Title: Small Intestine Bacterial Overgrowth is Associated with Poor Linear Growth in a Rural Tanzanian Birth Cohort

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Abstract: Small Intestine Bacterial Overgrowth (SIBO) is a condition where increased commensal bacteria in the small bowel lead to poor nutrient absorption. Data shows SIBO is prevalent in approximately 30% of children living in unsanitary conditions in low-income countries. In this setting SIBO has been associated with enteric inflammation and poor growth. We conducted a longitudinal study of SIBO in rural Tanzanian infants to determine SIBO's effect on growth. This was conducted in a subset of children enrolled in the ELICIT trial who were receiving either azithromycin + nitazoxanide, nicotinamide, both, or a placebo. Children were enrolled at birth and given a glucose hydrogen breath test for SIBO at ages 6, 12, and 18 months. Various measures of the glucose hydrogen breath test were compared for ability to predict linear growth. A 12-ppm increase over baseline, the gold standard, did not predict length-for-age Z score. Area under the hydrogen curve above baseline (AUC) is the best predictor of linear growth. SIBO AUC also interacts positively with courses of Azithromycin and Nitazoxanide to increase length-for-age Z scores for those with negative changes in length-for-age Z scores over the 18-month period. SIBO AUC interacts negatively with courses of Azithromycin and Nitazoxanide to decrease the length-for-age Z scores in children with positive changes in length-for-age Z scores over the 18-month period. Analyses of SIBO's effect on weight-for-age Z scores and neurocognition as well as the effect of other antibiotics are pending