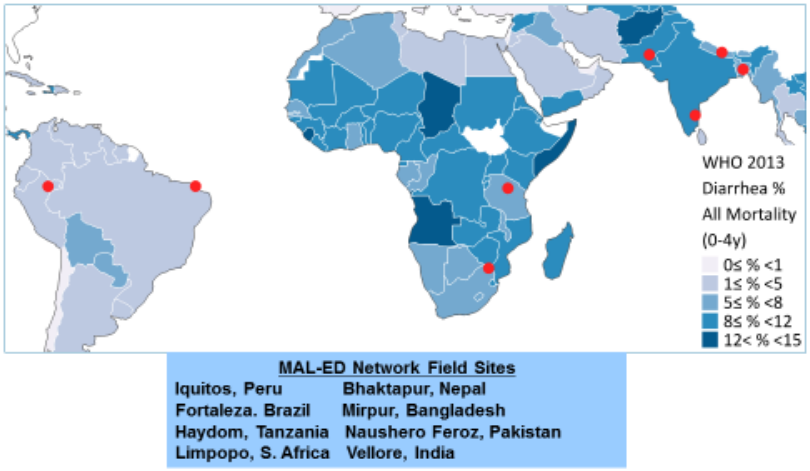
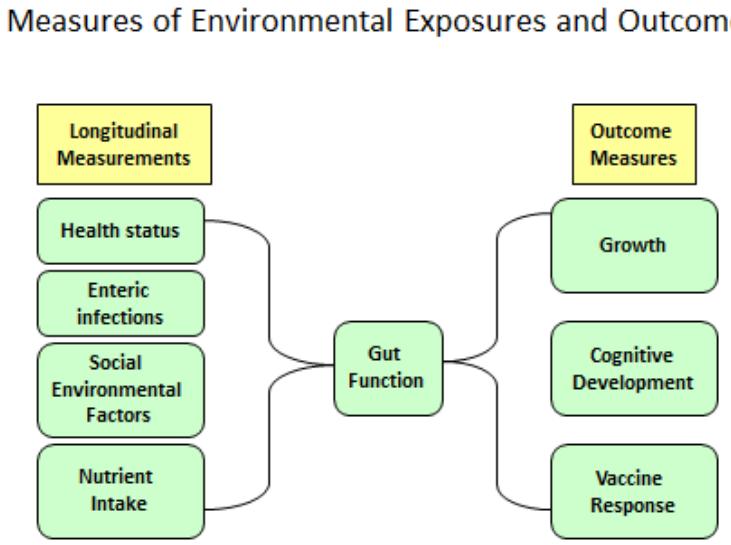
The MAL-ED Study

The Etiology, Risk Factors, and Interactions of Enteric Infections and Malnutrition and the Consequences for Child Health (MAL-ED) Study was established at resource-limited sites in eight countries with historically high incidence of diarrheal disease and undernutrition. These eight field sites are designated in the following map.



Rationale for the Study

Children living in under-resourced areas in low- and middle-income countries are more likely to exhibit growth and developmental shortfalls compared to children living in high income countries. In addition, such children are less likely to develop a protective immune response to recommended childhood vaccines. The MAL-ED study sought to gather data that will help to identify those environmental exposures early in life that contribute to growth and developmental deficits. Thus, the project's investigators took a holistic approach to assess and quantify the contribution of a large number of factors that may be associated with less than optimal outcomes using an approach that had not been previously explored. The underlying belief was that enteric infections, malnutrition, and gut function interact, rather than act in isolation, to negatively affect physical growth, cognitive development, and immune responses to vaccination as shown in the following figure.

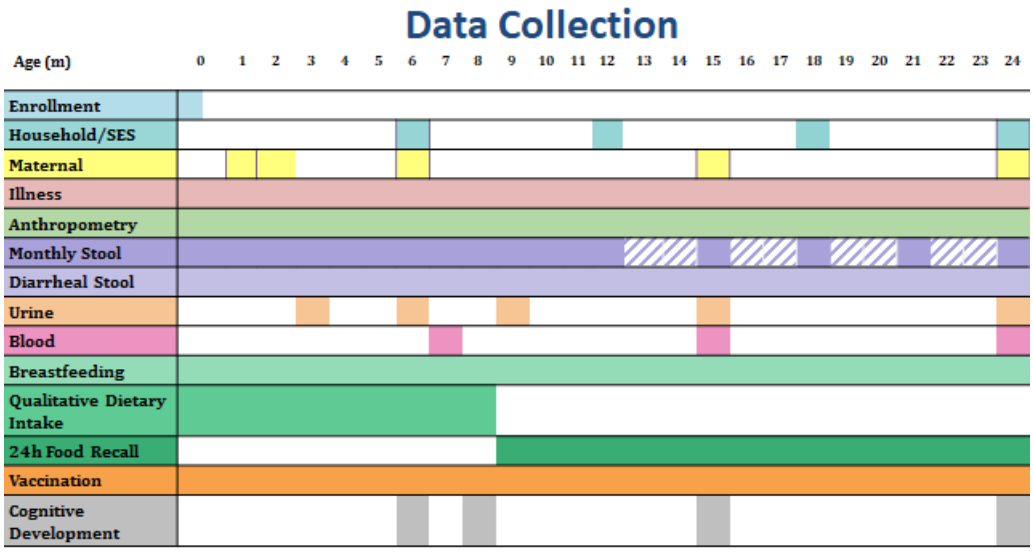


Study design

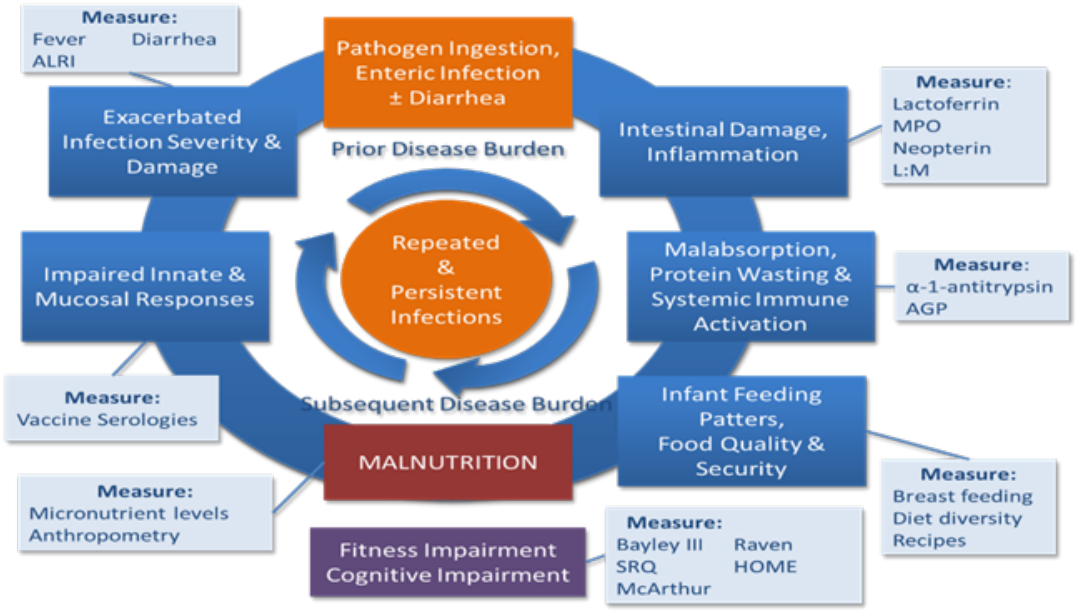
In contrast to cross-sectional and case-control studies, the MAL-ED study was designed as a observational study that used a prospective longitudinal design to directly address a complex system of exposures and health outcomes in children born and living in eight culturally and geographically diverse resource-constrained communities in low and middle income countries. Children were enrolled within the first 17 days of life and were visited twice weekly through to 24 months of age to collect data as represented in the figure below. Each site recruited more than 200 children over a 24-month time period – targeting a smooth and constant monthly enrolment across this time frame – to assess seasonal effects of exposures. Details of the study design and descriptions of data and sample collection have been published **[Clinical Infectious Diseases, vol. 59, suppl. #4, November, 2014]**.

Subjects were enrolled after signed informed consent was obtained according to appropriate procedures agreed to for this project. All sites used a common standardized protocol that was developed and agreed to by study investigators, and was reviewed and approved by national, local and organizational review boards, as appropriate and required, for each collaborating institution.

The aim of the MAL-ED study is to improve scientific understanding of the complex interrelationships among enteropathogen infection, dietary intake, nutritional status, gut physiology, growth, immune function and vaccine response, and cognitive development. The timing of data and sample collection and the assessments determined are shown here.



We have described these interactions as occurring in a synergistic and repetitive cycle as depicted in this "vicious cycle" figure. The figure also identifies the specific assessments determined in the project on the schedule shown above.



Developing appropriate interventions designed to break this "vicious cycle of poverty" is a long term goal. It is anticipated that knowledge derived from MAL-ED will help the public health community to better engineer prevention strategies and interventions that are envisioned to minimize those factors that contribute to lost lifetime potential.

Publications from the project can be found by clicking here:

PubMed Search for MAL-ED

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