

Multiple micronutrient supplements in pregnancy: Technical Reference Material III

Logistics of implementation



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TECHNICAL BRIEF ON MMS IN PREGNANCY

LOGISTICS OF IMPLEMENTATION

Introduction

Multiple micronutrients supplements (MMS) should be rolled out as part of the existing antenatal care (ANC) system. Hence the success of the rollout will largely depend on the quality of implementation of the ANC system itself¹. An ANC system with low population coverage, poor client compliance, or deficient supply management will undercut the potential of MMS to improve pregnancy outcomes. This technical guide identifies conditions of good performance and provides pointers to analyze barriers to successful implementation, looking particularly at supply management; and client compliance. Essentials of the program are as follows:

- 1) All women of reproductive age (WRA) should know about the program; and those who intend to become pregnant should be encouraged to take MMS ahead of their pregnancy
- 2) MMS should be provided to WRA at their first ANC visit, preferably ahead of becoming pregnant or else during the first trimester of their pregnancy
- 3) Providers should have access to adequate supply at all time, so they can provide women with MMS when needed
- 4) Women should receive an adequate number of tablets, taking into account the specifics of the program and their ease of access to contact points
- 5) Service providers should be trained in counseling techniques, and dispense advice that promotes women's adherence to the regimen.

I. Supply management

The most recent WHO ANC guidelines (2016) replaced the prior recommendation of 4 ANC "visits", to 8 ANC "contacts" during pregnancy². The information provided in Table 1 indicates the actions required at each visit.

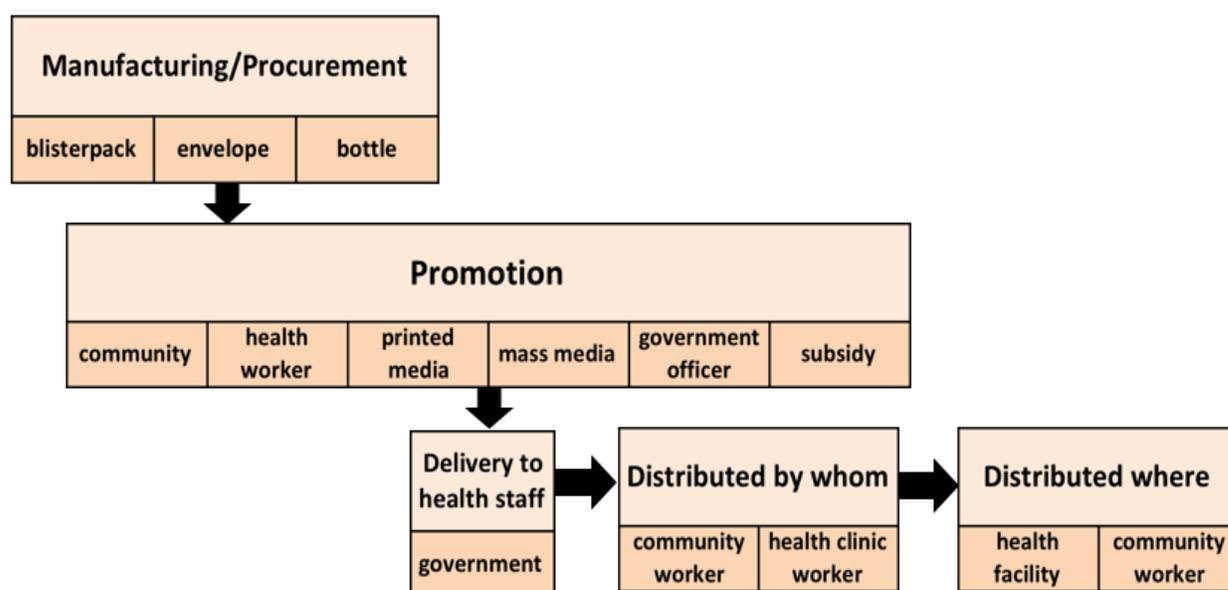
¹ ANC systems may be operated locally by the government or by a NGO, following government guidelines. We do not discuss this distinction further here, other than to acknowledge this variability in implementation modalities.

Table 1 - WHO ANC recommendations for nutritional interventions at eight scheduled ANC contacts

Type of intervention	Recommendation	Type of recommendation	Eight scheduled ANC contacts (weeks of gestation)							
			1	2	3	4	5	6	7	8
			(12 weeks)	(20 weeks)	(26 weeks)	(30 weeks)	(34 weeks)	(36 weeks)	(38 weeks)	(40 weeks)
A. Nutritional interventions										
Dietary interventions	A.1.1: Counselling about healthy eating and keeping physically active during pregnancy is recommended for pregnant women to stay healthy and to prevent excessive weight gain during pregnancy. ^a	Recommended	X	X	X	X	X	X	X	X
	A.1.2: In undernourished populations, nutrition education on increasing daily energy and protein intake is recommended for pregnant women to reduce the risk of low-birth-weight neonates.	Context-specific recommendation	X	X	X	X	X	X	X	X
	A.1.3: In undernourished populations, balanced energy and protein dietary supplementation is recommended for pregnant women to reduce the risk of stillbirths and small-for-gestational-age neonates.	Context-specific recommendation	X	X	X	X	X	X	X	X
	A.1.4: In undernourished populations, high-protein supplementation is not recommended for pregnant women to improve maternal and perinatal outcomes.	Not recommended								
Iron and folic acid supplements	A.2.1: Daily oral iron and folic acid supplementation with 30 mg to 60 mg of elemental iron ^b and 400 µg (0.4 mg) of folic acid ^c is recommended for pregnant women to prevent maternal anaemia, puerperal sepsis, low birth weight, and preterm birth. ^d	Recommended	X	X	X	X	X	X	X	X

The number of MMS tablets to be delivered at each time point, methods to assess compliance, etc. are left for each country to decide. The approach should be tailored to the local reality, taking into consideration aspects such as manufacturing and procurement; workforce availability; location of MMS distribution; responsibility for the distribution to pregnant women (figure 2).

Figure 2 - Conceptual Framework for Delivery Channels (Anuraj Shankar, Personal communication)



I.a. Health facility distribution vs. community based distribution

The distribution of micronutrient supplements for pregnant women at the health facility level encourages them to receive the various ANC interventions. However, in cases where there is low ANC attendance, limited funding, stock-outs, or ineffective management, a community-based distribution of MMS may be indicated. Examples of community distribution channels include: private pharmacies, community health centers, village health workers, community health workers, community volunteers, or community gatherings for health education sessions. A possible downside of community distribution is that it may be difficult to ensure tracking and follow up, hence special steps are advisable to overcome this limitation.

I.b. Amount of supplements to be distributed

A minimum of 180 tablets of MMS per pregnancy is recommended. Those may be distributed at once, or over time at the various contact points. Table 2 summarizes the advantages and disadvantages of providing the full quantity once (in the first ANC contact) versus the provision of smaller quantities, spaced throughout pregnancy.

Table 2 - Advantages and disadvantages of providing the full quantity of MMS once vs. smaller quantities of MMS, several times

	Advantages	Disadvantages
Full quantity of MMS (e.g. 180 tablets), distributed once (e.g. on the first ANC contact)	<ul style="list-style-type: none"> - helpful for women who have limited ANC access, or for women with limited community distribution channels of MMS - minimized risk of contamination and exposure to humidity 	<ul style="list-style-type: none"> - difficult to cover the whole pregnancy period without waste - less opportunities to assess compliance and encourage adherence (if women do not receive regular ANC)
Smaller quantities of MMS (e.g. 30 tablets), distributed several times (e.g. once a month)	<ul style="list-style-type: none"> - incentive for pregnant women to return to the ANC clinic and receive other ANC interventions - frequent assessment of compliance (i.e. count of remaining pills in the bottle) - frequent opportunities to encourage adherence 	<ul style="list-style-type: none"> - if the MMS are distributed at ANC clinics, women may not have the means to frequently return to the health facilities, and the frequency of the ANC contacts may not match the frequency of distribution of MMS - repackaging (if done) increases the risk of contamination and exposure to humidity, affecting MMS quality

I.c. Some country examples

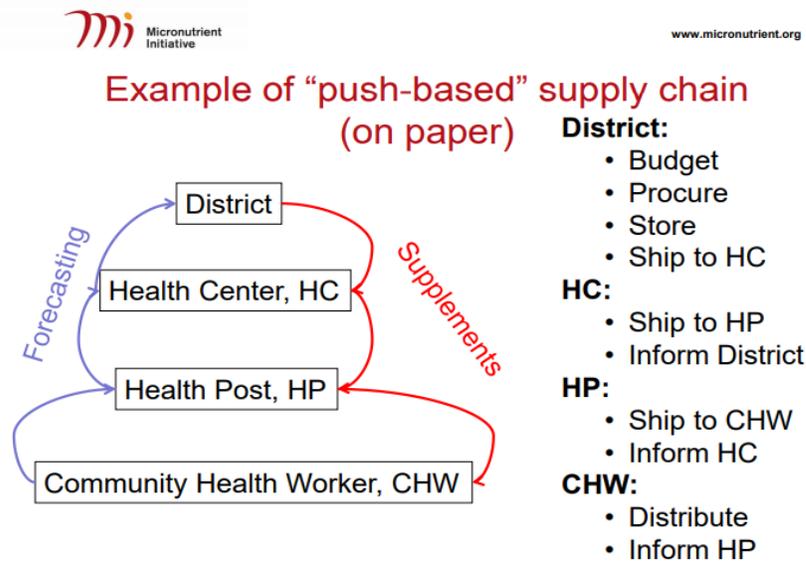
Different countries have successfully experimented with different MMS distribution systems, as shown by the examples below:

- In Kenya, supplements for pregnant women are routinely delivered in all public health facilities through Maternal and Child Health clinics as part of the ANC program. Only professional health workers are allowed to prescribe and dispense micronutrient supplements to pregnant women, while community health volunteers (CHV) are responsible for encouraging pregnant women to attend the clinics and talk about importance of micronutrient supplements for healthy pregnancy outcome.
- In Nepal, CHV are responsible for identifying pregnant women and for distributing the micronutrient tablets to them (which improves access), although women are also allowed to get the tablets from the health facility. CHV pack the tablets in small 30-tablet plastic containers and give them to pregnant women asking them to bring the containers for a recount and refill each month (standardized registers are maintained for all enrolled clients, facilitating monitoring and follow-up). Continuous counseling of mothers about the importance of compliance is done by the CHVs and the health workers.
- In Thailand, 500,000 CHV identify pregnant women and encourage them to obtain ANC services immediately; a decentralized system of supply and logistics of micronutrient supplements permits provincial offices to estimate their own needs, and there are easily accessible back-up supplies
- In Indonesia, the packaging of micronutrient supplements was improved to protect them from humidity and to make them more attractive to consumers (by using a red, film-coated supplement that did not have the fishy taste of the previous supplements). The distribution of the supplements is done by community health workers (village midwives and traditional birth attendants). Supplements can also be purchased from private drug vendors and small shops, which increases the supply and availability of micronutrient supplements at each level of the health system.

I.d. Supply management of MMS

Ensuring adequate and sustainable MMS supply requires that all levels of the health care system be involved, including governmental and non-governmental stakeholders. The supply chain needs to be clearly mapped and roles and responsibilities clearly understood at all levels³. As shown in figure 3, the information about the current supplies and needs of micronutrient supplements is sent from the CHW to the Health Post, from the Health Post to the Health Center, and from the Health Center to the District level. The level managing the budget (district, province, etc) is responsible for the procurement, storage and shipping of MMS to Health Centers, Health Centers then ship MMS to Health Posts, where MMS are distributed to CHW.

Figure 3 – Example of “push-based” supply chain for MMS in pregnant women (adapted from personal communication of [Jacqueline Kung'u](#))



I.e. Monitoring of stocks at all levels³

Existing Health Management Information Systems (HMIS) play an important role in the supply chain, through the regular use of the tracer drug report. The regional Health Office in Ethiopia for instance the HMIS captures the availability of IFA at health facilities. The same methods can be used for MMS (personal communication, [Jacqueline Kung'u](#)). Regular inventory controls must be carried out to avoid stock outs and to ensure that supplies do not expire.

I.f. Adequate prediction of quantities³

Forecasting the quantities of MMS needed is often done on the basis of use (supplies are ordered based on the number of women coming in for antenatal care) rather than need (the estimated number of pregnant women in the catchment area). Where the use of ANC services is high, forecasting by use works well but where it is not high, forecasting may underestimate the need, which may lead to stock outs, leaving many pregnant women without access to MMS. Hence if ANC use is limited, MMS supplies need to be available in the community (delivered by CHW or other community based distribution channels) in order to ensure they are used³.

A simple method for calculating MMS supplements for routine use in a catchment area where ANC use is low or late has been proposed by K4Health (adapted from IFA supplementation³):

Total number of tablets = total population x fertility rate (or 4% of the total population if the fertility rate is not known) x 180 MMS tablets (required amount for supplementation)

- Mechanisms that minimize the risk of gaps in MMS supplies include:
 - Provision of a buffer stock of 20% of the estimated needs to health centers and clinics

- Health centers and clinics can maintain funds to use when stocks of MMS run low which they can use to buy MMS at emergency depot centers without central level approvals
- Availability of MMS through community-based and private/retail outlets, and provision of vouchers to women at ANC to purchase MMS in case of stock-out or need for resupply. Thus, the packaging of MMS available in private stores/pharmacies should be the same as for the MMS distributed in ANC programs in health facilities, so women can easily identify the right product. In addition, shop owners should be trained to dispense the key messages about MMS (why, when, how often, how to manage side effects).

I.g. Storage (shelf life of MMS in different conditions)

The shelf life of MMS is 36 months, similar to IFA supplements (Alison Fleet personal communication). If affordable, special packaging that protects tablets in hot, humid climates and that is attractive to mothers should be used.

- **Factors that can affect quality and shelf life of supplements:**

(get input from Vitamin Angels on the following issues)

- **Light**
- **Temperature**
- **Humidity**

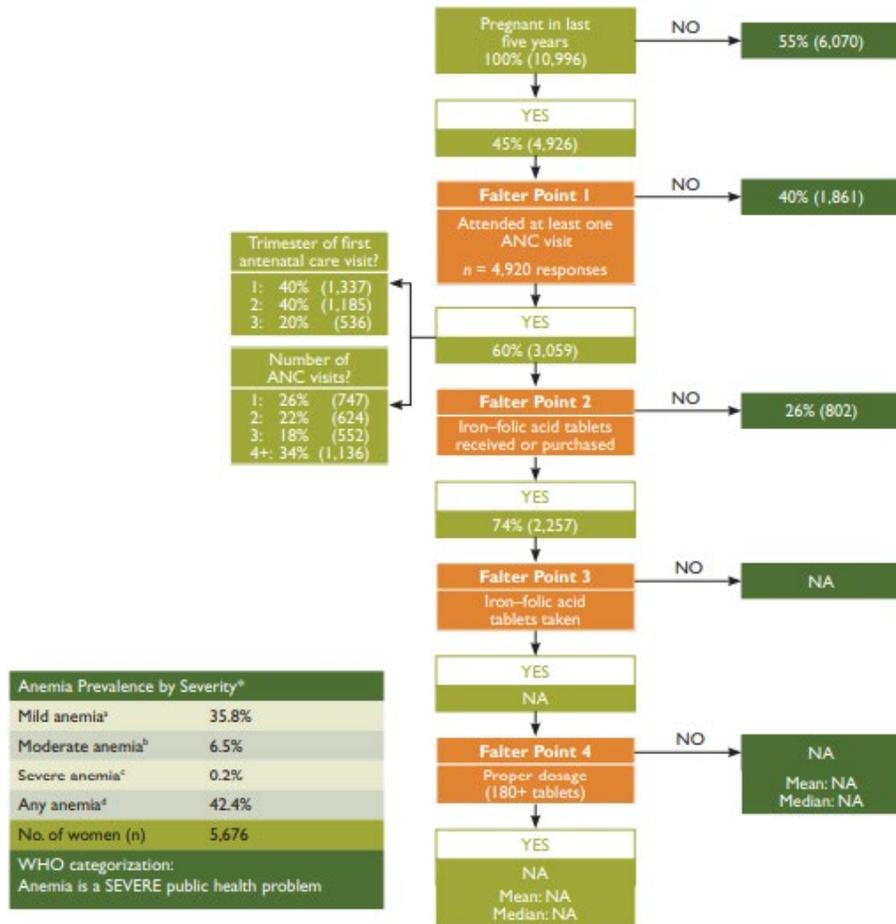
II. Client compliance

II.a. Analysis of existing delivery programs

In 2014, USAID’s SPRING project developed a Technical Brief on how to do a rapid initial assessment of clients’ compliance in taking IFA supplements in Bangladesh¹ which operates through the national ANC system. Figure 1 identifies four potential points at which the system might falter (highlighted in orange). Understanding the relative significance of each falter point makes it possible to prioritize them for more in-depth analysis (e.g. to understand the causes of these falter points), in order to improve the delivery of the program. The figure tracks the number and percentage of women who:

- obtained ANC,
- subsequently received and consumed at least one IFA tablet, and
- consumed the ideal minimum number of tablets

Figure 1. Analysis of Falter Points Related to Distribution and Consumption of IFA through Bangladesh's ANC Program in 2011, Women of Reproductive Age (15–49 Years), n = 10,996



Main Conclusions: Given the moderate 2007 ANC coverage rate, ANC is an underutilized platform for distributing IFA in Bangladesh. Nearly three quarters of women who had at least one ANC visit, 74 percent, received or purchased IFA tablets. While data was unavailable to provide estimates for Falter Points 3 and 4, supply and demand side constraints should be investigated to uncover potential shortcomings within the system.

A similar “falter points analysis” may be conducted in adopting countries to determine whether the existing ANC system is a suitable means for providing MMS to pregnant women, and the potential reasons for each falter point may be then addressed (table 3).

Table 3: Analysis of “falter points” related to the distribution of micronutrient supplements in pregnancy through existing antenatal care programs

Falter point	Indicator	Potential reasons
1. Did not attend at least one ANC visit	Proportion of women that did not have at least one ANC visit	- lack of knowledge about the need for these visits; - lack of transportation to reach the facilities where the visits take place
2. Did not receive or purchase at least one IFA tablet	Proportion of the women who had at least one ANC visit, proportion that did not receive or purchase any IFA	- inadequate supply (e.g., stock outs); - inadequate provider knowledge; and/ or - inadequate provider practices, whereby IFA supplements may have not been provided.
3. Did not take at least one IFA tablet	Proportion of women who did not take at least one IFA tablet (despite having received it or purchased it)	- inadequate provider counselling and follow-up; - women’s beliefs about actual or possible side effects; or - sociocultural factors.
4. Did not consume 180 or more IFA tablet	Proportion of women who did consume 180 or more IFA tablet (despite having received it or purchased it)	- women who began ANC after the first trimester, and - women who had fewer than WHO’s recommended four ANC visits during their last pregnancy and may have started their ANC too late or - women who did not have enough visits to receive 180 tablets (given IFA distribution protocols).

II.b. Managing compliance

In every ANC contact (either in the health facility or in the community, e.g. in home visits), compliance to the recommended quantity of MMS should be:

- assessed e.g. by asking the pregnant woman if she is managing to take the supplements every day, or by counting the remaining tablets in the bottle (useful in case of distribution of smaller and frequent quantities),
- recorded in the ANC register (i.e. number of tablets distributed and number of tablets consumed), and
- reinforced. The provider should reinforce compliance with MMS in every contact point, and there are available educational leaflets that should be delivered and explained at least once to reinforce compliance. These educational leaflets explain the reason why pregnant women need to take the MMS, when they should start, how they should take, what to do if they forget to take, and what

to do if they feel sick after taking the MMS. In case of poor compliance, the causes for this problem (e.g. forgetfulness, side effects, lack of knowledge) should be discussed, and strategies to overcome barriers that are reducing compliance should be suggested.

References

1. Fiedler, Jack, D'Agostino, Alexis & C. and Sununtnasuk. 2014. "*Nutrition Technical Brief: A Rapid Initial Assessment of the Distribution and Consumption of Iron – Folic Acid Tablets Through Antenatal Care in Bangladesh.*" Arlington, VA.
2. World Health Organisation. 2016. "*WHO Recommendation on Antenatal care for positive pregnancy experience.*"
3. K4Health. 2012. Logistics and Supplies 2012 <https://www.k4health.org/toolkits/anemia-prevention/logistics-and-supplies>.

To learn more go to:
www.nyas.org/MMS

