

## **New World Health Organization guidelines and Home Fortification Technical Advisory Group program guidance on the use of multiple micronutrient powders for home fortification of foods for pregnant women and young children.**

### **Introduction**

In this issue of Nutrition News for Asia (NNA) we provide summaries on the recent World Health Organization (WHO) guidelines concerning the use of multiple micronutrient powders (MNP) for home fortification of foods. We also provide highlights of a subsequent program guidance brief on MNP developed by the Home Fortification Technical Advisory Group (HF-TAG), a group of stakeholders from the public, private, academic and non-governmental sectors. In the last quarter of 2011, the WHO issued two sets of guidelines concerning the use of MNP for home fortification of foods for 1) children aged 6-23 months and 2) pregnant women. MNP are micronutrients in the form of powder (usually made in single dose sachets) that can be added to food just before consumption. The approach is used to improve the micronutrient quality of foods consumed by vulnerable groups such as young children, particularly in areas where the diet is limited in vitamins and minerals.

### **Methods**

The WHO guideline development process consisted of five steps: 1) identification of priority questions and outcomes; 2) retrieval of the scientific evidence on MNP; 3) synthesis and assessment of the available evidence; 4) formulation of recommendations; and 5) dissemination and future evaluation of the resulting guidelines. A systematic review of information on the effects and safety of home fortification using MNP was conducted and reevaluated by an external panel of experts. In pregnant women, the review focused on interventions that provided powders containing iron and at least two other vitamins or minerals compared with no intervention or placebo or iron containing supplements (either alone, or in combination with folic acid [IFA] or other vitamins and minerals) to healthy women. In young children, the review compared interventions that fortified foods consumed by children with MNP containing at least iron, zinc and vitamin A to no intervention or placebo or iron containing supplements given in drops or syrups. The specific questions addressed were: 1) should MNP be used in pregnant women (to improve health outcomes), and if so, at what dose, frequency and duration; 2) can MNP be used in infants and young children aged 6-23 months (to improve health outcomes), and if so, at what dose, frequency and duration? The HF-TAG program guidance brief was also developed through review of literature on MNP (although not systematic review) and expert consultation.

### **Results and Conclusions**

Summary of the specific guidance on MNP is listed below. Additional details can be obtained from the full reports, which are available on the WHO web site (<http://www.who.int/elena/en/>) and the HF-TAG website (<http://www.gainhealth.org/hftag/>).

#### *A. Summary of WHO recommendations*

- 1) The routine use of MNP for home fortification of foods consumed by pregnant women is not currently recommended as a public health intervention. There is scarce evidence to assess the potential benefits or harms of MNP on the pregnant woman or the infant. However, several trials are underway to provide additional information that may influence this guideline in the future.

- 2) Home fortification of foods with MNP containing at least 12.5 mg iron, 300 µg vitamin A and 5 mg zinc per sachet is strongly recommended as a public health intervention to improve iron status and reduce anemia among children aged 6-23 months. The suggested dosing scheme is one sachet per day for a minimum period of 2 months, followed by a period of 3-4 months without supplementation, so MNP use is started every six months. The intervention should be implemented in populations where the prevalence of anemia in children under 2 years or under 5 years is  $\geq 20\%$  and should begin at the time that complementary foods are introduced.
- 3) MNP programs should include a behavior change communication strategy to promote correct use of the powders along with information on recommended breastfeeding and complementary feeding practices, hygiene and sanitation and measures to manage childhood illnesses.
- 4) In malaria endemic areas, the provision of MNP containing iron should be implemented in conjunction with measures to prevent, diagnose and treat malaria.
- 5) MNP programs should be preceded by an evaluation of the nutritional status of the target population and existing measures to control anemia and vitamin A (including use of other fortified foods) to ensure the daily micronutrient needs are met and not exceeded. In settings where other micronutrient interventions such as iron supplementation have been widely implemented and proven to be effective, a cost-effectiveness analysis is recommended to determine whether the current intervention should be replaced with MNP.

*B. Highlights of HF-TAG program guidance brief*

- 1) Increasing the micronutrient intake of pregnant and lactating women may best be done using capsules, rather than MNP. The same may apply to adolescents.
- 2) MNP can be used to prevent micronutrient deficiencies in general, not just nutritional anemia. The MNP formulation containing 15 vitamins and minerals, which provide one Recommended Nutrient Intake (RNI) of each micronutrient per dose for children aged 6-59 months is preferable. However, the formulation can be adjusted where specific information warrants doing so.
- 3) MNP interventions should be targeted to children aged 6-23 months. However, in situations where micronutrient deficiencies are widespread it is better to also include children 24-59 months old. Schoolchildren could also be targeted with MNP.
- 4) For children 6-59 months, the suggested dosing scheme for MNP is no less than 60 sachets every six months and no more than 180 sachets every six months, at a consumption of no more than one sachet per day. Providing 90 sachets every six months is reasonable for most situations (i.e. equivalent consumption rate of 3-4 sachets per week, at no more than one sachet per day). For schoolchildren, MNP formulation and dosing scheme should be appropriate for this age group.
- 5) For young children, home fortification interventions should be implemented as part of an infant and young child feeding (IYCF) strategy, which provide guidance on appropriate breastfeeding and complementary feeding. The following program components should be in place for MNP interventions: policies, packaging/labeling, production and/or supply, delivery system, quality control, behavior change communication and demand creation. It is also important to monitor provision, coverage, and adherence; changes of IYCF practices and impact on micronutrient intake, status and function.
- 6) In malaria-endemic areas, the provision of iron-containing MNP should be implemented in conjunction with measures to prevent, diagnose and treat malaria.

- 7) MNP can be provided in combination with other interventions such as twice-yearly vitamin A capsule supplementation, iodized salt and general food fortification. However, it is not appropriate to combine MNP programs with interventions that provide RUTF (ready to use therapeutic foods), RUSF (ready to use supplementary food) or fortified blended foods such as WSB++ (wheat soy blend) or CSB ++ (corn soy blend) or LNS (lipid-based nutrient supplement)

### **Program and Policy Implications**

The guidelines and program brief support the use of MNP for home fortification of foods consumed by young children aged 6-23 months as a public health intervention to prevent nutritional anemia. As outlined in the HF-TAG brief, MNP can be used to prevent micronutrient deficiencies in general, particularly in areas where the diet of children consists mainly of staples with limited intake of animal source and fortified foods. MNP programs can also be extended to cover children in other age groups such as children aged 24-59 months and schoolchildren, particularly when micronutrient deficiencies are widespread and when there are enough resources. By contrast, MNP intervention is not currently recommended for pregnant women because of a lack of sufficient evidence to judge the beneficial or harmful effects of such programs. Furthermore, MNP is not recommended as a replacement to current IFA programs for pregnant women. In addition, capsules are preferable to MNP for programs with a focus of improving micronutrient status of lactating women and adolescents.

Among young children, MNP should not be provided as a stand-alone intervention, but should be delivered as part of a comprehensive IYCF strategy that promotes optimal breastfeeding and complementary feeding practices, and all MNP programs should have a behavior change communication component to promote acceptance and the correct use of the powder. MNP can be delivered through various channels including the health system, at the community level and through social marketing strategies. It is important to note that these guidelines are not applicable to children with specific conditions such as human immunodeficiency virus (HIV) infection or tuberculosis and the provision of iron containing MNP in malaria-endemic areas should be done in conjunction with measures to prevent, diagnose and treat malaria.

### **NNA Editors' comments\***

These guidance documents continue to support the use of MNP as a public health intervention for the prevention of anemia and micronutrient deficiencies among children 6-23 months. However, there are slight variations between the WHO guidelines and HF-TAG program brief, particularly with respect to the MNP formulation and suggested dosing scheme. The WHO guidelines suggest using MNP containing at least iron, vitamin A and zinc whereas the HF-TAG guidelines prefers the MNP containing 15 vitamins and minerals. In addition, the WHO guidelines suggest a dosing scheme of, at minimum, 60 MNP sachets per child every six months to be consumed at no more than one sachet per day during the first two months, followed by a period of 3-4 months without supplementation. However, the HF-TAG brief suggests a range of dosing schemes, with the most preferred dose being 90 MNP sachets per child every six months at a flexible consumption rate of 3-4 times a week and not exceeding more than one sachet per day. These differences are due to the fact that the WHO guidelines development process focused solely on using MNP for improving iron status and reducing anemia, whereas the HF-TAG program brief focused on using MNP to prevent micronutrient deficiencies in general, among children. Since micronutrient deficiencies often coexist in most developing countries where MNP programs are implemented, providing the MNP formulation with 15 vitamins and minerals, at a dose of 90 sachets every six months is likely the most reasonable for the majority of settings where these programs are implemented. Nevertheless, as suggested by both documents, MNP interventions should be preceded by

an evaluation of prevalence of anemia and other micronutrient deficiencies among the target population to ensure the intervention is justified and also to determine whether there is a need to adjust the MNP formulation and dosage. In addition, such initial assessments should provide information about the existing public health measures for controlling anemia and micronutrient deficiencies as well as the prevalence and control measures for infectious diseases such as malaria. Information for such initial evaluations can be obtained by conducting a survey or from recent secondary data on the target population. In areas where iron supplementation has been proven to be effective in young children, these guidelines recommend a cost-effectiveness analysis to compare the current interventions with the use of MNP before deciding whether it is reasonable to replace the current intervention with MNP.

It is noteworthy that these guidelines are public health recommendations, and treating individual children based on clinical signs of deficiency or risk of deficiency is up to the medical care provider. Finally, it should be remembered that optimal breast feeding of infants and young children and consumption of an adequate and varied diet with micronutrient rich foods by children, combined with other health improvement measures such as control of infectious diseases, are the best strategies for avoiding micronutrient deficiencies.

## HAPPENINGS IN ASIA

### *Singapore, July 23-24 2012*

2012 International Conference on Nutrition and Food Sciences (ICNFS 2012)

Conference website: <http://www.icnfs.org>

\* Note that the Editors' comments and discussion of program and policy implications have been added by the editorial team and are not part of the cited publication.



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Akoto Osei  
Managing Editor, Nutrition News for Asia  
Helen Keller International (HKI)  
[aosei@hki.org](mailto:aosei@hki.org)