Iron and Malaria Interactions: Where are we now and where do we go from here?

Brief Description:

In November 2007, the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) of the National Institutes of Health (NIH) launched a 5-year project to examine factors affecting the safety and effectiveness of interventions to prevent and treat iron deficiency in the context of malaria and other infections. This project represents a partnership with the World Health Organization (WHO) and is co-funded by the Bill and Melinda Gates Foundation (BMGF).

This project was initiated largely to address issues that re-emerged in response to a large randomized control study involving iron supplementation of children in Pemba, Tanzania (Sazawal et al., 2006). The original report of the larger protocol which involved more than 10,000 children included a significantly higher incidence of all-cause morbidity and mortality. In a subsequent analyses of these data, the researchers observed that while the children who were deficient benefitted, those children receiving iron-folic acid supplements who were not deficient prior to receiving the supplements were at greater risk for increased morbidity and mortality. The fact that the study took place in a region with high rates of malarial transmission raised particular concerns about the potential adverse interactions between iron and infection and particularly malaria.

As a consequence of the concerns raised by this report, the World Health Organization (WHO) has recommended that iron supplementation not be given in malarial regions without first assessing iron status. This has left the global health community at a loss on how to control and treat iron deficiency in the context of malaria.

The project conducted by NICHD in partnership with the (WHO) has two tracks: one supporting de novo research projects and data collection to address the outstanding research gaps and the other an integration of the extant and new data into a technical report to be used by WHO and the global community to develop new evidence programs and policy for the safe and effective use of iron interventions in areas of high malaria burden. This symposium will present the technical report drafted by the NICHD Technical Working Group (TWG) to address the three core areas of highest priority:

- Plausible mechanisms of iron/malaria/infection interaction
- Biomarkers for assessment of iron status (exposure, status and function) in the context of malaria and infection
- Interventions

Symposium Goal:

The overarching goal would be to present the technical report to the international nutrition community. The symposium would provide an opportunity for the international community to engage in discussions on:

1) the latest available scientific evidence generated from this project and other endeavors and assess the adequacy of the extant knowledge to support evidence-based practices for iron interventions in areas where malaria is endemic
2) up-dating the technical report and planning for consultations to translate scientific evidence into policy

3) the overall project structure and its' potential use as a model to systematically address the interactions between other micronutrients and infectious diseases
4) identify additional gaps in the current scientific evidence and define a prioritized research agenda

Speaker Panel:

The panel would be composed of members of the TWG. Along with an overview of the project and the process for developing the Technical Report, each of the three main sections would be presented by members of the TWG. There will also be a representative from the World Health Organization to present on the role of the WHO in this activity and future related activities.

Draft Agenda

Intro; overview of the project and approach to the report:
Dan Raiten (NICHD)

Topic 1: *Mechanisms*
Speaker: Gary Brittenham, Columbia University, USA

Topic 2: *Biomarkers*
Speaker: Sean Lynch, Eastern Virginia Medical School, USA

Topic 3: *Interventions*
Speaker: Andrew Prentice, London School of Hygiene and Tropical Medicine, United Kingdom

Topic 4: *Programmatic Implications: recommendations and next steps*
Speaker: Juan-Pablo Pena-Rosas, World Health Organization, Switzerland

Outstanding Questions/Discussion
Moderators: Dan Raiten/ Juan-Pablo Pena-Rosas