A conversation with Dr. Daniel Raiten, March 29, 2019

Participants

- Dr. Daniel Raiten – Program Director-Nutrition, Pediatric Growth and Nutrition Branch, the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, National Institutes of Health
- Dr. Stephan Guyenet – Senior Fellow, GiveWell

Note: These notes were compiled by GiveWell and give an overview of the major points made by Dr. Raiten.

Summary

GiveWell spoke with Dr. Raiten of the National Institutes of Health (NIH) to learn more about the determinants and assessment of micronutrient status. Conversation topics included the complexity of nutrition and research on assessment of micronutrient status.

Complexity of nutrition

The interaction between nutritional status, other environmental factors, and health is complex, and thinking about nutrition from a single-nutrient perspective is limiting. The complexity of nutrition should be integrated into assessments of micronutrient status and intervention strategies to address micronutrient malnutrition (i.e. over- or undernutrition). In addition, because of the intimate relationships between micronutrients and all biological systems, efforts need to be made to distinguish between physiological states that are due to nutritional status vs. other causes. For example, anemia can be caused by iron deficiency, infection, other nutrient deficiencies, or a combination. Failing to consider this complexity could lead to negative consequences in micronutrient supplementation or fortification interventions.

Issues with assessment of micronutrient status

Current methods of assessing micronutrient status, including for iron, often do not consider important contextual factors such as inflammation and infection status. The results from these methods may therefore be misleading in certain contexts and may trigger inappropriate interventions.

Research on assessment of micronutrient status

Collaborative research projects relevant to the assessment of micronutrient status include:

- **The Biomarkers Reflecting Inflammation and Nutrition Determinants of Anemia (BRINDA) project** – The BRINDA project pools survey data to examine the relationship between inflammation and nutrition biomarkers and identify factors associated with anemia in high-prevalence groups. Originally conceived and supported by the National Institute of Child Health

and Human Development (NICHD), BRINDA now receives support from the Bill and Melinda Gates Foundation (BMGF), the US Centers for Disease Control and Prevention (CDC), and the Global Alliance for Improved Nutrition (GAIN).

- **The Biomarkers of Nutrition for Development (BOND) project** – The BOND project provides information on the selection, use, and interpretation of biomarkers of nutrient exposure, status, function, and effect. It has produced wide-ranging reviews on micronutrient physiology and assessment, including for iron, iodine, zinc, folate, vitamin A, and vitamin B12. The BOND project was supported by a public-private partnership that included NICHD, BMGF, the NIH Office of Dietary Supplements, and others.

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