Advocacy Brief

# Nutrition resilience of mothers and their babies

## Antenatal MMS: One of the best bets for global development

October 2023

## Introduction

Maternal nutrition plays a crucial role in the health and well-being of communities and nations. However, poor nutrition continues to rob girls and women of their full potential, preventing them from growing, learning, working, and thriving. This harmful cycle starts before birth, continues through childhood, and can be passed on through motherhood.

Every year, maternal malnutrition contributes to an estimated 800,000 newborn deaths,[1] and iron-deficiency anemia is responsible for an estimated 22 percent of all maternal deaths.[2] Urgent action is needed now to implement and scale up access to proven solutions, like antenatal multiple micronutrient supplementation (MMS), that support mothers for a more resilient future.

## The Importance of Maternal Nutrition

During pregnancy, women need up to 50 percent more micronutrients – vitamins and minerals – to support the physiological changes in their bodies and meet the nutritional needs of their growing babies. Micronutrient deficiencies during pregnancy can have serious consequences for both the mother and her unborn child. These include an increased risk of maternal anemia, preeclampsia, hemorrhage, low birth weight, small for gestational age birth, stillbirth, irreversible stunted growth, impaired cognitive development, risk of chronic disease later in life, and even maternal or child death.[7,8]

### A GLOBAL PROBLEM: THE PREVALENCE OF MICRONUTRIENT DEFICIENCIES IN WOMEN

- Two-thirds of all women of reproductive age (1.2 billion women) are deficient in critical vitamins and minerals like iron, zinc, and vitamin A.[3]
- Up to 90 percent of women are affected in South Asia and Sub-Saharan Africa.[3]
- Anemia affects 36 percent of all pregnant women.[4]
- Iron deficiency anemia (the most common nutritional cause of anemia) accounts for 25 to 50 percent of all anemia cases.[2]

## COVERAGE OF CRITICAL MATERNAL NUTRITION INTERVENTIONS IS UNACCEPTABLY LOW

- Two-thirds of pregnant women in LMICs countries attend four or more ANC services, but the percentage receiving the recommended 90 IFA tablets is even lower.[5]
- For example, in Ethiopia and Kenya, 68 percent and 41 percent of pregnant women attend at least four ANC visits, respectively, but only 5 percent or less consume at least 90 IFA tablets.[6]

Iron-folic-acid (IFA) supplementation is the current standard of care for women in low- and middle-income countries (LMICs) to improve iron and folate status and reduce the risk of poor pregnancy outcomes. Yet, coverage of antenatal care (ANC) services and adherence to IFA supplementation remain unacceptably low.

## The Investment Case for Antenatal MMS

Evidence-based maternal nutrition interventions, like MMS, are readily available and scalable. According to a recent report by Copenhagen Consensus, MMS is considered one of the 12 best investments for global development.[9] The report, authored by leading international economists, highlights the substantial health and economic benefits of replacing IFA supplements with MMS. It states that for every dollar invested in MMS, there is a return on investment of $37.[9]

An estimated 36 million pregnant women in LMICs currently receive IFA supplements.[9] However, IFA alone may not be enough to meet all the nutritional needs of pregnant women since deficiencies in other micronutrients like vitamin A and zinc are also common and can affect pregnancy and birth outcomes.

Antenatal MMS were designed to address the heightened nutritional demands during pregnancy, which are often unmet in resource-poor settings because of poor dietary diversity, limited access to nutritious food, and inequitable gender and social norms.

> For **every dollar** invested in MMS, there is a return on investment of **$37**.

### UNIMMAP-MMS COMPOSITION

| | | | |
|---|---|---|---|
| **Vitamin A** | 800 µg | **Folic acid** | 400 µg |
| **Vitamin D** | 200 IU | **Vitamin B12** | 2.6 µg |
| **Vitamin E** | 10 mg | **Copper** | 2 mg |
| **Vitamin C** | 70 mg | **Iodine** | 150 µg |
| **Thiamine** | 1.4 mg | **Iron** | 30 mg |
| **Riboflavin** | 1.4 mg | **Selenium** | 65 µg |
| **Niacin** | 18 mg | **Zinc** | 15 mg |
| **Vitamin B6** | 1.9 mg | | |

Compared with IFA supplements, MMS has been shown to further reduce the risk of premature births, stillbirths, low birth weight, and small-for gestational age births.[10,11] Providing MMS to women during pregnancy can also prevent losses in human capital, such as educational attainment and income.[12] The cost of replacing IFA supplements with MMS is just US$84 million per year, yet the benefits are worth US$3.2 billion.[9,13,14]

The United Nations International Multiple Micronutrient Antenatal Preparation (UNIMMAP) MMS, which contains 15 essential vitamins and minerals, including IFA, in recommended doses, is an internationally accepted and standardized formula.[13] In 2021, UNIMMAP MMS was included in the World Health Organization's Model List of Essential Medicines in the category '*Medicine for Reproductive Health and Prenatal Care*' based on evidence that it is effective and safe.[16]

## Scaling up MMS implementation and coverage

Twenty-five years after the first introduction of UNIMMAP-MMS, the nutrition sector is finally witnessing momentum and action to make this supplement available for pregnant women. Academic experts, implementing agencies, and foundations are coalescing around a common agenda and united voice on MMS. Many LMICs worldwide are already exploring the introduction of MMS through implementation research;[17] however, despite 20 years of evidence supporting MMS, implementation and coverage remain limited. Only about five percent of pregnant women in LMICs are receiving MMS.[17] There are several factors that hinder the large-scale adoption of MMS:

- **Context-specific WHO recommendations:** National governments may hesitate to adopt MMS due to current WHO recommendations that call for the introduction of MMS in the context of rigorous research.
- **Supply and demand challenges:** While demand for MMS is slowly increasing, the number of global suppliers remains limited, particularly in LMICs.
- **The cost of MMS** is still higher, on average, than IFA supplements, as only one supplier has been able to match its cost.[18]
- **Adherence and delivery:** Implementing MMS requires ensuring high-quality delivery and improving adherence, as current adherence to IFA supplements is low.[6,19]

### KEY RECOMMENDATIONS FOR ACTION

To overcome the barriers to implementation and ensure the widespread availability of MMS, the following key actions should be taken:

1. Create a supportive global and national policy environment for maternal nutrition and MMS.
2. Invest in regional manufacturing and supply of UNIMMAP-MMS, ensuring high quality and an affordable cost for national governments.
3. Develop and implement a harmonized agenda for implementation science to support the delivery and adherence of MMS through strengthened ANC services.

## Conclusion

Maternal malnutrition is not only a public health issue but also an issue of inequity and development. By prioritizing the implementation of MMS programs, we can make sure that mothers receive the essential nutrients they need for a healthy pregnancy. It is crucial for normative agencies, governments, donors, and implementers to collaborate and unite in their efforts to improve the nutrition of future mothers, thereby helping to ensure a resilient future for their children, families, communities, and nations.

## References


1. Bhutta ZA, Das JK, Rizvi A, et al. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet*. 2013;382(9890):452-477. doi:10.1016/S0140-6736(13)60996-4
2. World Health Organization (WHO). Maternal, newborn, child and adolescent health and ageing. Published 2023. Accessed October 10, 2023. https://www.who.int/data/maternal-newborn-child-adolescent-ageing/mca/ageing
3. Stevens GA, Paciorek CJ, Flores-Urrutia MC, et al. National, regional, and global estimates of anaemia by severity in women and children for 2000–19: a pooled analysis of population-representative data. *Lancet Glob Health*. 2022;10(5):e627-e639. doi:10.1016/S2214-109X(22)00084-5
4. Stevens GA, Finucane MM, De-Regil LM, et al. Global, regional, and national trends in haemoglobin concentration and prevalence of total and severe anaemia in children and pregnant and non-pregnant women for 1995-2011: a systematic analysis of population-representative data. *Lancet Glob Health*. 2013;1(1):e16-25. doi:10.1016/S2214-109X(13)70001-9
5. UNICEF. UNICEF Data: Monitoring the situation of children and women. Antenatal care coverage. Published December 2022. Accessed October 10, 2023. https://data.unicef.org/topic/maternal-health/antenatal-care/
6. Karyadi E, Reddy JC, Dearden KA, et al. Antenatal care is associated with adherence to iron supplementation among pregnant women in selected low-middle-income-countries of Asia, Africa, and Latin America & the Caribbean regions: Insights from Demographic and Health Surveys. *Matern Child Nutr*. 2023;19(2):e13477. doi:10.1111/mcn.13477
7. Black RE, Allen LH, Bhutta ZA, et al. Maternal and child undernutrition: global and regional exposures and health consequences. *The Lancet*. 2008;371(9608):243-260. doi:10.1016/S0140-6736(07)61690-0
8. Gernand AD, Schulze KJ, Stewart CP, West KP, Christian P. Micronutrient deficiencies in pregnancy worldwide: health effects and prevention. *Nat Rev Endocrinol*. 2016;12(5):274-289. doi:10.1038/nrendo.2016.37
9. Larsen B, Hoddinott J, Razvi S. *Investing in Nutrition: A Global Best Investment Case*. Copenhagen Consensus Center; 2023:1-20. Accessed August 9, 2023. https://www.cambridge.org/core/product/identifier/S2194588823000222/type/journal_article
10. Keats EC, Haider BA, Tam E, Bhutta ZA. Multiple-micronutrient supplementation for women during pregnancy. *Cochrane Database Syst Rev*. 2019;3(3):CD004905. doi:10.1002/14651858.CD004905.pub6
11. Smith ER, Shankar AH, Wu LSF, et al. Modifiers of the effect of maternal multiple micronutrient supplementation on stillbirth, birth outcomes, and infant mortality: a meta-analysis of individual patient data from 17 randomised trials in low-income and middle-income countries. *Lancet Glob Health*. 2017;5(11):e1090-e1100. doi:10.1016/S2214-109X(17)30371-6
12. Perumal N, Blakstad MM, Fink G, et al. Impact of scaling up prenatal nutrition interventions on human capital outcomes in low- and middle-income countries: a modeling analysis. *Am J Clin Nutr*. 2021;114(5):1708-1718. doi:10.1093/ajcn/nqab234
13. Engle-Stone R, Kumordzie SM, Meinzen-Dick L, Vosti SA. Replacing iron-folic acid with multiple micronutrient supplements among pregnant women in Bangladesh and Burkina Faso: costs, impacts, and cost-effectiveness. *Ann N Y Acad Sci*. 2019;1444(1):35-51. doi:10.1111/nyas.14132
14. Kashi B, M Godin C, Kurzawa ZA, Verney AMJ, Busch-Hallen JF, De-Regil LM. Multiple Micronutrient Supplements Are More Cost-effective Than Iron and Folic Acid: Modeling Results from 3 High-Burden Asian Countries. *J Nutr*. 2019;149(7):1222-1229. doi:10.1093/jn/nxz052
15. World Health Organization (WHO), United Nations Children's Fund (UNICEF), United Nations University (UNU) workshop. Composition of a *Multi-Micronutrient Supplement to Be Used in Pilot Programmes among Pregnant Women in Developing Countries*. WHO; 1999. https://www.who.int/publications/i/item/composition-of-a-multi-micronutrient-supplement-to-be-used-in-pilot-programmes-among-pregnant-women-in-developing-countries--report-of-a-united-nations-children-s-fund-(-unicef)---world-health-organization-(-who)--and-united-nations-university-workshop
16. *World Health Organization Model List of Essential Medicines – 22nd List, 2021*. World Health Organization; 2021. https://www.who.int/publications/i/item/WHO-MHP-HPS-EML-2021.02
17. *Focusing on Multiple Micronutrient Supplements in Pregnancy: Second Edition*. Sight and Life; 2023. https://sightandlife.org/resource-hub/magazine/mms-second-edition
18. Ajello CA, Suwantika A, Santika O, King S, de Lange J. *UNIMMAP MMS for National Health Systems: Considerations for Developing a Supply Strategy*. Kirk Humanitarian; 2022. https://kirkhumanitarian.org/wp-content/uploads/2022/11/FINAL-Kirk_UNIMMAP_MMS_SupplyPaper_Digital.pdf
19. Sununtnasuk C, D'Agostino A, Fiedler JL. Iron+folic acid distribution and consumption through antenatal care: identifying barriers across countries. *Public Health Nutr*. 2016;19(4):732-742. doi:10.1017/S1368980015001652

The HMHB Consortium, hosted by the Micronutrient Forum, promotes evidence-based interventions to improve women's and children's nutrition and health outcomes. It brings together stakeholders to collaborate and share knowledge, advocate for investment in health and nutrition programs, and support evidence-based policies aiming to help achieve the UN's Sustainable Development Goals.

We invite organizations and individuals active in maternal health and nutrition to join the Healthy Mothers Healthy Babies Consortium as a member. Visit us online at HMHBconsortium.org, subscribe to our newsletter, or contact us to learn more at HMHB@Micronutrientforum.org. Follow us on X, LinkedIn, Facebook, and Instagram.

This brief is part of a series of papers designed to stimulate new thinking and discourse in advance of the Micronutrient Forum 6th Global Conference, Nutrition for Resilience (N4R): Ensuring Micronutrient Security in an Era of Complex Global Challenges. This hybrid conference, with an in-person component in The Hague, Netherlands, and online, will explore the interdependence of micronutrient nutrition and the resilience of individuals, communities, and systems within the context of a world where global crises are the new normal. For more information, click here.

N4R | Nutrition for Resilience

**Micronutrient Forum 6th Global Conference**

The Hague, the Netherlands & ONLINE

16-20 October 2023