

**Abstract of a major presentation at the
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Forging Effective Strategies to Combat Iron Deficiency

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Supplementation: Overcoming Technical and Practical Barriers

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This presentation will summarize key scientific issues that can influence decisions about iron supplementation programs. The first issue is whether it is proven that there is a need for iron supplementation and whether benefits have been demonstrated from efficacy trials. There is no doubt about the high global prevalence of iron deficiency in children and women of child-bearing age, although there is probably a need to revise some cut-offs for anemia and iron status indicators for specific groups. Efficacy trials indicate the following benefits of iron supplementation for iron-deficient anemic population groups: in pregnancy, improved maternal and infant iron status (additional benefits are probable but uncertain due to the lack of appropriately designed trials); for children, improved cognition and behavior, although more randomized, controlled trials are needed; and in individuals of all ages with severe or moderate anemia, increased work capacity and activity. The mechanisms by which lack of iron causes functional deficits are still poorly understood and more attention to these may provide particularly convincing evidence of the importance of adequate iron status. It is more difficult to assess the benefits of supplementation in malaria-endemic areas, where anemia is most severe. A little-studied but potentially very important consideration is the extent to which iron deficiency exacerbates the effects of other micronutrient deficiencies, such as vitamin A and iodine. While anemia and iron deficiency can be exacerbated by other micronutrient deficiencies, there is little evidence to show that other deficiencies make an important contribution to low hemoglobin, except perhaps in the case of vitamin A. However, adding folate to iron may lower the risk of neural tube defects if taken in the peri-conceptional period, and reduce risk of other abnormal pregnancy outcomes if taken later in pregnancy. In a few recently completed trials, providing multiple micronutrients in addition to iron did not improve hemoglobin more than iron alone, but the results of ongoing trials are awaited before a conclusion can be made on this question. While more research is needed on the comparative efficacy, effectiveness and other biological effects of the frequency of iron supplementation (such as daily and weekly supplements), it has become clearer that the expected degree of improvement in iron status depends mostly on the total amount of iron consumed during the intervention period. Once-weekly supplementation, for example, may be the best way to prevent iron deficiency at the community level, with lower cost and fewer side effects, while daily supplements would be most effective at treating anemia, especially during short periods of high iron demand such as during pregnancy. It would be helpful to have better data on the retention of iron stores that have been built up by various treatment regimens. The usual recommended doses of iron are based on estimates of requirements and experience with efficacy trials and programs, although there have been very few attempts to compare the relative efficacy (or effectiveness) and side effects of different doses within the same study. Major issues to be resolved include the relative importance of focusing on prevention versus treatment of iron deficiency, and of treatment of severe versus mild anemia.