Introduction of multiple micronutrient supplements (MMS) through antenatal care: **Training for healthcare providers**

Training manual for master trainers

Two-day training

June 2024

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Acknowledgment

The *Advancing Maternal Health through MMS Implementation Research* (AMMI) project is being conducted by Nutrition International in partnership with the Nutrition Wing of the Ministry of National Health Services, Regulations and Coordination Government of Pakistan (MoNHSR&C) with the support and guidance of the Directorate General Health Services and Integrated Health Program of Khyber Pakhtunkhwa, the District Health Office of Swabi, Khyber Pakhtunkhwa and the MMS Technical Working Group. This training manual was adapted from the AMMI project. This manual draws on the standard training for healthcare providers that supported the transition from iron folic acid supplementation (IFAS) to multiple micronutrient supplementation (MMS) in antenatal care (ANC) services across district Swabi, Khyber Pakhtunkhwa, Pakistan in 2022. It was developed as the minimum amount of training that healthcare providers should receive before providing MMS to pregnant women. The findings from AMMI are guiding a more comprehensive package that is designed to drive and sustain adherence. This package is being evaluated and results will be available in October 2024. In scale up planning, this manual should be considered alongside the new findings and enhanced resources.

This manual was developed by Nutrition International with input and guidance from the Nutrition Wing of the MoNHSR&C.

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Abbreviations and acronyms

AI: Adequate Intake

AMMI: Advancing Maternal Health Through MMS Implementation Research

ANC: Antenatal Care

BMI: Body Mass Index

DHIS2: District Health Information Software 2

EML: Essential Medicine List

Hb: Haemoglobin

HCF: Healthcare Facility

IFAS: Iron and Folic Acid Supplementation

IPC: Interpersonal Communication

LBW: Low Birth Weight

LHS: Lady Health Supervisors

LHWs: Lady Health Workers

MMR: Maternal Mortality Ratio

MMS: Multiple Micronutrient Supplementation

MNP: Multiple Micronutrient Powder

MoNHSR&C: Ministry of National Health Services, Regulations and Coordination Government of Pakistan

RAE: Retinol Activity Equivalent

RDA: Recommended Dietary Allowance

SD: Standard Deviation

SOPs: Standard Operating Procedures

ToT: Training of Trainers

UL: Tolerable Upper Intake Level

UNIMMAP: United Nations International Multiple Micronutrient Antenatal Preparation

WHO: World Health Organization

WRA: Women of Reproductive Age

General guidelines for program planners

Even if supply is available, before embarking on training, program planners are advised to think through the following fundamental components:

- **Logistics and distribution plan of MMS:** Develop a micro plan specifying how the MMS commodities will be managed from the warehouse to the end user with clear timelines. Detail where the MMS will be warehoused (including storage and climate control of commodity and stock control), health system channel(s) that will be used for distribution to facilities as well as the last mile distribution points, frequency of distribution and plans for resupply.

- **Implementation and supporting materials:** Develop a program implementation plan that details the systematic introduction of MMS into the ANC platform. Develop or adapt program guidance, standard operating procedures (SOPs) and tools and job aids (i.e. take-home sheets, counselling cards, frequently asked questions) that will support the transition. These should be based on the local context, health system, existing ANC guidelines and resources.

- **Management of anaemia:** Based on local and global guidelines, consider how best to support appropriate diagnosis and clinical care for pregnant women who are anaemic and ensure the program SOPs reflect this. Ensure a treatment dose of iron continues to be available in the supply chain.

- **Monitoring plan:** Develop a monitoring plan for ongoing program monitoring, course correction and learning. The supporting tools and methods should feed into existing routine monitoring systems where possible. Where District Health Information Software 2 (DHIS2) (which includes new indicators for MMS) is not yet rolled out, short-term systems may be required. Engage in continuous monitoring and course correction through supportive supervision mechanisms.

- **Training plan:** Develop a detailed plan including the identification of the cadres and number of participants who should receive this training and the master trainers who will be responsible for cascading it. The training should be modified to suit the needs of the participants.

- **Sustainability plan:** Consider the long-term aspects of maintaining this program over time such as continuous and timely procurement, sustained financing, and ongoing service delivery including supportive supervision, refresher trainings and reprinting of job aids. Build in ongoing course correction and learning.

General guidelines for the trainers

Trainers are advised to adhere to the following important guidelines when conducting this training:

- **Thorough preparation**: Ensure thorough preparation and rehearsal of the training material and activities in advance. Familiarize yourself with the content of the accompanying PowerPoint slide deck to avoid reading directly from it during the presentation.
- **Primary references**: Rely on this Trainer's Manual and the PowerPoint slides as your main references.
- **Organization**: Maintain a high level of organization throughout the training.
- **Continuous monitoring**: Engage in continuous monitoring by closely observing trainees' body language to assess their interest and understanding of the content.
- **Effective energizers**: Observe participants' energy and focus. Integrate brief energizers regularly, especially when participants seem sleepy or fatigued, or to facilitate smooth transitions between training sections. Choose activities that align with the local culture.
- **Active listening and engagement**: Actively listen to the trainees, encourage questions, patiently provide clarifications when needed and keep them engaged through active interaction.
- **Language and tone:** Be mindful of your choice of words and adopting professional and clear tone. Maintain professionalism and refrain from using jargon that may be unfamiliar to some participants.
- **Appreciation**: Thank the trainees for their participation and keen interest.
- **Facilitation approach**: During discussions with the trainees, avoid giving the impression of testing their knowledge. Instead, create an environment where participants recognize that their knowledge, experiences and ideas can benefit others. Encourage voluntary responses instead of singling out individuals with direct questions.
- **Transition between modules**: As you move from one module to the next, summarize key points, seek feedback and welcome questions. This helps assess the trainees' understanding of the previous module.
- **Pre-training preparation**: Before the training, meticulously organize materials, handouts and stationery. Ensure that all electronic devices and presentations required for the training are functioning properly.
- **Post-training documentation and reporting**: After each training module, record or document the feedback gathered from the various discussions and prepare a comprehensive summary report.

Training Overview

CONTEXT OVERVIEW

The Government of Pakistan's Maternal Nutrition Strategy (2022-2027) outlines the government's commitment to addressing the maternal nutrition situation in the country and includes a recommendation to implement MMS as part of antenatal care (ANC) services for pregnant women. The Nutrition Wing of the Ministry of National Health Services, Regulations and Coordination (MoNHSR&C) has been working with Nutrition International to conduct implementation research to look at the introduction of MMS to replace IFAS during antenatal services in Pakistan since 2021. The research focuses on effective implementation approaches to inform sustainable transition and scale up and ensure maximum health impact of MMS (1,2).

To undertake the implementation research, MMS had to be first introduced into the ANC platform in place of IFAS. Swabi district, located in Khyber Pakhtunkhwa province was selected as the pilot area for the project. Beginning in April 2022, with the support of federal, provincial and district health officials and local stakeholders, all newly enrolled pregnant women accessing public ANC services in Swabi were offered MMS. To further support this transition from IFAS to MMS, a 'standard' implementation package was developed. This included training for healthcare providers on MMS, the development of new standard operating procedures, a behaviour change strategy and materials, a bolstered program monitoring system and a strengthened supply chain.

The training manual used for this 'standard' implementation package forms the basis for this training and is being shared to support the wider scale up efforts. It was developed to showcase the minimum amount of training that healthcare providers should receive before providing MMS. The findings from the *Advancing Maternal Health through MMS Implementation Research* (AMMI) project are guiding a more comprehensive package that is designed to drive and sustain adherence. This package is being evaluated and results will be available in October 2024. In scale up planning, this manual should be considered alongside the new findings and resources.

Nutrition International is available to guide local adaptation, design and planning to optimize the use of this manual and the accompanying package of tools.

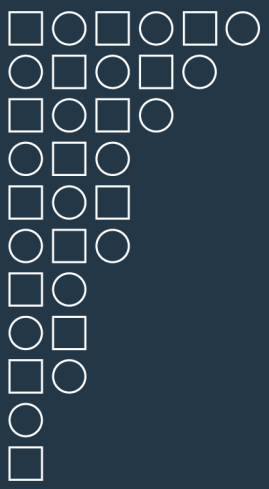
PURPOSE AND INTENDED AUDIENCE OF THE TRAINING

This training is designed to guide and support healthcare providers in providing MMS instead of IFAS to non-anaemic pregnant women during their ANC contacts through public healthcare services in Pakistan. This training manual serves as a thorough resource, guiding master trainers on effectively conveying knowledge and providing detailed instructions to meet this goal. It encompasses all essential steps and information required for delivering each module efficiently, ensuring trainers are adequately prepared to convey the material, engage participants and achieve the training's objectives. Subsequently, a cascading training approach can be adopted using the training of trainers (ToT) method, primarily targeting healthcare providers at health facility and/or community levels, in alignment with the agreed-upon training plan.

TRAINING CONTENT AND DURATION

This master training manual is organized into eight modules, each featuring a well-structured outlined plan, including learning objectives, overall duration, supporting materials and tools, key discussion topics and relevant learning activities. The modules are distributed over two consecutive days, covering various topics including setting the tone, nutrition during pregnancy, from IFAS to MMS, key messages on how to give MMS, MMS Take Home Sheet, MMS Standard Operating Procedures (SOPs), monitoring and reporting and closing of the training.

A complementary set of PowerPoint slides accompanies this manual, offering a concise summary of its content for streamlined presentation purposes. Other components of the training package include pre-test and post-test assessments (available upon request) and participants' manual(s).



MODULES

Module 1: Setting the tone

DURATION
110 MINUTES

This module serves as an introduction that sets the tone for the training. Within this module, participants will be provided with an overview of what to expect, with an emphasis on the importance of creating a positive and interactive learning environment.

1.1 LEARNING OBJECTIVES

By the end of this introductory module, participants will:

- Know the learning objectives
- Get familiarized with the training team
- Know the training flow and scheduled activities

1.2. MATERIALS AND HANDOUTS/FORMS NEEDED:

- PowerPoint presentation
- Training manual
- Flipcharts and permanent markers
- Registration form
- Training schedule *(one for each participant)*
- Pre-test assessment *(one for each participant)*
- Board
- Sticky notes *(for each participant and for the trainers)*
- Pens *(one for each participant)*
- Notepads *(one for each participant)*

1.3. INSTRUCTIONS TO FACILITATORS

a. Registration and opening remarks (30 minutes)

- Welcome participants as they arrive and guide them through the registration process, using the training's registration form.
- Invite one person from the participants to recite verses from Holy Quran. (Note: cultural and religious practices may differ; trainers should be mindful of these variations)
- Proceed with opening remarks and discuss how participants can bring about positive change by enhancing their own capacities and skills through this training.
- Conclude the opening remarks by acknowledging participants' attendance. Reinforce the value of their active participation throughout the training modules.

b. Pre-test assessment (25 minutes)

- Distribute the pre-test assessment (available upon request) then allocate 15 minutes for participants to complete it.
- Collect the participants' responses.
- Kindly refrain from reviewing or making corrections to the pre-test assessment at this point since the same test will be used to assess the participants' acquired knowledge at the end of the training.

c. Establishment of training rules (10 minutes)

- Ask the participants to specify rules they would like to set in place for the training.
- Write the training rules on a flipchart and place the flipchart somewhere in the training hall that is visible to everyone.
- Conclude by saying that since these rules have been established through consensus, it is the responsibility of each participant to follow them.

d. Background and overview of the training and its objectives (45 minutes)

- Present to the participants the background and context to the transition from IFAS to MMS and the overview and objectives of the training:

ANC has been recognized as a strategic platform for delivery of services, health promotion, and disease prevention (3). In July 2020, the World Health Organization's (WHO) recommendation about administering MMS — a daily dose of 15 vitamins and minerals including iron and folic acid — during pregnancy was updated in response to new evidence that showed that MMS was more effective than IFAS in improving birth outcomes, had equivalent benefits for preventing maternal anaemia, was safe for mother and baby and is more cost-effective (4,5). In the 2020 update (4), the WHO recommended that implementation research be conducted in settings where the transition from IFAS to MMS is being considered. Implementation research is useful to understand how to effectively introduce proven interventions, such as antenatal MMS, in real-life situations.

Based on the updated WHO recommendation, the maternal and newborn needs in the country and the government's vision, the Government of Pakistan began undertaking implementation research on MMS with Nutrition International in 2021 (AMMI project) (2). The research was initiated with the establishment of a MMS technical advisory group chaired by the MoNHSR&C. A set of research questions were then selected and prioritized by this group using a participatory process. The research is being conducted using mixed methods over three different phases and has included a situation analysis, formative research, an extensive participatory research phase using human centred design and a set of evaluations (outcome, process and cost-effectiveness). The research is focused not only on transitioning from IFAS to MMS through the health system, but also understanding what changes could be made in the platform to improve ANC services for pregnant women and increase adherence. The research is in its final phase and findings will continue to be rolled out to support scale up efforts underway.

This training has been adapted from the AMMI project to showcase the minimum amount of training that healthcare providers should receive before providing MMS to pregnant women. It is designed to guide and support healthcare providers in providing MMS instead IFAS to non-anaemic pregnant women during their ANC contacts at public healthcare facilities. Additionally, this training provides essential resources for the provision of MMS, including the MMS Take Home Sheet, MMS

SOPs (available upon request) and participants' manual(s). These resources will be thoroughly explained and discussed throughout the training.

Ask audience

Learning activity 1.1:

Participants' expectations:

- Ask the participants to write down their expectations on sticky notes then place them on a board (parking lot).
- Take note of the parking lot during this session and throughout the training (to then be included in the training report).

Material required:
Board, sticky notes, pens, PowerPoint presentation

Ask audience

Learning Activity 1.2:

Participants' previous knowledge and experience with MMS:
If relevant, ask participants to share any previous knowledge and experiences they may have with MMS.

Material required:
Board, sticky notes, pens, PowerPoint presentation

- Briefly introduce the following key definitions to the participants, mentioning that they will be extensively discussed throughout the training:
  - **Iron folic acid supplement (IFAS):** A prenatal supplement that contains 30-60mg of iron and 400mcg of folic acid (3).
  - **Multiple micronutrient supplementation (MMS):** A prenatal micronutrient supplement that contains 15 vitamins and minerals, including iron and folic acid (4).
  - **Adherence** (related to MMS): WHO recommends MMS to be taken daily during pregnancy to prevent anaemia. For pregnant women to receive the most health benefits from MMS tablets, high adherence throughout pregnancy is required (3). Therefore, adherence is the extent to which a pregnant woman takes MMS daily.

Module 2: Nutrition during pregnancy

DURATION
60 MINUTES

This module presents the increased maternal micronutrient needs and the importance of a balanced, nutritious diet and adequate supplementation during pregnancy.

2.1. LEARNING OBJECTIVES:

To provide a comprehensive understanding of the:

- Increased nutritional requirements of pregnant women
- Impact of poor nutritional status and micronutrient deficiencies on maternal and birth outcomes
- Significance of consuming a balanced, nutritious diet and adequate micronutrient supplementation during pregnancy

2.2. MATERIALS AND HANDOUTS/FORMS NEEDED:

- PowerPoint presentation
- Training manual
- Flipcharts and permanent markers
- Notepads *(one for each participant)*
- Letter cards for the multiple-choice questions *(one for each participant)*
- Green/red cards *(one for each participant)*

2.3. KEY DISCUSSION POINTS TO BE COVERED BY THE FACILITATORS:

Increased nutritional needs of pregnant women:

- During gestation, nutritional needs are increased to meet the physiological requirements, sustain fetal growth and development, protect the health of the mother during pregnancy and build her capacity to effectively breastfeed.
    - Estimated energy requirements: Women who have a normal pre-pregnancy body weight require an additional +340 calories/day during their second trimester and +452 kcal/day during their third trimester (6).
    - Micronutrient requirements: Compared to non-pregnant women, the majority of micronutrient requirements increase during pregnancy. Table 1 presents the Recommended Dietary Allowance (RDA) of selected micronutrients (6).

Table 1. Recommended dietary allowance (RDA) of selected micronutrients for non-pregnant vs. pregnant women

	Non-pregnant		Pregnant	
RDA *	**Adolescent girls (14-18 years)**	**Women (19-50 years)**	**Adolescent girls (14-18 years)**	**Women (19-50 years)**
Iron (mg/day)	15	18	27	27
Folate (µg/day)	400	400	600	600
Vitamin A (µg RAE/day) **	700	700	750	770
Vitamin D (µg/day)	**5**	**5**	**5**	**5**
Vitamin E (mg/day)	15	15	15	15
Vitamin C (mg/day)	65	75	80	85
Vitamin B6 (mg/day)	1.2	1.3	1.9	1.9
Vitamin B12 (µg/day)	2.4	2.4	2.6	2.6
Zinc (mg/day)	9	8	12	11
Vitamin B1 (mg/day)	1.0	1.1	1.4	1.4
Vitamin B2 (mg/day)	1.0	1.1	1.4	1.4
Niacin (mg/day)	14	14	18	18
Copper (µg/day)	890	900	1000	1000
Selenium (µg/day)	55	55	60	60
Iodine (µg/day)	150	150	220	220
Calcium (mg/day)	**1300**	**1000**	**1300**	**1000**

Reference: Institute of Medicine 2006 (6)
Abbreviations: RAE: Retinol activity equivalent; RDA: Recommended dietary allowance.
* Values in **bold font** represents an adequate intake (AI)
** Tolerable upper intake level (UL) of vitamin A: 2800 µg RAE/day for pregnant adolescent girls aged 14-18 years; 3000 µg RAE/day for pregnant women aged 19-50 years (6)

- Globally, many pregnant women do not meet their dietary requirements through food alone which can have negative consequences on their health and the health of their baby. For example, a woman's daily iron requirement nearly doubles during pregnancy, increasing from 15 mg/day and 18 mg/day for non-pregnant women aged 14-18 years old and 19-50 years old, respectively, to 27 mg/day for pregnant women aged 14-50 years old (6). Therefore, to fulfill their nutritional requirements, pregnant women are advised to consume a balanced, nutritious diet, in addition to daily adequate micronutrient supplementation.

The impact of poor nutrition on pregnancy and birth outcomes:

- Poor nutrition during pregnancy can lead to micronutrient deficiencies which could result in adverse maternal and fetal outcomes (7). For instance, deficiencies in iron, folate, vitamin A and vitamin B12 can lead to anaemia – which is a serious global public health concern (8). The causes of anaemia are often multifaceted, but in lower-middle-income countries like Pakistan, iron deficiency is one of the major contributors to anaemia (8).

Ask audience

Learning activity 2.1:

Multiple-choice question:
What are the consequences of anaemia on the health of pregnant women and on birth outcomes?

Material required:
Letter cards, PowerPoint presentation

- Anaemia during pregnancy elevates the mother's risk of mortality and increases the risk of adverse maternal and birth outcomes, including preterm birth and low birth weight (i.e. babies being born too early or too small) (7). Anaemia can also lead to maternal fatigue, weakness and dizziness.

Health and nutrition status of women of reproductive age (WRA) and children in Pakistan:

High burden of pregnancy and birth outcomes:

- Neonatal mortality rate:
    - *Definition:* "Probability of dying during the first 28 days of life, expressed per 1,000 live births" (9)
    - Neonatal mortality rate is 42 per 1000 live births (10) (data from 2020), positioning Pakistan with the highest baseline neonatal mortality rate in South Asia (11).
- Maternal mortality ratio (MMR):
    - *Definition*: "The number of maternal deaths during a given time period per 100,000 live births during the same time period" (12)
    - Maternal mortality ratio is 186 per 100 000 (13) (data from 2019), indicating a high MMR (14). Despite significant improvements in MMR from 2000 to 2017, it remains considerably high (14).

- Low birth weight:
    - *Definition*: Weight at birth of <2500 g (5.5 pounds) (15)
    - LBW is estimated to be 32% in Pakistan (16), indicating a high prevalence of LBW.
    - Global data estimated that 15% to 20% of all births worldwide are categorized as LBW (17). In comparison, Pakistan's LBW rates are nearly double the global prevalence.
- Stunting among children under five years (height-for-age <-2SD):
    - *Definition*: "Stunting, or being too short for one's age, is defined as a height that is more than two standard deviations below the WHO child growth standards median". (18)
    - Very high rates of stunting (40.2%) were reported among children under five years of age (19,20). The average annual reduction rate since 2011 is estimated at ~0.5% (20), which falls far below the global nutrition targets aiming to reduce stunting by 40% (21).

Triple burden of malnutrition:

- Underweight and overweight/obesity:
    - Table 2 shows the prevalence (%) of underweight and overweight/obesity among women of reproductive age (WRA) (15-49 years) and adolescents (10-19 years) in Pakistan.

Table 2. Prevalence (%) of underweight and overweight/obesity among WRA (15-49 years) and adolescents (10-19 years) in Pakistan; 2011 and 2018

WRA (15-49 years)		
	2011	**2018**
Underweight (BMI <18.5 kg/m^2)	18 %	14.4 % (1 in 7 women)
Overweight or obesity (BMI ≥25 kg/m^2)	28 %	37.8 %
Adolescents (10-19 years)		
	2018	
	Females	**Males**
Underweight (BMI -2 SD)	11.8 % (1 in 8 girls)	21.1 %
Overweight (BMI >+1SD to +2SD)	11.4 %	10.2 %
Obesity (BMI >+2 SD)	5.5 %	7.7 %
Overweight or obesity (BMI +1SD)	16.9 %	17.9 %

Reference: National Nutrition Survey 2018 (20)
Abbreviations: BMI: Body mass index; SD: Standard deviation; WRA: Women of reproductive age.

- Micronutrient deficiencies
    - Anaemia (all-cause anaemia; moderate and severe): Among WRA, the prevalence of anaemia (Hb <12 gm/dL) increased from 29.4% in 2001 to 50.5% in 2011, followed by a slight decrease (42.7%) in 2018. Despite this trend, the prevalence of anaemia remains quite high and is thus a severe public health problem in Pakistan. Similarly, anaemia among pregnant women (Hb <11 gm/dL) is a public health concern with the prevalence estimated at 35.2% in 2018. (22)
    - The 2018 National Nutrition Survey (22) presented micronutrient deficiencies among WRA and pregnant women (as summarized in Table 3). Deficiencies in vitamin A and zinc were prevalent among more than a quarter of the population, and over three-quarters of the population for vitamin D.

Table 3. Prevalence (%) of anaemia and micronutrient deficiencies among WRA and pregnant women (15-49 years) in Pakistan in 2018

	WRA (15-49 years)	Pregnant Women (15-49 years)
Anaemia *(WRA: <12 gm/dL; Pregnant women: < 11 gm/dL)*	42.7 %	35.2 %
Iron deficiency anaemia	18.2 %	21 %
Vitamin A deficiency *(≤0.70 µmol/L)*	27 %	30 %
Zinc deficiency *(<60 µg/dL)*	22.1 %	37.2 %
Vitamin D deficiency *(≤20.0 ng/mL)*	79.7 %	81.2 %

Reference: National Nutrition Survey 2018 (Volume 1) *(22)*
Abbreviations: WRA: Women of reproductive age.

Well-balanced diet and adequate micronutrient supplementation during pregnancy:

Well-nourished women have safer pregnancies and healthier birth outcomes which affect the health status of future generations. To prevent anaemia and micronutrient deficiencies and decrease the risk of diet-related health conditions, pregnant women are recommended to consume:

1. A healthy balanced diet composed of a variety of foods from the different food groups (23), including cereal grains and grain products (chapatti, bread, rice, etc.), vegetables, fruits, milk and milk products (yogurt, cheese, kheer, feerni or other milk-based products), meats, , eggs, and pulses, with an emphasis on iron-rich foods

and

2. Daily micronutrient supplementation that includes 30-60 mg of iron and 400 mcg of folic acid as recommended by the WHO (3)

Ask audience

Learning activity 2.2:

True or False Question:
True or false question about micronutrient supplements and an adequate nutritious diet.

Material required:
Green/red cards, PowerPoint presentation

Micronutrient supplements are designed to complement the diet and should not be used as substitutes for meals or whole foods (4).

Module 3: From IFAS to MMS

DURATION
45 MINUTES

This module describes and compares MMS and IFAS and discusses considerations for transitioning from IFAS to MMS in Pakistan.

3.1. LEARNING OBJECTIVES:

To provide a comprehensive understanding of the:

- Definition and composition of MMS as compared to IFAS
- WHO guidelines (2020) and the evidence of MMS for pregnancy and birth outcomes
- Transition from IFAS to MMS in Pakistan

3.2. MATERIALS AND HANDOUT/FORMS NEEDED:

- PowerPoint presentation
- Training manual
- Flipcharts and permanent markers
- Notepads *(one for each participant)*
- Green/red cards *(one for each participant)*

3.3. KEY DISCUSSION POINTS TO BE COVERED BY THE FACILITATORS:

IFAS versus MMS:

- IFAS is the abbreviation for iron and folic acid supplementation, an antenatal supplement containing 30-60mg of iron and 400mcg of folic acid (3).
- MMS is the abbreviation for multiple micronutrient supplementation. MMS is an antenatal supplement that provides 13-15 micronutrients (minerals and vitamins), including iron and folic acid, all combined in a single tablet. MMS is different from MNP (micronutrient powders) which are used for children (4).

Ask audience

Learning activity 3.1:

Group discussion:
Have you provided dietary supplements to pregnant women as part of routine ANC in Pakistan?

Material required:
Flipcharts, permanent markers, PowerPoint presentation

- MMS is available in various formulations. The United Nations International Multiple Micronutrient Antenatal Preparation (UNIMMAP) is the standard formulation that is widely available and now included in the WHO's Essential Medicine List (EML) (2022) (24). The UNIMMAP MMS formulation comprises 10 vitamins and 5 minerals at recommended daily amounts for pregnant women as shown in Table 4 (25). The presence of vitamin C, vitamin A and vitamin B2 increases the absorption of the available iron in the MMS tablet (25).

Table 4. The composition of vitamins and minerals in one MMS tablet – UNIMMAP formulation

Vitamin B1	1.4 mg
Vitamin B2	1.4 mg
Vitamin B6	1.9 mg
Vitamin B12	2.6 µg
Vitamin A	800 µg
Vitamin D	5 µg
Vitamin E	10 mg
Vitamin C	70 mg
Niacin	18 mg
Folic Acid	400 µg
Zinc	15 mg
Copper	2 mg
Selenium	65 µg
Iodine	150 µg
Iron	30 mg

Reference: MMS-TAG and MNF, 2020 *(26)*, WHO, 2021 *(27)*
Abbreviations: MMS: Multiple Micronutrient Supplement; UNIMMAP: United Nations International Multiple Micronutrient Antenatal Preparation.

- MMS can help improve maternal and birth outcomes. Although MMS and IFAS are equally effective at reducing the risk of anaemia in pregnancy, MMS is more effective than IFAS at reducing the risk of low birth weight, small for gestational age, pre-term birth and neonatal mortality (3,4). MMS can contribute to meeting the increased micronutrient requirements during pregnancy. The benefits of MMS help address some of the health concerns presented in Module 2. Further details on MMS will be provided in the next modules.

WHO Guidelines (2020) and the transition from IFAS to MMS in Pakistan:
In light of the evidence on MMS' effectiveness and cost-effectiveness, the WHO updated its ANC guidelines in 2020, recommending the transition from antenatal IFAS to MMS be conducted in the context of rigorous research (4).

Based on the WHO recommendation, the maternal and newborn needs in the country and the government's vision, the Government of Pakistan started implementation research on MMS with Nutrition International in 2021. The AMMI project is focused not only on transitioning from IFAS to MMS through the health system but also understanding what changes could be made in the platform to improve ANC services for pregnant women and increase adherence. The research is in its final phase and the findings will continue to be rolled out to support scale up efforts underway.

DURATION
90 MINUTES

Module 4: Key messages on the provision of MMS

This module presents key messages on the provision of MMS to pregnant women as part of preventative ANC, including MMS initiation, dosage, intake and safety.

4.1. LEARNING OBJECTIVES:

To comprehensively elucidate the key messages for the provision of MMS as part of preventative ANC, including:

- When and why women should take MMS during pregnancy
- MMS initiation, dosage, and consumption guidelines
- MMS adherence
- Possible side effects of MMS and their management

4.2. MATERIALS AND HANDOUTS/FORMS NEEDED:

- PowerPoint presentation
- Training manual
- Flipcharts and permanent markers
- Notepads *(one for each participant)*
- Green/red cards *(one for each participant)*

4.3. KEY DISCUSSION POINTS TO BE COVERED BY THE FACILITATORS:

Provision of MMS:

- MMS, as preventive care, will be provided free of cost to all non-anaemic pregnant women accessing public ANC services (as defined by the distribution plan). Eligible pregnant women will be offered MMS, instead of IFAS, in an unopened bottle containing 180 tablets.
- The MMS formula is tailored to meet the particular nutritional requirements of pregnancy based on the RDAs. It is not intended for use by other age groups, children or men. Therefore, MMS tablets are solely for the pregnant woman's consumption and should not be distributed to others.
- When a pregnant woman is suspected to be anaemic, the recommended protocol for managing anaemia should be followed.

Initiation, dosage and intake of MMS:

Ask audience

Learning activity 4.1:

True or false question:
True or false question about the initiation of MMS during pregnancy.

Material required:
Green/red cards, PowerPoint presentation

- As soon as a woman knows she is pregnant, she is advised to promptly seek ANC services. As a standard component of ANC, she will be provided with a bottle of MMS if she is non-anaemic. It is recommended that she begins taking one whole MMS tablet per day as early in her pregnancy as possible, continuing daily throughout her entire pregnancy. Any remaining MMS tablets can be consumed daily post-delivery (28). Details on the provision of the MMS bottles will be presented in the SOPs.

Ask audience

Learning activity 4.2:

True or false question:
True or false question about how to consume MMS.

Material required:
Green/red cards, PowerPoint presentation

- The MMS tablet should be swallowed with a glass of clean water. It should not be chewed or crushed, should not be taken with tea or coffee and should not be consumed with calcium supplements or calcium-rich foods (like milk) as they can decrease iron's absorption in the body.
- If a pregnant woman forgets to take her MMS tablet, she should resume her regular regimen by taking one tablet per day. It is important not to exceed the recommended daily dosage, meaning she should not take two tablets the following day to compensate for the missed dose. Similarly, if she stopped taking MMS for any reason and wishes to resume, she should continue taking just one tablet per day.
- MMS should be stored in its original bottle which should remain tightly closed to prevent damage to the tablets. The MMS bottle should be kept away from direct sunlight, heat and moisture, in a dry and secure location and out of reach of children.

Ask audience

Learning activity 4.3:

Group discussion:
Recap of when MMS is recommended vs. is not recommended.

Material required:
Flipcharts, permanent markers, PowerPoint presentation

MMS adherence:

- It is important for pregnant women to take MMS daily to receive the most health benefits from the MMS tablets. This consistent intake is referred to as 'adherence'.

- Adherence refers to the degree to which a patient follows the guidance provided by their healthcare worker/practitioner. In the case of MMS, adherence is simply defined as taking one MMS tablet daily throughout a woman's pregnancy.

- As healthcare providers, it is essential to assess and encourage pregnant women's adherence to MMS during every ANC contact, while maintaining a non-judgmental approach. Some sample questions include:

    - Did you start taking your MMS?
    - Have you been able to take your MMS daily?
    - Why do you think you have not been able to take your MMS daily?
    - Would you like to discuss how I can support you with overcoming these barriers?

The adherence gap in Pakistan in 2017-18: (29)

- Women who received ANC in 1st trimester: 55%
- Women who attended 4+ ANC visits during pregnancy: 51%
- Median of 1st ANC visit: 3.4 months
- Women who received any ANC services from skilled providers: 86%
- Women who took iron tablets or syrup: 59%
- Women who took iron tablets or syrup for 90+ days during pregnancy: 29%

➔ The difference between receiving the iron tablet vs. taking the tablet is termed the "adherence gap". Adherence is essential for the intervention to achieve its intended impact on maternal and birth outcomes.

Ask audience

Learning activity 4.4:

Group discussion:
Group discussion on what might be barriers/challenges to MMS adherence among pregnant women in Pakistan.

Material required:
Flipcharts, permanent markers, PowerPoint presentation

Safety and possible minor discomforts and their management:

- A pregnant woman can take MMS if she has diabetes, high blood pressure, heart disease, or a history of miscarriage.
- MMS is safe and does not cause major side effects. Pregnant women may experience minor discomfort, which is usually temporary until their body adjusts to the iron in the tablet. Some of these potential minor discomforts include constipation, upset stomach, mild headaches and/or nausea. These are generally less pronounced than what may be experienced with IFAS, as the iron dosage in MMS is lower (30).
- If the pregnant woman experiences these side effects, taking MMS at night and/or with food may help alleviate them.
- In case of any concern, the pregnant woman is advised to contact her healthcare provider.

Recap of day 1

DURATION
15 MINUTES

- Anaemia during pregnancy elevates the mother's risk of mortality and increases the risk of adverse pregnancy and birth outcomes, including preterm birth and low birth weight (i.e. babies being born too early or too small). Anaemia can also lead to maternal fatigue, weakness and dizziness.
- To meet their essential nutritional requirements and decrease the risk of micronutrient deficiencies, pregnant women are advised to supplement their diet with appropriate daily micronutrients, alongside consuming a balanced and nutritious diet.
- MMS is the abbreviation of multiple micronutrient supplementation, an antenatal supplement which provides 13-15 minerals and vitamins, including iron and folic acid. MMS is different from MNP - micronutrient powders - which are intended for children.
- While MMS and IFAS are equally effective at reducing the risk of anaemia in pregnancy, MMS is more effective than IFAS at reducing the risk of low-birth weight, small for gestational age, pre-term birth and neonatal mortality.
- As soon as a woman knows she is pregnant, she is advised to promptly seek ANC services where she will be provided with a bottle of MMS if she is non-anaemic. It is recommended that she begins taking one whole MMS tablet as early in her pregnancy as possible, consuming it daily throughout her entire pregnancy. Any remaining MMS tablets can be consumed daily after delivery.
- If anaemia is suspected, the recommended protocol for managing anaemia should be followed.
- The MMS tablet should be swallowed with a glass of clean water. It should not be chewed or crushed, should not be taken with tea or coffee, and should not be taken with calcium-rich foods (like milk).
- If a pregnant woman forgets to take her MMS tablet or temporarily stops taking it but wishes to continue, she should resume with one tablet per day. It is important to adhere to the recommended daily dosage and avoid exceeding it, meaning she should not double her intake the following day.
- MMS should be stored in its original bottle which should remain tightly closed to prevent damage to the tablets. The MMS bottle should be stored in a dry, safe place away from direct sunlight and heat, and out of reach of children.
- Adherence (related to MMS) is the extent to which a pregnant woman ingests one MMS tablet daily throughout her pregnancy. To benefit the most from MMS tablets, high adherence throughout pregnancy is required.

Module 5: MMS Take Home Sheet

DURATION
45 MINUTES

This module presents the MMS Take Home Sheet including its content and utilization.

5.1. LEARNING OBJECTIVES:

To explain the relevant job aids such as the MMS Take Home Sheet, including:

- Its content and usage
- Its provision to pregnant women

5.2. MATERIALS AND HANDOUTS/FORMS NEEDED:

- PowerPoint presentation
- Training manual
- Flipcharts and permanent markers
- Notepads *(one for each participant)*
- MMS Take Home Sheet and other job aids *(one for each participant)*

5.3. INSTRUCTIONS TO FACILITATORS:

Content overview

- Indicate that the MMS Take Home Sheet was designed as a job aid in Urdu for the AMMI project. It meets low literacy requirements and can be adapted and translated as needed.
- Instruct the participants to refer to the MMS Take Home Sheet and provide step by step guidance on its various components.

Use of MMS Take Home Sheet

- Explain that healthcare providers can refer to the MMS Take Home Sheet when informing pregnant women about MMS.
- Inform the healthcare providers that, when giving the pregnant woman her MMS bottle, they should also provide her with a copy of the MMS Take Home Sheet for her personal reference.
- The MMS Take Home Sheet mainly covers the definition, benefits and safety of MMS. It also outlines proper administration, provides guidance in the event of missed doses or discontinuation, offers advice on managing potential minor side effects and includes instructions for proper storage. A sample of the AMMI MMS Take Home Sheet is available upon request.

Ask audience

Learning activity 5.1:

Role play:
Working in pairs, practice explaining the content of the MMS Take Home Sheet.

Material required:
MMS Take Home Sheet

Module 6: Standard Operating Procedures (SOPs)

DURATION
120 MINUTES

This module explains the SOPs related to the provision of MMS. The SOPs were developed for healthcare providers as part of the AMMI project and may require local adaptation and translation. This module also provides a summary of Interpersonal Communication (IPC) techniques which serve as key components for delivering quality ANC.

6.1. LEARNING OBJECTIVES:

To explain the SOPs for providing MMS to pregnant women during their ANC contact, while emphasizing the differences between anaemic and non-anaemic pregnant women as well as incorporating IPC techniques.

6.2. MATERIALS AND HANDOUTS/FORMS NEEDED:

- PowerPoint presentation
- Training manual
- Flipcharts and permanent markers
- Notepads *(one for each participant)*
- SOPs *(one for each participant)*
- Green/red cards *(one for each participant)*

6.3. KEY DISCUSSION POINTS TO BE COVERED BY THE FACILITATORS:

Standard Operating Procedures (SOPs)

The following SOPs outline the processes for providing MMS to pregnant women through routine ANC, both at public health facilities and in the community through Lady Health Workers (LHWs):

- Based on government guidelines, at each ANC contact, a set of recommended services are offered to pregnant women. Healthcare providers are urged to adhere to these recommendations according to government protocols. For guidance on the provision of MMS instead of IFAS, healthcare providers are asked to follow the SOPs. (Present the SOPs handout, provide an overview of each page's content, and guide participants through the outlined steps in the SOPs).
- According to the WHO guidelines, it is recommended that pregnant women have a minimum of 8 ANC contacts. Ideally, the first ANC contact should take place as early in the pregnancy as possible (3).
- Screening pregnant women for anaemia is crucial and should be conducted according to local protocols. Anaemia screening results should be documented in the relevant existing records.
- If anaemia is suspected:
    - The appropriate protocol for managing anaemia should be followed based on its severity. MMS should not be initiated (or continued) at this point.
    - MMS is intended for preventive care and should be initiated (or continued) if there is no anaemia (or if the anaemia has been managed/resolved).

- If no anaemia is suspected:
    - MMS is provided to pregnant women in an unopened bottle containing 180 tablets, which corresponds to a six-month supply of MMS.
    - MMS is intended to supplement an adequate nutritious diet. Therefore, as an integral part of ANC services, it is important to continue providing nutrition counselling to emphasize the importance of consuming a balanced and nutritious diet.
    - During each ANC contact, healthcare providers should remind pregnant women to take their MMS daily and address any adherence issues . Pregnant women should also be reminded to come back for their follow-up ANC contacts.

A sample of the AMMI SOPs is available upon request.

Interpersonal communication (IPC) (31,32)

- Interpersonal communication (IPC) is the exchange of verbal and non-verbal communication between two individuals in a face-to-face setting. IPC serves as a channel for the exchange of information, thoughts and feelings. IPC is an integral component of quality antenatal care.
- In the context of patient-provider relationships, IPC is fundamental in building trust and increasing patients' satisfaction and adherence to their health plan, including taking MMS. Effective utilization of IPC techniques is key during counselling sessions around MMS and can also be applied to ANC sessions in general.
- Pregnant women who perceive that their healthcare provider genuinely cares for them and engages in interactive discussions during ANC sessions are more likely to accept and adhere to MMS.
- IPC techniques aimed at building trust include: greeting the woman, inviting her to share her thoughts, demonstrating empathy, providing encouragement, and actively listening to her.
- IPC techniques aimed at fostering interactive communication include: asking open-ended questions, seeking clarification when necessary, encouraging women to ask their questions and share their concerns, asking women for their ideas and preferences, and assessing their understanding of MMS.
- During ANC sessions, involving influential accompanying family members in the MMS discussion can increase support and adherence to MMS (depending on cultural variations and individual preferences). The same IPC techniques can be used for engaging family members in the discussion.

This intervention is a fundamental element of providing quality antenatal care and should not be viewed as standalone. Additional information will be available as part of the comprehensive package that is being designed to improve adherence based on the findings of the AMMI project.

Ask audience

Learning activity 6.1:

Role play:
Role play to practice using the SOPs.

Material required:
SOPs

Ask audience

***Learning activity 6.2*:**

Group discussion:
Group discussion of different scenarios using the SOPs as a reference guide, where participants are presented with different profile cards, then asked to determine whether the pregnant woman is eligible for MMS (Yes/No), followed by a brief discussion justifying their decision.

Material required:
Green and red cards, flipcharts, permanent markers, PowerPoint presentation

Module 7: Monitoring and reporting

DURATION
90 MINUTES

This module presents the MMS monitoring forms that were created for the AMMI project and shows how these additional forms are integrated within the existing routine monitoring systems and protocols in Pakistan. This can be adapted, based on the program's monitoring plan, the status of the DHIS2 rollout and the use of the new MMS indicators.

7.1. LEARNING OBJECTIVES:

To present the:

- Value of monitoring
- Monitoring plan and monitoring forms
- Existing registers, booklets, documents and reporting

7.2. MATERIALS AND HANDOUTS/FORMS NEEDED:

- PowerPoint presentation
- Training manual
- Flipcharts and permanent markers
- Notepads *(one for each participant)*
- Monitoring plan
- Monitoring forms *(one for each participant*
- Existing registers, booklets, documents and reporting

7.3. KEY DISCUSSION POINTS TO BE COVERED BY THE FACILITATORS:

Please adjust the training content based on the different trainee groups:

Purpose of monitoring:

- The purpose of monitoring is to collect, review and learn from data on a regular basis to better understand the program, its effectiveness, whether it is achieving the intended targets and identify areas for improvement in real-time.
- During the project design phase, a plan is established to structure the project's monitoring system and define what is collected, how, when and by whom.

How to monitor MMS?

- MMS is a new commodity and has not been included in the government routine monitoring systems. An indicator for MMS has recently been included in the DHIS 2. Where DHIS 2 is not yet fully active, a complementary monitoring system will need to be established to capture this missing information and help track what commodities pregnant women receive, manage stocks and facilitate project course correction as needed.
- As part of AMMI, project specific monitoring forms (LHW-Form 1, Lady Health Supervisors (LHS)-Form 2, and Health Care Facility (HCF)-Form 3) were developed to collect information pertinent to the pregnant woman and to track MMS stock.

- During each ANC contact (even if the pregnant woman is not taking MMS), healthcare providers need to:

    1. Fill out their existing ANC forms/records following their usual reporting protocol, AND

    2. Complete their relevant project-specific forms.

    - For LHWs: Direct them to record their visits with pregnant women in the LHW diary, following local existing protocols. Then provide a detailed, step-by-step explanation of how to complete and submit the LHW-Form 1.
    - For HCFs: When providing the MMS bottle to the pregnant woman, instruct them to record it in the ANC/MCH register as well as in the HCF-Form 3.

Ask audience

Learning activity 7.1:

Role play:
Role play to practice using the monitoring forms.

Material required:
Monitoring forms

Module 8: Closing of the training

DURATION
75 MINUTES

This module recaps the key messages and concludes the training.

8.1. LEARNING OBJECTIVES:

- To recap key messages
- To plan the next steps of the cascade training
- To conclude the training

8.2. MATERIALS AND HANDOUTS/FORMS NEEDED:

- PowerPoint presentation
- Training manual
- Flipcharts and permanent markers
- Notepads *(one for each participant)*
- Training plan
- Post-test assessment *(one for each participant)*
- Training evaluation form *(one for each participant)*

8.3. INSTRUCTIONS TO FACILITATORS:

a) Cascade planning

- Explain to participants that the training needs to be cascaded to public healthcare providers based on the agreed training plan.
- Review the training plan with participants.
- Introduce the team of trainers, including master trainers and co-trainers and hold a brief planning session.
- Collaborate with co-trainers and master trainers during the planning session to identify suitable venues for the cascade training. Assign trainers to locations based on their convenience and operational area.
- Provide master trainers with the agenda and necessary content for cascade training.
- Explain logistical arrangements and designate a focal point of contact.
- Address any queries from trainers.
- Guide and motivate trainers to conduct effective field training.
- Assign a focal person to supervise and support each training location.

a. Post-test evaluation and training evaluation

- Distribute the post-test assessments and training evaluation forms (available upon request).
- Provide a brief overview of the post-test assessment and training evaluation forms.
- Ensure participants have enough time to fill out the forms.
- Offer assistance to participants as they complete the forms.
- Facilitate a group discussion to review participants' responses to the post-test assessment.
- Arrange for collection of completed forms by someone other than the trainer to ensure unbiased evaluation of the training by participants.

b. Comments from facilitators

- Invite key representative(s) to express gratitude to the participants for sharing their valuable recommendations and opinions. Provide contact information for participants to reach out with any questions, concerns, or requests for forms and/or other information.
- Request the representative to address participants' suggestions and assure them that their input will be seriously considered to enhance the training.
- Encourage the representative to commend participants for their involvement and focus throughout the training.
- Recognize and appreciate the role of the Government of Pakistan for support and facilitation.
- Conclude the training by extending best wishes to all participants for their future endeavors.

Additional Resources

The following additional resources are available upon request:

- Sample Pre-test and Post-test
- Sample Training Evaluation Form
- Sample Registration Form
- Sample Take Home Sheet
- Sample Standard Operating Procedures
- Sample Monitoring Forms
- Sample Counselling Cards
- Sample Poster

For more information about MMS and maternal nutrition programming, please contact Nutrition International at maternalnutrition@nutritionintl.org.

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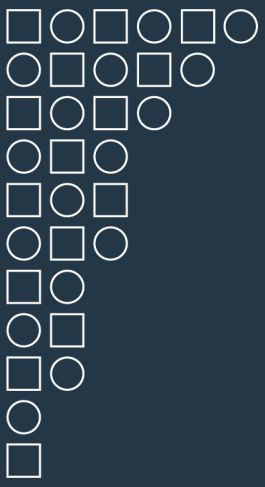

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