Multiple Micronutrient Interventions during Early Childhood: Moving towards Evidence-Based Policy and Program Planning\(^1,2\)

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**Abstract**

There is considerable evidence that micronutrient deficiencies affect child health and well-being. Although the benefits of strategies that improve diet quality and micronutrient density of foods consumed by small children combined with reducing infections are well recognized as optimal for promoting young child growth and development, they have been difficult to accomplish in many resource-poor settings and few countries have clear policies in support of integrated strategies to control micronutrient deficiencies. The focus of a recent symposium that was part of the Annual Meeting of the ASN held in Anaheim in April 2010 was on how we as the scientific community can help governments and organizations design nutrition and specifically micronutrient policies and programs based on the available evidence; papers that were based on the invited presentations are included in this Supplement. The first paper is a critical review of the current state of knowledge regarding the efficacy and effectiveness of multiple micronutrient interventions in developing country settings, followed by a paper that reviews key issues in evidenced-based policy and program development and includes a relevant example from Mexico where this has occurred. These are followed by a paper that describes a systematic process that is being proposed as a method to guide policy makers and program developers to strengthen program design and performance. The final paper is a summary that highlights areas where the nutrition research community has been successful in translating evidence into policy-relevant advice and where we can improve in this process.

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There is considerable evidence that micronutrient deficiencies, especially iron, vitamin A, zinc, iodine, and folic acid, affect child health and well-being. In many developing countries, multiple micronutrient deficiencies rather than single deficiencies are common due to low intakes of micronutrient-rich, particularly animal-source, foods and/or poor bioavailability \(^1\). Although the benefits of strategies that improve diet quality and micronutrient density of foods consumed by small children combined with reducing infections and early childhood stimulation are well recognized as optimal for promoting young child growth \(^2\) and development \(^3\), they have been difficult to accomplish in many resource-poor settings. Multiple micronutrient interventions such as syrups and powders have been regarded as easier and less expensive to implement than food-based interventions \(^1,2,4\) but may be less sustainable in the long term. Despite evidence of the efficacy of food-based and micronutrient-based interventions on child health, growth, and development \(^5,6\), few countries have clear policies in support of integrated strategies to control micronutrient deficiencies and evidence of successful programs implemented at scale is scarce.

New evidence of the efficacy (effect of an intervention under controlled research conditions) and effectiveness (effect under programmatic conditions) of many micronutrient interventions was presented at the Micronutrient Forum in Beijing in May 2009. One of the messages throughout these sessions, also reiterating those stated in the Lancet series \(^2\) and the Copenhagen Consensus \(^7\), was the need to succeed in the rollout of proven effective interventions in developing countries to improve micronutrient status of vulnerable populations. One of the major gaps in our knowledge is how to assist governments and organizations to ensure that policies and programs in countries are based on the best available evidence. Ideally, information used to generate policies and programs should include: 1) a population situation analysis (dietary pattern; micronutrient bioavailability; specific micronutrient deficiencies; adequacy of energy, protein, and essential fat; literacy; disposable income; etc); 2) the
objectives of the program and the specific outcomes intended for modification (e.g. biochemical status, morbidity, stunting, child development); 3) the potential interventions, including dietary diversification, promotion of appropriate breast-feeding and complementary-feeding patterns, nutritional supplements, fortified foods, etc. and; 4) the potential delivery mechanisms available for the interventions (child health days, clinic visits, community/home-based visits, social marketing, etc.). Some frameworks and methodologies have been developed to strengthen the incorporation of such information into research and the program design process (8,9). In our experience, however, the use of such methodologies is still limited and programs are often designed without adequate consideration of population context and with ambitious goals for outcomes to be improved, even when some of these may not be supported by the evidence. This might change if we can generate relevant evidence and effectively communicate this information and advocate appropriately.

The focus of a recent symposium that was part of the Annual Meeting of the ASN held in Anaheim in April 2010 was on how we as the scientific community can help governments and organizations design nutrition and specifically micronutrient policies and programs based on available evidence; papers that were based on the invited presentations are included in this Supplement. The first paper is a critical review of the current state of knowledge regarding the efficacy and effectiveness of multiple micronutrient interventions in developing country settings (10). This is followed by a paper that reviews key issues in evidenced-based policy and program development and includes a relevant example from Mexico where this has occurred (11). This case study includes a critical review of the process that was followed to guide program modification based on evidence and the barriers and factors that facilitate this process. These are followed by a paper that describes a systematic process that is being proposed as a method to guide policy makers and program developers to strengthen program design and performance (12). The final paper is a summary that highlights areas where the nutrition research community has been successful in translating evidence into policy-relevant advice and where we can improve in this process (13).

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**Literature Cited**