



The multiple micronutrient supplementation (MMS) pilot project in Madagascar

Case study: Madagascar

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This document provides an overview of the multiple micronutrient supplementation (MMS) pilot project in Madagascar. It also forms Annex 1 of a case study published by Emergency Nutrition Network (ENN) on nutrition for women and adolescent girls in the humanitarian context of Madagascar. The case study outlines policies and programmes implemented to support women's and adolescent girls' nutrition as part of the recent humanitarian response in Madagascar, identifies implementation gaps and challenges, and provides advocacy recommendations. The case study can be accessed online: https://www.ennonline.net/humanitariannutritionforwomen_madagascar

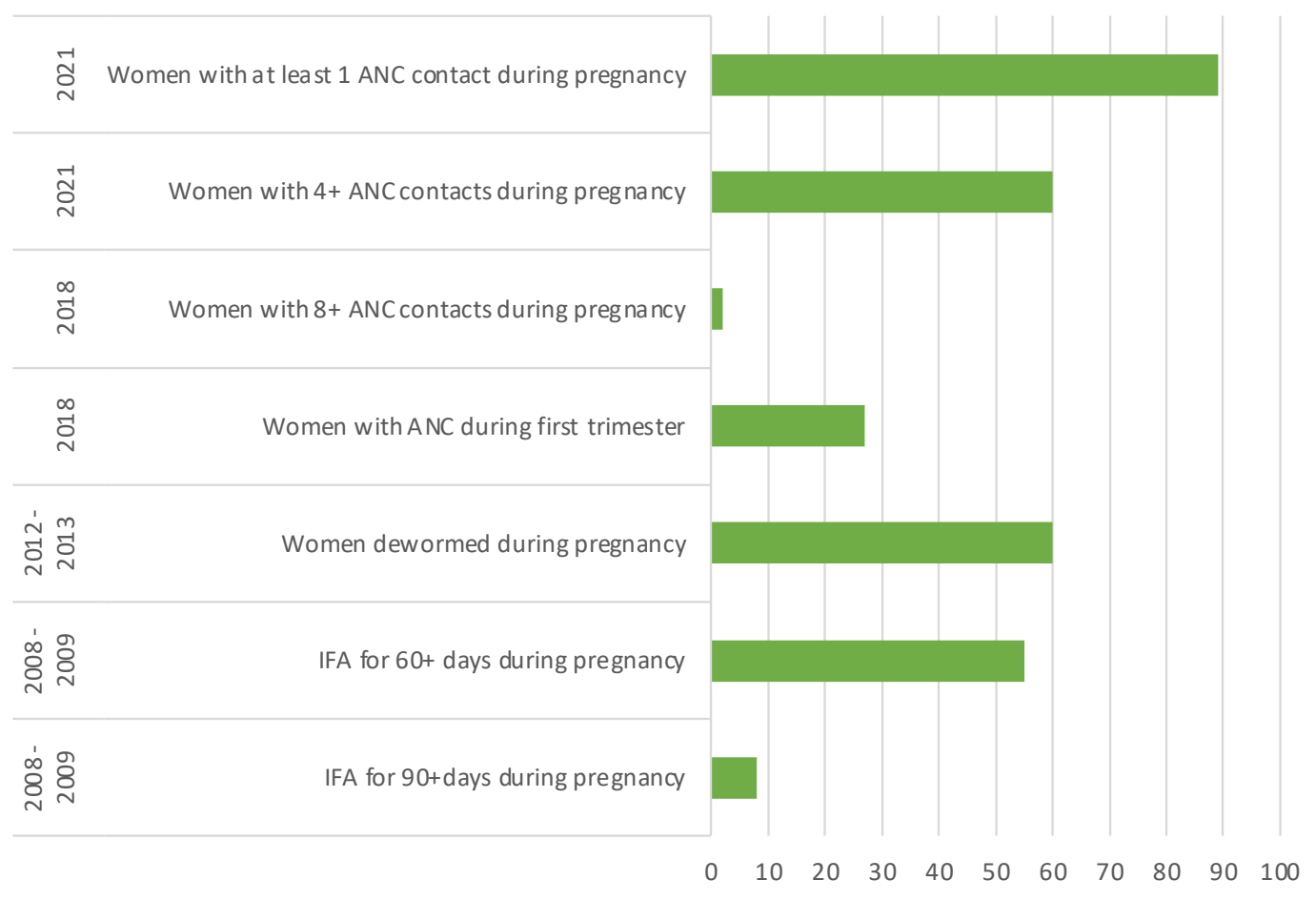


Background

The World Health Organization (WHO) 2016 antenatal care (ANC) guidelines recommend daily iron and folic acid (IFA) supplementation throughout pregnancy¹. However, low coverage of essential nutrition interventions, including IFA supplementation, within routine services for pregnant women has been recognised by the government of Madagascar (**Figure 1**). While almost 90% of women in Madagascar access ANC services during pregnancy, only 27% do so

during their first trimester and only 60% achieve at least half of the recommended eight ANC contacts. In addition, only 55% of pregnant women receive IFA supplements, and as few as 8% receive them for 90 days or more⁴. Low coverage of IFA supplementation, alongside pre-existing nutritional vulnerabilities, increases the risk of adverse delivery outcomes, including maternal and infant mortality, preterm birth and low birthweight¹.

Figure 1: Coverage of maternal nutrition programmes in Madagascar; data sources: EDS-IV 2008-2009⁵; ENSOMD 2012-2013⁶; MICS 2018⁴; EDS-V 2021⁷



Abbreviations: antenatal care (ANC); iron and folic acid (IFA). Coverage of maternal nutrition programmes provided as percentages.

Further, more than two decades of research has identified multiple micronutrient supplementation (MMS) as an effective, safe, affordable, and cost-effective antenatal supplement for pregnant women⁸⁻¹⁰. Compared to IFA alone, MMS has been shown to enhance maternal nutritional status and

to reduce the risk of adverse birth outcomes, including preterm birth, stillbirth, low birth weight, and small-for-gestational age deliveries¹⁰. Since nutritional vulnerabilities are exacerbated in humanitarian contexts, particularly for pregnant and lactating women and girls (PLW/G), the United

Nations (UN) recommendations for prenatal MMS take precedence, with daily MMS to be taken in addition to any fortified foods or IFA tablets already being received, as well as any vitamin A being taken postpartum¹. However, since humanitarian responses focus on maintaining (or extending) national health guidelines and services, as well as various challenges related to switching from IFA supplementation to MMS, few affected countries are currently implementing MMS during humanitarian crises². Thus, MMS was articulated alongside IFA supplementation as part of the ANC service package in Madagascar's National Nutrition Action Plan (2017-2021), with an aim to transition to MMS within routine ANC services at national level, allowing for sustained implementation during the ongoing humanitarian crises experienced in Madagascar.

MMS pilot project

In 2020, the Ministry of Public Health (MSANP) seized the opportunity to participate in a three-year multi-country MMS pilot project funded by the Bill and Melinda Gates Foundation and supported by UNICEF². The pilot focuses on how to appropriately introduce MMS as an alternative to IFA, while improving coverage of ANC services by: (1) identifying effective strategies for introducing MMS which address barriers to coverage, acceptability, and compliance; and (2) providing programmatic evidence for national scale up.

Leadership and coordination

A national MMS working group was formed in 2018 to establish government ownership and to engage key stakeholders around implementation and scale up of MMS in Madagascar. This group is led by the MSANP Nutrition Service (SNUT) and includes representatives from various government ministries and international partners involved in maternal health and nutrition (**Box 1**). There are three sub-committees (SCs), namely the Technical SC, Communication SC, and Monitoring and Evaluation SC, that address specific areas of programme implementation. Project coordination and implementation at national and regional/district levels is led by MSANP SNUT. At regional, district and health facility levels, implementation occurs through existing health system mechanisms, including delivery by community health workers (CHWs), who fall under the remit of the MSANP, and the National Nutrition Office (ONN) within the Office of the Prime Minister. Participants at coordination meetings include the national MMS working group, regional and district health and

Box 1: Multiple micronutrient supplementation (MMS) pilot partners

National team:

- Ministry of Public Health (MSANP) Nutrition Service (SNUT)
- National Community Nutrition Programme Unit (U-PNNC)
- National Nutrition Office (ONN), Prime Minister's Office
- Directorate of Family Health, MSANP
- Safe Motherhood Unit, MSANP

International partners:

- UNICEF, World Health Organization (WHO), United Nations Population Fund (UNFPA), World Food Programme (WFP), the World Bank
- GRET

nutrition managers, local non-governmental organisations (NGOs), and health staff.

Pilot implementation

Planning for pilot implementation in two districts, Soavinandriana district (Itasy region) and Ifanadiana district (Vatovavy region), began in 2020. Districts were selected by the national MMS working group from those where the World Bank funded Nutritional Outcomes Improvement Project (PARN) was being implemented. Selection was based on the high prevalence of anaemia in women, high performance of ANC services and the presence of nutrition activities at health centre and community levels, with most health centres and community-based platforms accessible all year-round. The pilot has occurred across three phases: (1) situation analysis of MMS/micronutrient programmes; (2) MMS implementation; and (3) development of monitoring, evaluation, and documentation plans.

Phase 1: Situation analysis of MMS/micronutrient programmes

Situation analysis involved identifying enabling environments for supplementation, procurement and production models for MMS, women's preferences for supplement formulation and packaging, potential barriers and facilitators to uptake and adherence, and optimal delivery platforms. As part of this process, mixed methods formative research was conducted by Pennsylvania State University, in partnership with UNICEF, Sight

and Life, and GRET to tailor MMS programme design for improved acceptability and compliance among pregnant women in rural Madagascar². Research was conducted in two phases using rapid assessment procedures in the pilot districts (Itasy and Vatovavy Fitovinany) from October 2020 to March 2021. Community inputs (workshops, focus group discussions, market observations) were

combined with information from semi-structured interviews with pregnant women and health workers to understand the factors influencing nutrition and health behaviours, and supplement use, during pregnancy, as well as product-related considerations to improve acceptability and compliance. A summary of the formative research findings is provided in **Box 2**.

Box 2: Key findings from formative research on the introduction of multiple micronutrient supplementation (MMS) in Madagascar.

Source: Formative research report from UNICEF, Sight and Life, and GRET (2).

- Limited household finances and physical access, competing livelihood demands, lack of access to diverse diets and food aversions prevented women from consuming nutritious diets and accessing health services during pregnancy.
- Experiencing pregnancy symptoms, positive perceptions towards the quality of antenatal care (ANC) services, and adequate support by health workers and other community members, increased healthcare seeking and promoted positive attitudes to prenatal supplement use.
- Participants described an understanding of the health benefits of prenatal supplementation, particularly iron and folic acid (IFA), for women and their infants. They also discussed challenges to IFA supplement use, including stock outs at health facilities, experiencing side effects (e.g., nausea, dizziness) and forgetting to consume them regularly.
- Women outlined preferences related to MMS formulation (colour, taste) and packaging, as well as the logo and slogans used to promote MMS in social and behaviour change communication (SBCC) strategies.
- Women cited price as the primary driver of supplement purchasing and felt that MMS should be provided for free to address financial constraints in most households.
- Many women believed that distributing MMS via a wider range of community-based channels, alongside facility/ANC-based distribution, would increase coverage.
- Community health workers and medical staff, family members (particularly male heads of household) and community leaders were identified as important audiences for MMS sensitisation and social mobilisation activities.
- It was recommended that pregnant women be reached via a combination of interpersonal communication (peer-to-peer information sharing, door-to-door visits, and village-level meetings), social mobilisation, and media-based approaches (radio, television, newspapers, and Facebook). Women also desired clear messaging about MMS (dosing, benefits, and side effects) and how it compares/contrasts to other prenatal supplements.

Phase 2: MMS implementation

Phase 2 (2021-2022) of the MMS pilot involved project design, development of implementation manuals/tools, and supply and distribution plans, capacity building of human resources and social mobilisation activities. Two implementation models were agreed upon by the MMS working group to build evidence on optimal strategies, successes and challenges and inform scale up within different contexts in Madagascar. In Soavinandriana district,

an enhanced health facility-based delivery model provides MMS during routine ANC. In Ifanadiana district, a combined model provides MMS at health facilities (during ANC) and community-based platforms through CHWs.

In both implementation models, MMS is distributed free of charge and women must obtain their first box of supplements from a health centre during their first ANC visit. In Ifanadiana district, women can then benefit from distribution and support by

CHWs. Health centre staff have received additional training to improve the quality of ANC services (routine ANC practices, MMS counselling, maternal nutrition counselling, interpersonal communication to promote ANC and MMS). Where community-based distribution is being implemented, CHWs and traditional birth attendants (TBAs) have been trained to promote ANC and MMS, and to counsel mothers and community members on their benefits. Since TBAs are highly respected in communities for providing essential social support to women during pregnancy and childbirth, they have been provided with additional training to promote and support pregnant women's adherence to MMS and uptake of ANC services. A local NGO (Pivot) in Ifanadiana district provides food to TBAs when they take pregnant women to a health centre to deliver. They also provide necessities, clothing and blankets to women who deliver in their supported health centres. During key informant interviews, midwives noted an increase in the number of deliveries at health centres since these activities have been implemented.

To ensure an uninterrupted and quality supply of MMS during the pilot project, UNICEF has been responsible for procurement and supply chain management of the United Nations International Multiple Micronutrient Antenatal Preparation (UNIMMAP) formulation³ (see **Box 3**). This support includes strengthening supply

Box 3: The United Nations International Multiple Micronutrient Antenatal Preparation (UNIMMAP)³

UNIMMAP is an established multiple micronutrient formulation containing the following 15 vitamins and minerals in recommended dosages: Vitamins A, vitamin D, vitamin E, vitamin C, thiamine, riboflavin, niacin, vitamin B6, folic acid, vitamin B12, copper, iodine, iron, selenium, and zinc.

It has been specifically developed to improve pregnancy outcomes and has been tested in efficacy and effectiveness trials across multiple regions. When compared with iron and folic acid (IFA) supplementation, results indicate similar benefits of UNIMMAP-MMS for anaemia prevention, but larger benefits on other pregnancy outcomes such as low birth weight and small-for-gestational age deliveries.

chains from national to community levels. During a key informant interview, a representative from the MSANP confirmed that MMS is now included in Madagascar's list of essential medicines and discussions are ongoing to facilitate introduction of MMS into the national supply chain.

Based on findings from the formative research, tailored social behaviour change communication (SBCC) strategies have been developed to increase pregnant women's acceptability of, and compliance to MMS. Social mobilisation and media-based approaches have been developed to address cultural barriers and social norms, as well as to inform key influencers of pregnant women (e.g., husbands, mothers-in-law, grandmothers, community members) about the importance of nutritious diets and the routine use of MMS. Observations provided by medical personnel and CHWs during key informant interviews indicated that these investments have promoted MMS acceptance, uptake, and adherence.

Phase 3: Development of monitoring, evaluation, and documentation plans

Integrating MMS coverage into routine monitoring systems and evidence documentation forms Phase 3 (2022-2023) of the MMS pilot. The health management information system (HMIS) collects information on the provision of iron containing supplements to pregnant women during ANC contacts. UNICEF has supported the District Health Information Systems (DHIS2) team in the two districts to integrate an indicator for the percentage of pregnant women consuming MMS for 90+ days in the DHIS2. Other indicators to assess ANC contacts and MMS supplementation at the community level are tracked through a parallel system using a data collection tool designed and validated by the Technical SC.

The pilot has utilised routine regional and district level supervision sessions for health personnel and CHWs to introduce monitoring of MMS. During these sessions, the team checks the availability of SBCC tools and materials and conducts training to improve the quality of ANC services including maternal nutrition counselling, MMS distribution and stock management.

Biannual reviews of the pilot project are conducted by the MMS National Technical Committee under the leadership of the MSANP SNUT. GRET has also been contracted to support the national MMS working group to document lessons learned from

pilot implementation to broaden the operational evidence base and support national scale up of MMS. While GRET has not yet started the documentation process, discussion and review of this learning is scheduled to occur during the coordination meeting held by the National Technical Committee in early September 2023.

Implementation successes and challenges

Distribution of MMS began in September 2021, with a target of 60% coverage. During the first six months of supply, overall coverage reached 79%. In May 2022, coverage was 80% in Ifanadiana district (health centre and community-level distribution) and 69% in Soavinandriana district (health centre distribution).

Data collected during the July 2022 supervision visit in Soavinandriana district indicated that, while the number of low birthweight deliveries increased from 100 in Semester 1 2020 to 127 in Semester 1 2021, this was reduced to 77 in the following year (Semester 1 2022).

Strengthening the capacity of health personnel (health centre staff, CHWs and TBAs)

The last supervision visits during July 2022 saw improved awareness of ANC and MMS, as well as improved ANC service delivery. However, ANC providers need to make more effort to ensure integration of nutritional awareness into their practice, alongside comprehensive nutrition counselling services. Regular supervisions for CHWs have improved their performance, particularly related to completing monitoring and reporting tools.

Use of TBAs in Ifanadiana district has been instrumental in early identification and referral of pregnant women to health centres. CHWs who were previously trained by PARN have demonstrated improved performance in conducting pregnancy follow-ups and sensitisation activities in the MMS community site. However, the need for refresher training and the high turnover of CHWs, due to a lack of incentives to remain in post, have been flagged as potential challenges to sustainability and scale up.

Supply chain distribution

MMS is currently being distributed via two channels: one running between national and community levels, and another between national level and health centres. The distribution of MMS by CHWs was implemented to address issues of inaccessibility and remoteness that prevent women

from receiving adequate ANC, including MMS, and thus to ensure the continuity of MMS supply chains at the community level. While distribution of MMS by CHWs in landlocked and remote regions is going well, very little distribution is recorded in community sites situated near to health centres.

“ The distribution of MMS by CHWs was implemented to address issues of inaccessibility and remoteness that prevent women from receiving adequate ANC, including MMS, and thus to ensure the continuity of MMS supply chains at the community level. ”

Some health centres have experienced difficulties in receiving adequate MMS supplies due to inaccessibility and remoteness. A community-based system has therefore been established whereby community members take turns retrieving supplements from a supply point. However, retrieval of supplies has been restricted by work demands in the field, as well as the recent passage of cyclones, leading to further breaks in the supply chain.

Creating demand for MMS

While primary communication materials (animation leaflet, posters, guide for mobilisers, job aids, etc.) are still being developed and refined, community-level sensitisation and SBCC activities have been an integral part of health and community workers' responsibilities in the two pilot districts. A module on interpersonal communication was provided to all health centre and community-based personnel during initial pilot training. During home visits, CHWs promote the benefits of pregnant women attending early antenatal consultations and taking MMS throughout pregnancy, particularly emphasising the availability of MMS at health centres. The same messages are provided during nutrition education sessions or small group meetings with pregnant women. During ANC visits, health workers inform women of the benefits of MMS. In addition, the Soavinandriana district management team partnered with local radio stations (Radio Locale de Soavinandriana) to deliver messages about MMS during special health broadcasts. Using their own initiative, the Ifanadiana district management team produced a video clip on MMS supplementation in the local dialect.

During focus group discussions with pregnant women and adolescents, they expressed preferences for MMS over IFA supplementation due to the comparatively minimal side effects. Women and adolescent girls also mentioned that the information provided about MMS at health centres and in their communities, including the benefits, how to manage side-effects, and strategies for remembering to take MMS daily throughout pregnancy, had supported them in starting, and continuing, to take MMS.

According to requests from the two regional health directorates, several activities are planned to expand awareness around ANC and MMS. These include: (1) advocacy with press owners and influential people at community level; (2) orientation of journalists and radio hosts towards the challenges related to accessing ANC services and MMS; (3) dialogues with community leaders; (4) conducting listening group sessions; and (5) hosting events like the “champion approach” (poem, speech, theatre contests).

Guidelines, advocacy, political commitment

The MMS pilot project provided an opportunity to review national maternal nutrition and ANC guidelines. As a result, MMS has been included in the National Nutrition Action Plan (2017-2021) and the upcoming National Multisectoral Plan for Nutrition (2022-2026). In addition, national guidelines were updated to incorporate all the 2016 WHO ANC recommendations, as previously described. The supplementation protocol for the main micronutrient deficiencies for health,

nutrition, and food security in Madagascar was developed in 2021. It includes early initiation of MMS, daily intake of MMS by pregnant women throughout pregnancy, and the provision of MMS by health staff through ANC at health centres or by CHWs at community sites, as well as other interventions such as nutrition education for food diversification and deworming.

Through advocacy with the MSANP, UNICEF influenced the government to include MMS in the national essential medicines list.

Plans for scale up

Government ownership remains the major challenge to success. However, drafting of the National Nutrition Action Plan (2022-2027) provides an opportunity to include financing, sourcing, and procurement of MMS, as well as capacity building to effectively deliver services that support uptake and adherence to MMS. This will, in turn, support a transition from IFA to MMS at national level, across all districts beginning with those prone to humanitarian crises such as in southern Madagascar.

Leveraging existing momentum and opportunities from the MMS pilot, scale up is planned to start later in 2022 through PARN in 13 regions, with additional support from the European Union and Germany. The MMS National Technical Committee has started establishing a supply plan with costing covering all districts of Madagascar. The distribution model will be informed by the operational lessons learned during the evaluation exercise to be led by GRET.

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