

Multiple Micronutrient Supplementation During Breastfeeding: Guidance to Interpret the UNIMMAP MMS* Product Label

January 2025

EXPERT GUIDANCE



Purpose

To provide decision-makers with expert guidance from the global MMS Technical Advisory Group (MMS TAG) on interpreting the inclusion of *breastfeeding* women in the UNIMMAP MMS* product label, ensuring informed decisions on the postpartum use of antenatal multiple micronutrient supplements (MMS).

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*UNIMMAP MMS = United Nations International Multiple Micronutrient Antenatal Preparation



Summary of key points and best practices

1. Prenatal Multiple Micronutrient Supplements (MMS) are supplements designed for pregnant women. The United Nations International Multiple Micronutrient Antenatal Preparation (UNIMMAP MMS) is a tablet formulated with 15 vitamins and minerals at a single Recommended Dietary Allowance (US Institute of Medicine) for pregnancy. Its daily use in pregnancy has been shown to be safe and effective for improving birth outcomes.

2. The World Health Organization (WHO) has issued a context-specific recommendation for MMS use in pregnancy and the UNIMMAP MMS formulation is listed in the WHO Essential Medicines List.

3. MMS introduction and scale-up within antenatal care is increasing, being conducted by national governments. Implementers are raising the issue of using leftover MMS tablets, if any, after delivery, while breastfeeding.

4. To answer this question, the Global MMS Technical Advisory Group developed the current guidance, based on the group expert opinion.

5. Albeit limited, **evidence from trials suggests benefits of providing MMS during breastfeeding, given its potential to influence breastmilk micronutrient composition, infant growth, maternal cognition, and maternal and infant micronutrient status.** The presumed postpartum benefit of MMS is biologically plausible and MMS is likely to be a safe and a valuable addition to a mother's postpartum diet and, consequently, for the breastfed baby.



6. Recognizing the postpartum period as an opportunity to restore maternal nutrition reserves after childbirth, the United Nations Children's Fund (UNICEF) guidance supports the continued use of MMS postpartum.

7. While pregnant women should be the primary target for receiving MMS in national antenatal care services, if MMS tablets remain after delivery of the baby, **women may use remaining MMS tablets postpartum.**

8. Where national guidelines exist regarding preventive iron supplementation in the postpartum period, UNIMMAP MMS (containing iron) may be used instead.

9. The updated UNIMMAP MMS product label now states "Multiple Micronutrient Supplement for Pregnant and Breastfeeding Women".



Background

MMS are supplements for pregnant women, proven to reduce the risk of adverse birth outcomes.¹⁻³ The WHO has issued a context specific recommendation for its introduction,⁴ and program guidance for country level decision-makers has been issued by UNICEF.^{5,6} The UNIMMAP MMS, containing 15 vitamins and minerals to meet pregnancy needs, is the most extensively studied MMS formulation and is now listed in the WHO Model List of Essential Medicines.⁷

Following an evidence-based approach, some national governments are exploring the potential use of UNIMMAP MMS, and increasingly decide to introduce and scale its use within the context of antenatal care (ANC). As exploration and introduction proceed, an important question decision-makers and stakeholders ask is whether UNIMMAP MMS is recommended to be targeted for use by **pregnant** women only, or for **both pregnant and breastfeeding women**.

This document explains why this issue has come to prominence recently and provides guidance to decision-makers on appropriate use of UNIMMAP MMS.

The document is not based on a formal guideline development process, but rather on the expert opinion of the global MMS Technical Advisory Group, taking into consideration the current, albeit limited, evidence.

The description of the product in a new, standardized label is “UNIMMAP – Multiple Micronutrient Supplement for Pregnant and Breastfeeding Women”. The term *breastfeeding women* may be confusing to national governments exploring the introduction and scale-up of antenatal UNIMMAP MMS. **The inclusion of both pregnant and breastfeeding women on the label is intended to recognize that MMS is proven to be efficacious and safe during pregnancy, and is likely to continue to convey nutritional benefits to mothers postpartum and to their breastfed infants.**

A detailed description of the new standardized elements for the UNIMMAP MMS product label and packaging can be found [here](#), which is also included in the consensus product specification with unified guidance on the production of UNIMMAP MMS.⁸

DIRECTIONS: Take one tablet daily with food, or upon retiring. Not to be chewed. Do not exceed recommended dose.

STORAGE: Do not store above 30°C, protect from light and moisture. **Keep out of reach and sight of children.**

Manufactured by
Manufacturer contact information here

usp
Verified
UNIMMAP

UNIMMAP

Multiple Micronutrient Supplement for Pregnant & Breastfeeding Women

Tablets WHO/UNICEF Formulation

Supplement Facts		
Serving Size: 1 Tablet		
Amount Per Serving		%Daily Value*
Vitamin A (as Retinyl Acetate)	800 mcg RAE	62%
Vitamin C (as Ascorbic Acid)	70 mg	58%
Vitamin D (as Cholecalciferol)	5 mcg (200 IU)	33%
Vitamin E (as d-α-Tocopheryl Succinate)	10 mg α-TE	53%
Vitamin B-1 (as Thiamine Mononitrate)	1.4 mg	100%
Vitamin B-2 (Riboflavin)	1.4 mg	88%
Vitamin B-3 (as Niacinamide)	18 mg NE	100%
Vitamin B-6 (as Pyridoxine HCl)	1.9 mg	95%
Folate (as Folic Acid)	680 mcg DFE (400 mcg)	113%
Vitamin B-12 (as Cyanocobalamin)	2.6 mcg	93%
Iron (as Ferrous Fumarate)	30 mg	111%
Iodine (as Potassium Iodide)	150 mcg	52%
Zinc (as Zinc Oxide)	15 mg	115%
Selenium (as Sodium Selenite)	65 mcg	93%
Copper (as Cupric Oxide)	2 mg	154%

*Daily Value (DV) for Pregnant and Lactating Women, as established by the U.S. FDA.

OTHER INGREDIENTS: Microcrystalline Cellulose, Dicalcium Phosphate, Croscarmellose Sodium, Magnesium Stearate, Silica, Starch, Polyvinylpyrrolidone, Sucrose, Acacia, Crospovidone, Hydroxypropylcellulose, Polyethylene Glycol, Triglycerides, Tocopherols, Sodium Ascorbate and Tricalcium Phosphate.

WARNING: Accidental overdose of iron-containing products is a leading cause of fatal poisoning in children under 6. **Keep this product out of the reach of children. In case of accidental overdose, call a doctor or poison control center immediately.**

MFG DATE:
EXP DATE:
LOT#:

NOT FOR SALE
RXXXXX

Figure 1 – New, illustrative, consensus label developed for use on UNIMMAP MMS product qualified to show the elements to be displayed on all packaging formats (bottles of any tablet count, box packaging, or blister packs), including the Pink Figures Mark, the United States Pharmacopeia (USP) Verified UNIMMAP Mark, and the word description “Multiple Micronutrient Supplement for Pregnant and Breastfeeding Women”.



The evidence on the safety and benefits of MMS during breastfeeding

Table 1 shows the Recommended Dietary Allowances (RDA) for 15 vitamins and minerals for non-pregnant and non-lactating women, for pregnant women and for lactating women, as well as the composition of UNIMMAP MMS. During lactation, similar to pregnancy, most micronutrient

requirements are increased – between 17% to 93% – in comparison to those for non-pregnant and non-lactating women. The only exception is iron, for which the requirements drop to 9 mg per day during lactation (presumably, until menses return).

Table 1 - Recommended Dietary Allowances (RDA) for 15 vitamins and minerals for non-pregnant and non-lactating women, in pregnant women and in lactating women,^{9,10} as well as the composition of UNIMMAP MMS

Nutrient	RDAs for non-pregnant and non-lactating (NPNL) women	RDAs for pregnant women (% increase from NPNL women)	RDAs for lactating women (% increase from NPNL women)	UNIMMAP MMS formulation
Vitamin B1 (thiamine)	1.1 mg	1.4 mg (+27%)	1.4 mg (+27%)	1.4 mg
Vitamin B2 (riboflavin)	1.1 mg	1.4 mg (+27%)	1.6 mg (+45%)	1.4 mg
Vitamin B3 (niacin)	14 mg	18 mg (+28%)	17 mg (+21%)	18 mg
Vitamin B6 (pyridoxine)	1.3 mg	1.9 mg (+46%)	2.0 mg (+53%)	1.9 mg
Vitamin B9 (folate)	400 µg DFE	600 µg DFE (+50%)	500 µg DFE (+25%)	680 µg DFE (400 µg of folic acid)
Vitamin B12 (cobalamin)	2.4 µg	2.6 µg (+8%)	2.8 µg (+17%)	2.6 µg
Vitamin C (ascorbic acid)	75 mg	85 mg (+13%)	120 mg (+60%)	70 mg
Vitamin D (cholecalciferol)	600 IU	600 IU	600 IU	200 IU
Vitamin E (tocopherol)	15 mg	15 mg	19 mg (+27%)	10 mg
Copper	900 µg	1000 µg (+11%)	1300 µg (+44%)	2000 µg
Iodine	150 µg	220 µg (+47%)	290 µg (+93%)	150 µg
Iron	18 mg	27 mg (+50%)	9 mg (-50%)	30 mg
Selenium	55 µg	60 µg (+9%)	70 µg (+27%)	65 µg
Zinc	8 mg	11 mg (+38%)	12 mg (+50%)	15 mg

DFE = Dietary Folate Equivalents; IU = International Units; RDA = Recommended Dietary Allowances; UNIMMAP MMS = The United Nations International Multiple Micronutrient Antenatal Preparation



Although adverse effects of excessive amounts of iron in other life stages have been documented,¹¹⁻¹⁴ a study testing the provision of an iron supplement with 27 mg of iron (close to the iron content in UNIMMAP) taken with a distinct iron-free MMS vs placebo (iron-free MMS) for 3.5 months in non-anemic lactating mothers resulted in moderately increased iron status and hemoglobin levels, without increasing oxidative stress or other adverse effects.¹⁵

WHO recommends that oral iron supplementation may be provided to postpartum women for 6–12 weeks following delivery for reducing the risk of anemia in settings where gestational anemia is of public health concern (i.e., in populations with at least 20% of women affected by gestational anemia), irrespective of their lactation status.¹⁶ Thus, providing a relatively modest amount of iron in postpartum is likely beneficial in LMICs, where 95% (121 out of 128 LMICs) of countries have a prevalence of gestational anemia greater than 20%.¹⁷

The focus on replenishing iron stores soon after childbirth is justified by the need to prevent the adverse effects of postpartum iron deficiency and anemia from continuing through other stages of the reproductive cycle.¹⁸ This is particularly relevant for women with short inter-pregnancy intervals.

Providing MMS during breastfeeding has the potential to influence breastmilk micronutrient composition, infant growth, maternal cognition, as well as maternal and infant micronutrient status.

The benefits of providing MMS (in comparison to IFA) for pregnant women have been extensively studied in 19 trials conducted in various LMICs.^{1,3} In contrast, few trials assessed the effect of MMS in breastfeeding mothers,¹⁹ demonstrating the need for more direct research on this topic. However, it is known that maternal dietary supplementation with vitamins A, D, E, K, most B-complex vitamins, and C, as well as choline, iodine, and selenium, influences the levels of these nutrients in breast milk.^{20,21}

Nine of the 19 trials that assessed the effect of MMS during pregnancy continued MMS postpartum, with supplementation duration varying from 1 month to 6 months after birth.²²⁻³⁰ **In those trials that continued supplementation in the postpartum, recent analysis suggested that MMS has greater benefits on infant size and growth** (such as higher length, weight and head circumference, and lower risk of stunting and small head circumference up to 3-6 months), in comparison to the effect observed in the studies that discontinued MMS at birth (unpublished data – manuscript submitted for publication).³¹ The evidence on the benefits of continuing MMS postpartum is limited by the small number of trials.

Most trials assessing the effect of (multiple) micronutrient supplementation focus primarily on breastmilk micronutrient status or infant growth, often neglecting the impact on maternal health. One major trial conducted in Bangladesh (JiVitA-3), which compared the effect of MMS (with ~ 1 RDA of 15 micronutrients) versus IFA during pregnancy through 3 months postpartum analyzed not only breastmilk composition but also maternal and infant micronutrient status until 3 months postpartum. An oral presentation given at the Micronutrient Forum's 6th Global Conference described the findings on micronutrient status at 3 months postpartum.³²



At the end of supplementation (3 months postpartum), in comparison with IFA, MMS significantly reduced maternal deficiencies of vitamins B12, A, D, and E, as well as infant deficiencies of vitamins B12 and D. However, even in the MMS group, some deficiencies remained prevalent. In terms of breastmilk composition, MMS significantly improved the levels of vitamins A, E, B2, B3, B6, and B12 compared to IFA. However, these concentrations remained insufficient to fully meet the nutritional recommendations for infants up to 6 months. Thus, **these findings suggest that maternal and infant micronutrient status, as well as breastmilk composition, are enhanced with the continued use of MMS postpartum**, although some women may benefit from³² higher doses or longer supplementation duration.

Similar benefits on maternal micronutrient status were observed when limited to women who were breastfeeding, with an intervention that lasted 6 months. A recent RCT enrolled lactating mothers within 7 days after birth and provided a daily snack containing 600 kcal and 20 g of protein (unlikely to

have a significant contribution to the total micronutrient intake) along with a UNIMMAP MMS for the first 6 months postpartum. Compared to the control group (which received no intervention), lactating mothers who received MMS and the snack showed significantly higher serum levels of ferritin (a biomarker of iron status), vitamin A, folate, and vitamin D at 6 months postpartum. In addition, the infants had improved ferritin and vitamin A status at 6 months.³³

Another large trial (SUMMIT) compared the effect of MMS vs IFA during pregnancy and until three months postpartum on maternal cognition and mood. At the end of the supplementation period, **MMS resulted in significant benefits on maternal overall cognition and reading efficiency (compared to IFA)**, which may result in improved quality of care provided to the infant.³⁴

Ongoing systematic reviews are evaluating the effect of micronutrient supplementation in pregnancy and lactation on maternal and infant nutritional status.³⁵





Practical considerations for the use of MMS during breastfeeding



- Recognizing the postpartum period as an opportunity to replenish nutrients lost due to pregnancy, childbirth and breastfeeding, UNICEF guidance on maternal nutrition supports the continued use of MMS during the postpartum, in addition to nutrition counselling, breastfeeding counseling and deworming.⁵
- In humanitarian settings, there is guidance to provide MMS during pregnancy and breastfeeding,^{36,37} since 2006.³⁷
- If MMS tablets provided during pregnancy remain after delivery of the baby, the woman may continue using the remaining supplements.
- The new, standardized bottle label on the use of MMS conveys its safety for the use of any remaining MMS after delivery of the baby.
- Where national guidelines exist regarding preventive iron supplementation in the postpartum period, MMS (containing iron) may be used instead and national guidelines can be adjusted accordingly.
- Further research is needed before breastfeeding women are included as a priority target audience for the provision of MMS (beyond the primary target of pregnant women). Thus, provision of the MMS product to all breastfeeding women should not be routine until further research on costs, benefits, and other implications for programs is conducted.
- National governments should plan to continue procuring iron or, if not available, IFA supplements for treatment of iron deficiency anemia.



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About HMHB and MMS TAG

The **Healthy Mothers Healthy Babies Consortium (HMHB)**, hosted by the **Micronutrient Forum**, is a growing collective of more than 300 organizations and individuals dedicated to improving maternal nutrition. We work collaboratively to accelerate the availability and effective use of affordable MMS and other nutrition interventions during pregnancy in low and middle-income countries.

Hosted by HMHB, the **global MMS TAG** is an interdisciplinary, diverse group of members with expertise in nutrition, maternal health, and public health that serves to interpret the evidence on MMS and provide high-fidelity guidance for stakeholders and decision-makers, including national governments, considering introduction and use of MMS in antenatal care services.

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