



DEVELOPMENTS IN MICRONUTRIENT POWDERS

A review of the public discussion in 2009-2011

The public discussion on micronutrient powders (MNPs), or sprinkles, during 2009 to 2011 has revealed (1) an ongoing rigorous scientific investigation of MNPs to prove efficacy and safety, (2) a proactive sharing of MNP programming experiences, and (3) the development of guidelines on MNP use, as MNPs are increasingly becoming streamlined into national nutrition strategies worldwide.



Figures 1-3. Sprinkles distribution programs in India, Bangladesh, and Bolivia.

Over the past decade, a robust portfolio on MNPs has developed, and overarching conclusions are now being drawn from reviews of research findings. A review by Dewey et al. on the efficacy and effectiveness of home fortification found Sprinkles were as effective as iron drops, yet better accepted and had fewer side effects; Sprinkles also halved the risk of anemia in prevention trials. Another literature review studied iron supplementation in malaria endemic areas. The authors Ojukwu et al. disagreed with WHO recommendations and advised that “iron supplementation should not be withheld from children living in malaria-endemic countries,” as “iron does not increase the risk of clinical malaria or death, when regular malaria surveillance and treatment services are provided.” Their conclusion was echoed in a letter to the editor for the *Journal of Nutrition*, which asked, “Is it time to change guidelines for iron supplementation in malarial areas?” Sprinkles was suggested as an alternative iron supplement that should be used, as it is less likely to increase the risk of infection. Alternatively, Troesch et al. (2010) heeded the WHO’s recommendation with more caution and tested MNPs containing a lower dose (2.5 mg) of iron; they found a 30.6% decrease in the prevalence of iron deficiency among their subjects. Upcoming findings from large scale clinical studies will continue providing evidence on MNP safety and efficacy in malarial areas, as well as other under-researched topics like MNP use in pregnant mothers.

Yet, the current pool of evidence provides enough confidence that MNPs are indeed an effective intervention for reducing iron deficiency and anemia.



In the *Huntington Post*, Van Ameringen (2011) writes:

“... there can be no doubt the impact micronutrient Sprinkles are having on lives and communities the world over, and its impact will only continue to grow, fortifying the future.”

Global acceptance of MNPs is reflected in Sullivan et al. (2010) statement in the *IDD Newsletter*:

“Distribution of MNPs is becoming the preferred strategy for addressing nutrient deficiencies around the world”

In fact, Osei et al. (2009) conclude in a UNICEF/US CDC workshop report that **“MNPs can, as a component of improved young child nutrition, be included in national development plans such as national Poverty Reduction Strategies and Sector Wide Approaches.”**

With the convincing evidence and rise of MNP programs, an active dialogue on program implementation been set in motion. The *2009 Micronutrient Forum* and the Global Health Council’s *38th Annual International Conference on Global Health* were among many forums that provided opportunities for sharing lessons learned and best practices.



Figure 4. Training community health volunteers in Nepal

A majority of programs have been found to distribute Sprinkles through public health channels. All begin as pilots and then scale up to a regional or national level after proving effective and successful. Nepal, for instance, is distributing Sprinkles through Female Community Health Volunteers in a pilot covering six districts; then, based on lessons learned, a national program will reach out to

all of Nepal’s 75 districts. Village Health Committees are also being used to promote Sprinkles in a Kyrgyzstan pilot, as the Ministry of Health creates momentum to make Sprinkles a key intervention against anemia and donors are being solicited for financing a national program.

The sale of Sprinkles is another common form of distribution and the experience in western Kenya has been widely documented. With the provision of educational sessions and dissemination of promotional materials, Sprinkles gained a high level of acceptance and most families prepared and used them correctly. Routine monitoring and evaluation on sales, distribution, and perceptions was valued by programmers for informing strategic and critical program changes, such as the increase in number of training sessions, launches and distribution offices and revised



Figure 5. Distributor with promotion items for Sprinkles in Kenya.



incentive strategies. At the end of the pilot, the team concluded that “Sprinkles distribution through community vendors [was] effective in reducing iron deficiency and anemia in a resource-poor setting and malaria-endemic area” and was not associated with morbidity among young children. The pilot’s success has consequently increased the Government of Kenya’s interest in using MNPs to prevent malnutrition in infants and young children (GAIN, 2011).



Figure 6. Feeding food with Sprinkles in Kyrgyzstan.

MNPs were increasingly being included in national nutrition strategies and the demand for guidance in programming and product specifications was also increasing. As such, UNICEF responded by organizing three workshops, co-sponsored by the US CDC, to guide the development of MNP programs in Asia, Latin America and the Caribbean, and sub-Saharan Africa. The workshops were held in 2009-2011 and aimed to (1) provide a common program framework for scaling up MNP delivery to young children, (2) strengthen and improve program plans, and (3) identify, prioritize and address fundamental challenges for planning. MNPs are primarily distributed freely through public health arms. Bolivia and Mongolia are organized at a national level, while a majority are operating at a sub-national level, with some still at a pilot/demonstration project phase. Regional trends show Asia experimenting with social marketing programs, while Latin American and Caribbean programs commonly distribute MNPs through social protection schemes, like conditional cash transfers. The latest workshop for sub-Saharan Africa addressed the issues surrounding distribution in malarial areas. This series of workshops has provided a forum for sharing experiences, an opportunity for countries to draft new implementation plans or improve existing ones, and the push to develop critically needed guidelines and recommendations for program implementation.

Moreover, as a result of the first workshop in Asia, the Home Fortification Technical Advisory Group, or HF-TAG, was created to provide technical advice and program guidance. It has been tasked to publish standards and practices, develop tools for guiding programs, monitoring and evaluation, and advocacy, provide guidance on finding supply, and facilitate the sharing of experiences.

The WHO has also responded to the increasingly acute need for assistance and published guidelines on the use of multiple micronutrient powders for home fortification of foods consumed by (1) infants and children 6-23 months of age and (2) pregnant mothers. For infants and young children, the WHO strongly recommends for the use of MNPs with at least iron, vitamin A and zinc to improve iron status and reduce anemia in infants and young children, while for pregnant mothers, they advise against routine use of MNPs during gestation because there is no currently available evidence on the benefits or harms of MNPs. The new WHO guidelines also allow for iron supplementation in malaria-endemic areas when measures are taken to prevent, diagnose and treat malaria.



References

A2Z. *Micronutrient Forum 2009: Micronutrients, health, and development*. Beijing, China. 2009, May 12-15.

Community Action for Health in Kyrgyzstan. (No date). *Sprinkles program for home fortification with iron and other micronutrients*. Retrieved from http://www.cah.kg/en/health_actions/Anemia/sprinkles_ims/

Dewey KG, Yang Z and Boy E. Systematic review and meta-analysis of home fortification of complementary foods. *Mat Child Nutr* 2009, Oct; 5(4):283-321.

GAIN. (2011, May 23). *Empowering mothers: The promise of micronutrient powders*. Retrieved from <http://www.thousanddays.org/success-story/empowering-mothers-the-promise-of-micronutrient-powders/>

Global Health Council. *38th annual international conference on global health: Securing a healthier future in a changing world*. Washington, D.C. 2011, Jun 13-17.

Jefferds MED, Ogange L, Owuor M, et al. Formative research exploring acceptability, utilization, and promotion in order to develop a micronutrient powder (Sprinkles) intervention among Luo families in western Kenya. *Food Nutr Bull* 2010; 31(2):s179-185.

Peugh L. (2011, May 10). Launch of Sprinkles nutrition intervention. *ICTPH (IKP Centre for technologies in public health) Blog*. Retrieved from <http://ictph.org.in/blog/nutritional-deficiencies/launch-of-sprinkles-nutrition-intervention/>

MacLean A. 2009, Jun 15. *National distribution of MNP in Bolivia*. Micronutrient Initiative. Retrieved from <http://www.iycn.org/files/FINALMIGHCMNPinBolivia061511.pdf>

Micronutrient Initiative. 2008. *Bolivian Family*. Retrieved from http://www.flickr.com/photos/micronutrient_initiative/4560840183/in/set-72157623991276192/

Ojukwu JU, Okebe JU, Yahav D, Paul M. Oral iron supplementation for preventing or treating anaemia among children in malaria-endemic areas. *Cochrane Database of Systematic Reviews* 2009, Issue 3.

Osei A, Timmer A, Grasset C et al. (2009, Jun). *Workshop report on scaling up the use of multiple micronutrient powders to improve the quality of complementary foods for young children in Asia*. UNICEF and US Centers for Disease Control and Prevention.

Ruth L, Jefferds M, Quick R et al. (2009, May 14). *Monitoring coverage, promotional strategies, and perceptions of factors influencing sales of Sprinkles in rural western*



Kenya: *The Nyando Integrated Child Health and Education Project (NICHE)*. Presented at the Micronutrient Forum 2009.

Schuth T. Introducing Sprinkles in Kyrgyzstan: From people's mandate to national policy. *Bulletin of Medicus Mundi Switzerland* 2011, Feb; 119.

Suchdev P, Jung C, Ruth L et al. (2009, May 14). *Sprinkles use not associated with morbidity among young children in western Kenya*. Presented at the Micronutrient Forum 2009.

Suchdev PS, Leeds IL, McFarland DA and Flores R. Is it time to change guidelines for iron supplementation in malarial areas? *J Nutr* 2010; 140(4):875-76.

Suchdev PS, Ruth L, Obure A, et al. Monitoring the marketing, distribution, and use of Sprinkles micronutrient powders in rural western Kenya. *Food Nutr Bull* 2010; 31(2):s168-78.

Suchdev P, Ruth L, Usha M et al. (2009, May 14). *Effectiveness of Sprinkles sales in western Kenya in reducing childhood anemia and iron deficiency*. Presented at the Micronutrient Forum 2009.

Sullivan KM, Suchdev PS and Ruth LJ. Micronutrient powders and iodine. *IDD Newsletter* 2010, Feb; 35(1):6-7.

Timmer A, Dalmiya N and Irizarry L. (2010, Oct 11). *Workshop report on scaling up the use of micronutrient powders to improve the quality of complementary foods for young children in Latin America and the Caribbean*. UNICEF and US CDC.

Troesch B, van Stuijvenberg ME, Smutus CM et al. A micronutrient powder with low doses of highly absorbable iron and zinc reduces iron and zinc deficiency and improves weight-for-age z-scores in South African children. *J Nutr* 2010_jn.110.129247; first published online December 22, 2010.

Van Ameringen M. (2011, Jun 6). A Canadian breakthrough: Fortifying lives through nutrition. *The Huntington Post*. Retrieved from http://www.huffingtonpost.com/marc-van-amerigen/a-canadian-breakthrough_b_867969.html

WHO. (2011, Aug). *Guideline: Use of multiple micronutrient powders for home fortification of foods consumed by infants and children 6–23 months of age*. WHO: Geneva.

WHO. (2011, Aug). *Guideline: Use of multiple micronutrient powders for home fortification of foods consumed by pregnant women*. WHO: Geneva.

Sprinkles Global Health Initiative



WFP and DSM. (2009, Sep). Micronutrient powder use and outcomes in refugee camps in Nepal (ASIA). 2(1). Retrieved from <http://www.unhcr.org/4b7bcbbc9.pdf>