve health and development problems, we have an opportunity to improve nutritional outcomes for children as well as contribute to global knowledge.

Baby WASH

Baby WASH interventions are targeted to decrease children’s exposure to feces through a range of strategies and behavior change. These include:

- changes in where and when children are put on the ground,
- the development of “protected play spaces” that are free of fecal contamination,
- and changes in animal management and sanitation practices.

Addressing EE as part of N@C also provides an opportunity to collaborate with others investigating solutions. We are working with researchers from Cornell University to Test the feasibility, acceptability, and effectiveness of potential strategies to reduce Exposure to animal feces and EE in young children in Zambia.