A State of Play Report

Multiple Micronutrient Supplements in Humanitarian Emergencies

March 2024

ENN

unicef for every child

Eleanor Crook Foundation

Irish Aid
An Roinn Gnóthaí Eachtracha
Department of Foreign Affairs

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Acknowledgements

Many people have generously given their time and resources to help shape this State of Play report. Philip James, Kate Sadler and Amir Samnani from ENN led the research and write-up of the report, with close collaboration and additional oversight from Emily Mates at UNICEF. The overall research, including the case studies and MMS survey, was funded with the generous support of UNICEF and the Department of Foreign Affairs, Ireland. We are also grateful to the Eleanor Crook Foundation (ECF) for giving funding for further key informant interviews, which provided additional information on the barriers and opportunities summarised in the concluding chapter, as well as on thinking around the definition of humanitarian contexts.

For the Somalia case study, we thank Eric Alain Ategbo, Biram Ndiaye, Pradiumna Dahal, Madina Ali Abdirahman, Zephenia Gomora, Dr Abdirizak Osman Hussein, and Dayib Said Ismail from UNICEF Somalia. We also thank: Farhan Mohamed Mohamud at the Ministry of Health and Human Services (MoH), Fadumo Osman Nur (Fatima) at Concern Worldwide, Mohamed Moallim at Banadir Primary Health Care Consortium (BPHCC), Khadar Ahmed at the African Network for the Prevention and Protection Against Child Abuse and Neglect (ANPPCAN SL) and Adan Mahdi at Save the Children.

For the Pakistan case study we thank Dr Khawaja Masuood and Dr Abdul Baseer Khan Achakzai (Ministry of National Health Services, Regulation & Coordination, Government of Pakistan), Anteneh Girma Minas (UNICEF country office), Dr Naureen Arshad (UNICEF country office), Dr Shehla Tabassum (UNICEF, Sindh), Asim Shahzad Quresh (Nutrition International), Dr Irshad Danish (Nutrition International), Shahid Fazal (Nutrition International), Dr Sajid Shafique (People Primary Health Initiative), Dr Yozan Shahid (Save The Children), Dr Shah Miran (Medical Emergency Resilience Foundation (MERF)), Muhammad Ali (MERF), Dr Fatima Amin (Action Against Hunger), Abdullah Waqar (Remington Pharmaceutical), Ayesha Hammad (Remington Pharmaceutical), and Dr Farhana Shahid (independent consultant on multiple micronutrient supplements).

Additional key informants from a range of countries generously gave their time to speak to us about micronutrient supplementation for women and adolescent girls in humanitarian contexts: Anjuman Tahmina Ferdous, Martin Nankap, Edmond Roboye, Tesfaye Chuko, Olivia Agutu, Laura Kiige, Onjanarindra Razafimalaza, Fatoumata Lankoande, Nemat Hajeebhoy, Yadika Charles, Olayinka Chuku, Hanifa Namusoke, Abner Elkan Daniel, Dr Ahmadwali Aminee, Rebecca Nerima, Kamanda Bishimini Augustin and Mulamba Dièse.

This report benefitted enormously from detailed reviews. We thank Yashodhara Rana (ECF), Chelsea Cole (ECF), Martin Mwangi (Healthy Mothers Healthy Babies Consortium), Filomena Gomes (Healthy Mothers Healthy Babies Consortium), Tanya Khara (ENN) and Vilma Tyler (UNICEF) for their helpful reviews and suggestions. We also thank Kelsey Grey who helped conduct several of the key informant interviews.

The ideas, opinions and comments included in this report are entirely the responsibility of the document's authors and do not necessarily represent or reflect the policies of the donors, or the views of the key informants or reviewers.

Recommended citation

Philip James, Kate Sadler, Amir Samnani and Emily Mates (2024). Multiple Micronutrient Supplements in Humanitarian Emergencies: A State of Play Report. Emergency Nutrition Network (ENN): Kidlington, Oxford, UK. March 2024. https://doi.org/10.71744/zvfw-yc43

Designed by Terry Nightingale: www.tnightdesign.com

Copyeditor: MyBluePencil

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Executive summary

Introduction

In recent years there has been significant global momentum on progressing women's and adolescent girls' nutrition. Daily multiple micronutrient supplements (MMS), received through antenatal care (ANC) platforms, have received particular attention. The growing evidence base describing the effectiveness of MMS for birth and maternal outcomes, together with an increasing volume of documented learning about operational aspects from several implementation research pilots, and a strongly supportive advocacy agenda, means that our understanding of the potential impacts of MMS when taken to scale is rapidly improving.

Women and girls are disproportionately affected by conflict and disasters due to their increased nutritional needs and vulnerabilities. However, there is limited consolidated information on the extent to which women and adolescent girls receive MMS in humanitarian emergencies. Where MMS programming exists in these contexts, details on implementation and barriers to successful scale-up are often lacking. This report aims to fill some of these important knowledge gaps, while recognising that this is simply a starting point for ongoing knowledge sharing and informed action.

Methods

Information for this report was sourced from a survey, two in-depth country case studies, and additional key informant interviews.

- An online survey was conducted in countries experiencing humanitarian emergencies in June 2023, addressing MMS provision, barriers and opportunities.
- Pakistan and Somalia were chosen as case studies from contrasting regional contexts. In the report we summarise the main findings from these case studies but we direct readers to the accompanying individual case study reports that contain full details (**Somalia** and **Pakistan**).
- To broaden insights into MMS programming, additional key informant interviews were conducted, including with stakeholders providing iron-folic acid (IFA) but not MMS. These interviews covered diverse humanitarian contexts, including refugee responses, conflicts, economic crises, and natural disasters.

Background

MMS

MMS are formulated to contribute towards the Recommended Dietary Allowance of 15 micronutrients for pregnant women. The formula recommended for use, and which therefore forms much of the evidence base, is the United Nations International Multiple Micronutrient Antenatal Preparation (UNIMMAP). When compared to IFA, MMS reduces low birthweight by 15%, stillbirth by 9%, preterm birth by 4%, and small-for-gestational-age deliveries by 7%. Compared to iron with or without folic acid MMS has similar benefits for preventing maternal anaemia. The 2023 Copenhagen Consensus Report underscores the considerable economic advantages of replacing IFA with MMS, estimating a return on investment of USD 37 for every USD 1 spent.

Current policy and guidance for MMS

In 2007, the World Health Organization (WHO), the World Food Programme (WFP) and the United Nations Children's Fund (UNICEF) issued a joint statement on preventing and controlling micronutrient deficiencies in populations affected by an emergency, including recommendations on the use of daily MMS for pregnant and breastfeeding women. Since the 2007 joint statement, the recommendations have been implemented to varying degrees around the world.

Survey results: use of MMS in humanitarian emergencies

An online survey was sent to respondents from 46 eligible countries[1] in June 2023. A total of 131 individual responses were recorded, from 39 different countries. Most of the responses came from individuals working for non-governmental organisations (NGOs) (63%), followed by individuals in UNICEF country offices (24%), governments (5%) and others (8%). Respondents from 28 countries stated they distributed MMS to women in humanitarian programmes. Of the 11 countries that indicated there was no MMS provision, respondents from seven countries reported plans to implement MMS programming in the next year.

In most countries (27 out of 28), all respondents stated that under humanitarian programmes MMS was given to pregnant women. Twenty of these countries also had respondents who said that MMS was given to breastfeeding women, with a minority giving MMS to non-pregnant women (six countries) and non-pregnant adolescent girls (nine countries).

Financing of MMS programming was the most commonly reported barrier across countries, by a large margin, followed by three similarly ranked barriers: inadequate country policy/protocols, inadequate supply chain, and inadequate awareness of benefits of MMS by healthcare workers and target populations.

1 Eligibility was defined as countries having released a UNICEF Humanitarian Action for Children Appeal in 2022/3, and/or being listed as a Level 2 (L2) or Level 3 (L3) emergency, and/or having an active cluster established under the Global Nutrition Cluster (GNC) in 2022/3, as at June 2023.

Summary of key findings

The key findings from the survey, case studies and additional key informant interviews are compiled and summarised here by WHO health system building block. While all of the barriers identified here were described by key informants in the context of humanitarian emergencies, they are not necessarily exclusive to these settings but rather reflect recurring themes found across the spectrum of humanitarian and development contexts.

Building block 1
Leadership and governance

MMS programming is increasingly recognised by governments as important for addressing micronutrient deficiencies among women. **Support from non-government actors such as United Nations agencies, NGOs, researchers and donors with expertise in nutrition and micronutrient supplementation is often key to assisting governments to integrate MMS programming into national nutrition policy and strategy in many countries.** In countries where national policies and strategies do not yet mention MMS there can be a barrier to the development of corresponding implementation guidance.

Some stakeholders view global guidance on MMS as confusing: some guidelines recommend using MMS only in ANC within the context of rigorous research, while other recommendations endorse its use in emergency settings alongside IFA. **A lack of clarity in global guidance may contribute to the slow integration of MMS programming into national policy.** Concerns about over-supplementation or micronutrient toxicity was reported to be a potential barrier to including MMS in national policy by a few key informants working in refugee settings where other fortified food was also made available. However, the majority of key informants stressed that these concerns are less relevant in humanitarian emergencies.

UNIMMAP MMS has been on the WHO global Essential Medicines List (EML) since 2022, which is reported to facilitate procurement, particularly in international humanitarian responses. MMS is also beginning to be integrated into national EMLs – although in many countries this is still in process. There is broad understanding that this will support the scale-up of MMS through leveraging domestic resources for its purchase, by mobilising further political commitment for its integration into ANC services, and potentially reducing breaks in MMS supply chains.

Building block 2
Service delivery

Micronutrient supplementation is almost always integrated into health service provision, mainly in ANC. This is the case both in international humanitarian response and domestic crisis management. Many countries have a mixture of both IFA and MMS programming, most often with national IFA programmes and smaller-scale MMS programming at subnational level, and not yet integrated into routine government programming. Somalia and the Democratic Republic of Congo (DRC) are an exception: in these countries, MMS is part of the national programme. In all surveyed countries, MMS is currently provided to recipients for free during humanitarian responses, and is mainly distributed to pregnant women monthly as part of ANC.

Key barriers to scaling MMS programming in humanitarian emergencies and achieving adequate coverage of the population include limited awareness among healthcare workers and target populations, restricted access to health services, poor ANC service quality, and supply chain breaks. Key informants made a few anecdotal comments relating to fears/misconceptions among pregnant women about having larger babies due to the additional micronutrients given. Some confusion also exists at the service delivery level regarding the different uses of MMS and IFA for anaemia prevention and treatment, linked to the lack of clear guidance and challenges with health worker capacity.

Key informants described the fact that once reached through outreach and mobilisation, women are eager to participate in, and understand the value of, ANC services. Indeed, the inclusion of MMS in ANC packages reportedly encourages women to attend health facilities, anecdotally because women prefer MMS over IFA due to fewer reported side effects. There are examples, particularly from Somalia and Madagascar, of leveraging existing community health worker infrastructure to improve mobilisation and outreach for ANC.

Building block 3
Health system financing

Currently, MMS programming during humanitarian emergencies heavily relies on donors, often through non-governmental agencies like UNICEF, Vitamin Angels Alliance and other NGOs, or philanthropies such as Kirk Humanitarian. However, initiatives such as UNICEF's Child Nutrition Fund (CNF) also aim to mobilise domestic funds for nutrition commodities, including MMS provision, in 23 countries affected by a high prevalence of child wasting. While the CNF does not have a specific funding initiative tied to humanitarian emergencies, governments that receive matching funds from the CNF could leverage these resources in crisis-affected areas of their countries.

Key informants noted that the cost of purchasing MMS is considerably higher than that related to IFA. The factors underlying this vary by country, but commonly include the additional cost of MMS, which contains 15 different micronutrients (versus only two in IFA), the need to import MMS (versus IFA, which is often locally produced) and, in some countries, an importation tax on MMS. Implementation research in countries like Pakistan and Nigeria is exploring the feasibility and cost advantages of locally producing MMS.

Some key informants from the case studies described how meeting financial requirements for programming MMS within humanitarian emergencies is challenging, explaining that there were other critical nutrition programmes, such as those treating child wasting, also remaining underfunded. **Sustainable funding opportunities for MMS programming within ANC is therefore an urgent priority, recognising that this will need to part of a wider discussion on how to prioritise which interventions to fund in complex situations with constrained resources.** However, opportunities are emerging in this area: key informants described the growing attention being given to the prevention of child undernutrition in humanitarian contexts by some researchers, donors and practitioners. Correspondingly, there is growing momentum and evidence generation on the role of improved maternal nutrition to reduce the risks of wasting and stunting in early childhood by reducing the prevalence of poor birth outcomes, such as low birth weight. Scaled-up MMS provision could play a vital role in prevention efforts, potentially improving funding for the product as well as improving the quality and reach of delivery platforms.

Building block 4
Health workforce

MMS is mainly delivered through ANC services, often by government health staff and occasionally by NGOs/United Nations agencies in locations with reduced government health service capacity. Health staff knowledge on MMS benefits and delivery protocols within ANC relies heavily on limited in-service training and support from NGO/United Nations agency-funded programmes. **The absence of national protocols and guidance for MMS in humanitarian programmes sometimes creates confusion around delivery protocols.**

Health staff capacity challenges are common, including limited staff availability and their existing workload. Community health outreach staff, who are crucial for mobilisation and for improving MMS coverage, often face heavy workloads, making integration of MMS programming into existing work difficult, especially when remuneration is inadequate.

Enhanced in-service training, implementation guidance, and updated job descriptions can help to strengthen MMS programming, in addition to incorporating associated nutrition education and counselling within ANC. The increased focus on preventing child undernutrition in humanitarian settings, and the role maternal nutrition plays in this, offers potential opportunities to scale up support for MMS delivery through both facility-based and community-based workforces, improving ANC service provision more broadly.

Building block 5
Supplies and technology

Currently, MMS used in humanitarian programmes is imported from overseas, sourced largely through UNICEF or Kirk Humanitarian supplies and procured directly in-country by UNICEF Country Offices or NGOs such as Vitamin Angels Alliance. MMS tablets are mostly supplied in bottles of 100 or 180 tablets. Many countries adopt a protocol according to which the whole bottle is given at once, so that the desiccant inside the bottle continues to keep the tablets dry and to reduce the risk of tablets becoming discoloured over time. However, some key informants described how in order to align distribution with eight ANC contacts (i.e., monthly visits during pregnancy), sometimes the tablets from the bottles are decanted into smaller packages at facilities, adding to health staff workload.

Blister packs of 30 tablets are available but can be cost-prohibitive. While the in-country supply chain works well in some cases, such as Somalia and Sri Lanka, in other cases demand outpaces supply or supplies take time to reach programme locations. Breaks in MMS supply have occurred in several countries; these were linked to global market availability, restricted funding, and challenges with reporting and estimating need at health service level. Considerable work is being undertaken by UNICEF Supply Division and key partners, including Kirk Humanitarian and the Bill & Melinda Gates Foundation, to develop a more reliable global supply of MMS. **Key actions needed include investment to strengthen and support a network of regional producers, the adoption of a global set of common product standards, and encouraging more procurement commitments through mechanisms such as the Child Nutrition Fund.**

Developing local or regional MMS production in some countries could shorten the supply chain. Establishing a buffer stock of MMS at the facility/pharmacy level could also address unforeseen increases in demand and reporting issues within national supply chains. Finally, the inclusion of MMS on national EMLs could facilitate procurement and distribution in line with national protocols, especially in crises that are managed domestically following national protocols.

Building block 6
Information systems

Monitoring of the coverage of MMS programming is only just beginning to be integrated into national health information systems in a few humanitarian contexts, such as in Somalia. In most places, where it exists, programme monitoring and evaluation for MMS programming relies on programme data collection and reporting, usually put in place by UNICEF, and this can be parallel to government systems. In some cases, MMS and IFA are combined into one indicator.

Since in several countries MMS is not yet written into national protocols, national-level surveys collect self-reported adherence data on iron-containing tablets/syrups for pregnant women but do not yet collect data on MMS availability and adherence. There is also a lack of data on the explanatory factors underpinning adherence to IFA or MMS. **All of this means that there are large gaps in data, and therefore in our knowledge of the availability of, and adherence to, MMS.**

Given Humanitarian Response Plans (HRPs) rely first and foremost on an estimation of the number of people in need of a service or intervention, these data gaps could be a barrier to ensuring MMS programming is built into HRPs, fundraised for, and delivered.

The integration of MMS monitoring into DHIS2 in all countries where it is programmed, as well as into relevant national surveys, is important to strengthen our understanding of coverage of MMS programming. This is already beginning to happen in some places, e.g., Somalia and Pakistan, and these early experiences will contribute learning for other countries.

Conclusions

The information compiled for this report highlights a significant and growing interest in MMS programming in humanitarian emergencies, yet currently MMS programming is not being delivered at scale in these contexts. The opportunity of MMS, a much-improved product in terms of effectiveness for improving nutrition, is seen by many as a welcome opportunity to improve maternal health and pregnancy outcomes, including through the opportunity to revitalise quality ANC services more generally. However, replacing IFA with MMS cannot happen successfully without investment in overcoming many of the barriers discussed above.

While humanitarian emergencies undeniably present additional, complex barriers to MMS programming coverage, what is needed to address them in these contexts remains fundamentally the same as what is needed across all settings: namely, it entails using the lens of health systems strengthening to make MMS programming as effective as possible within quality ANC services. The opportunities this will bring are essential for the overall health and well-being of pregnant women and adolescent girls, and will help ensure we fulfil our obligations to fully support their human right to adequate nutrition.

Acronyms

ANC	Antenatal care
CHW	Community health worker
DALY	Disability-adjusted life year
DHS	Demographic and Health Survey
ECF	Eleanor Crook Foundation
EML	Essential Medicines List
ENN	Emergency Nutrition Network
GNC	Global Nutrition Cluster
GWG	Gestational weight gain
HAC	Humanitarian Action for Children
HMHB	Healthy Mothers Healthy Babies Consortium
HRP	Humanitarian Response Plan
IASC	Inter-Agency Standing Committee
IFA	Iron-folic acid
MMS	Multiple micronutrient supplements
MoNHSR&C	Ministry of National Health Services, Regulations, and Coordination
NGO	Non-governmental organisation
SMART	Standardised Monitoring and Assessment of Relief and Transitions
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIMMAP	United Nations International Multiple Micronutrient Antenatal Preparation
WFP	World Food Programme
WHO	World Health Organization

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Introduction and scope

In recent years there has been significant global momentum on progressing women's and adolescent girls' nutrition, led by governments, United Nations agencies, non-governmental organisations (NGOs), research institutions, the private sector and donors. Daily multiple micronutrient supplements (MMS), received through antenatal care (ANC) platforms, have received particular attention. The growing evidence base describing the effectiveness of MMS for birth and maternal outcomes, together with an increasing volume of documented learning about operational aspects from several implementation research pilots, and a strongly supportive advocacy agenda, means that our understanding of the potential impacts of MMS when taken to scale is rapidly improving.

However, despite the joint United Nations statement published in 2007, which provided recommendations on the use of MMS in emergencies (1), there is limited consolidated information on the extent to which women and adolescent girls receive MMS in humanitarian emergencies. Where MMS programming exists in these contexts, details on implementation and barriers to successful scale-up are often lacking. This report aims to fill some of these important knowledge gaps, while recognising that this is simply a starting point for ongoing knowledge sharing and informed action.

In *Box 1* we provide a summary of the body of work the Emergency Nutrition Network (ENN) has done leading up to this report. At the global level, partners have been supporting several governments to spearhead implementation research on MMS and to program MMS in humanitarian emergencies, as illustrated later within this report. The United Nations Children's Fund (UNICEF) has also been advancing the case for MMS distribution as part of strengthened, quality ANC service provision, with some of the key documentation summarised in *Box 2*. There has been sustained research and advocacy on MMS by a large number of research, operational and donor institutions, such as the Healthy Mothers Healthy Babies Consortium (HMHB), the MMS Technical Advisory Group (MMS-TAG), Nutritional International, the Sight and Life Foundation, the Eleanor Crook Foundation (ECF), the Bill & Melinda Gates Foundation, and many others. In *Annex 1* we provide a summary of selected resources on MMS from a range of sources: here readers can find background documentation and tools that have been developed to support MMS scale-up.

In this State of Play report, we address gaps in our knowledge of the use of MMS in humanitarian emergencies through four main sections:

- In **Section 1** we provide a brief background to MMS, summarising the key evidence and policies, we define how we describe humanitarian emergencies, and we summarise the humanitarian system for nutrition programming.
- In **Section 2** we present the results of a survey to provide a snapshot of where MMS is being used in humanitarian emergencies and by whom.
- In **Section 3** we provide a short summary of two case studies on MMS in humanitarian emergencies: one from Somalia and one from Pakistan.
- In **Section 4** we pull together the key themes regarding barriers to, and opportunities for, the use of MMS in humanitarian emergencies. These themes are drawn from the findings of the survey, both of the case studies and several additional key informant interviews that were conducted, from a range of contexts (see methods below).

Throughout the report we use the World Health Organization (WHO) definition of adolescence as extending from the onset of puberty up until adulthood, approximately corresponding to the 10–19 years age bracket. Many source documents write about 'women aged 15–49 years', and therefore risk erroneously excluding adolescent girls and/or misclassifying them as women. Where possible, we make this distinction. We provide definitions of terms describing humanitarian emergencies in Section 1, below.

Box 1: ENN's work on women's and girls' nutrition

In 2012, ENN published a technical background paper summarising the existing evidence on maternal nutrition interventions and identifying knowledge gaps relating to addressing maternal undernutrition in emergencies (2).

Given that substantial gaps remained in our understanding of the state of maternal nutrition globally, and given the implications of poor nutritional status for adolescent girls and women, as well as their infants, ENN updated and expanded this technical paper in 2021 to summarise evidence, policy and practice relating to all areas of women's nutrition in a technical briefing paper on women's nutrition (3).

In researching the 2021 paper, it became clear that there was a particular dearth of evidence and shared learning coming from humanitarian contexts. In 2022, ENN therefore summarised progress in a State of Play report, specifically focusing on humanitarian contexts (4). Information was gathered through literature reviews, policy document searches, and key informant interviews. The report presented the background to humanitarian response architecture, the importance of women's and girls' nutrition in humanitarian contexts, the state of women's and girls' nutrition in humanitarian contexts, the current policy environment, existing scientific evidence on what works, combined with examples from programme experiences, and a summary of the current gaps and recommendations. Readers are therefore referred to this 2022 report for more detailed background information on the wider context within which micronutrient supplementation sits.

Box 1: ENN's work on women's and girls' nutrition continued

The 2022 State of Play report was complemented by an in-depth case study on programming for women's and girls' nutrition, including MMS programming, in Madagascar (5). The case study summarised policies and programmes to support women's and adolescent girls' nutrition as part of the recent national humanitarian response in the country. It identified implementation gaps and challenges, and recommended actions to strengthen advocacy, policies and programmes. It also provided detailed information about the ongoing MMS pilot project in-country, much of the learning from which has been expanded on in this current report.

The 2022 State of Play report and the Madagascar case study were used as background documents for a 2022 roundtable discussion on MMS use in humanitarian contexts, co-hosted by ENN, UNICEF and HMHB. The key findings and recommendations from this roundtable were summarised in an article in the latest Sight and Life Foundation Special Report on MMS (6).

Box 2: Recent work from UNICEF on maternal nutrition

Over the past few years, UNICEF has been developing and documenting the evidence base for women's nutrition. The main vehicle for generating evidence through implementation research has been via the 'Introducing Antenatal Multiple Micronutrient Supplementation in Prioritized Countries (In Asia and Africa)', also known as the IMPROVING project, implemented since 2018 and reaching completion in March 2024. With funding from the Bill & Melinda Gates Foundation, the project has been collecting evidence on the enabling environment, delivery systems (including issues related to demand and data systems), supply systems and experiences in identifying and addressing barriers to uptake and utilisation of maternal nutrition services. Final project documentation is underway, which will outline key lessons learned from the operational implementation of MMS provision to pregnant women living in Tanzania, Burkina Faso, Bangladesh and Madagascar.

Following the recommendations of UNICEF's 'Undernourished and Overlooked' flagship report (see below), UNICEF has developed an 'Improving Maternal Nutrition Acceleration Plan', to be launched in March 2024. This Acceleration Plan intends to help governments and partners fast-track the delivery of a package of essential services during pregnancy to prevent malnutrition and anaemia and includes the provision of MMS. The Plan targets 16 million women across 16 low- and middle-income countries over the next two years and has been estimated to cost US $20 per woman.

UNICEF has also been producing global publications on the importance of women's nutrition more generally as well as scaling up MMS programming more specifically. In chronological order, recent publications include:

- Maternal nutrition integrating MMS in UNICEF's Nutrition Strategy 2020-2030
- Maternal nutrition included in UNICEF's Core Commitments for Children, October 2020.
- Programme Guidance on Maternal Nutrition, January 2022.
- Maternal Nutrition Counselling Brief, January 2022.
- MMS Advocacy brief, January 2022.
- Undernourished and Overlooked: A Global Nutrition Crisis in Adolescent Girls and Women, Flagship Report, March 2023.

UNICEF has also contributed to a series of journal articles, included in the resource compilation in *Annex 1*.

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Methods

Information for this State of Play report was sourced from a survey, two in-depth country case studies and additional key informant interviews.

MMS survey

Given the complexities of varying definitions of humanitarian contexts (see *Section 1* below), a simple way of categorising countries experiencing humanitarian emergencies was adopted for the purposes of targeting the survey. Countries (or sub-regions within countries) falling into the following categories were defined as experiencing a humanitarian emergency:

- having released a UNICEF Humanitarian Action for Children (HAC) Appeal in 2022/3;[2]
- and/or being listed as a Level 2 (L2) or Level 3 (L3) emergency;[3]
- and/or having an active cluster established under the Global Nutrition Cluster (GNC) in 2022/3.[4]

A list of countries fulfilling the above criteria was compiled in June 2023.

2 Current HAC Appeals can be viewed here: https://www.unicef.org/appeals

3 Information on current and past L2 and L3 countries is provided on an updated, public webpage: https://www.corecommitments.unicef.org/level-3-and-level-2-emergencies

4 The GNC update on where there are active clusters can be viewed here: https://www.nutritioncluster.net/where-we-work

The survey was programmed in SurveyMonkey®. It asked respondents about the organisation they worked for, their country of work, and whether MMS was provided for women and/or adolescent girls in a humanitarian emergency. If the answer was yes, respondents were then asked about who received the MMS and who distributed the MMS, information on localities and targets, the MMS supplier, where MMS was procured from, barriers to programming MMS at scale, and whether MMS was on the national Essential Medicines List (EML). If the respondent answered that there was no MMS programming, they were directed to a set of questions on whether iron-folic acid (IFA) was used. These IFA questions were the same in structure as those asked for MMS, with a set of additional questions on whether the respondent was aware of the joint United Nations 2007 statement on controlling micronutrient deficiencies in emergencies (1), whether they had plans to implement MMS programming in the following year, and the top issues that needed to be addressed or changed in order to switch from IFA to MMS programming in the future.

The survey was distributed to all countries defined as experiencing a humanitarian emergency using the above categorisation. The survey was initially distributed by UNICEF New York headquarters to regional and relevant country offices. UNICEF country office leads were asked to pass the survey on to implementing partners in the country. In parallel, other agencies helped to share the survey with their partners working in relevant countries, such as the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), Action Against Hunger, Médecins Sans Frontières, Kirk Humanitarian and Vitamin Angels.

Responses were anonymous, but respondents were optionally asked to provide their contact details if they consented to being contacted for further information, which provided a pool of key informants for some supplementary interviews (see below). Due to the differing numbers of respondents per country, questions on the top three barriers/opportunities were summarised by country rather than by individual.

Survey limitations

The selection of countries to target for the survey (based on the criteria described above) was necessarily imperfect, in order to enable a broad enough yet rapid response. The definition did not cater for countries that were not on the list but that may have had geographical pockets of humanitarian emergency, or countries that were entirely managing humanitarian emergencies through domestic management. The sample was self-selected, and responses were therefore not necessarily representative of what was happening overall at the country level. The survey results should therefore be viewed as a snapshot of what was happening in a complex, rapidly evolving field.

The survey was programmed so that respondents had sets of questions filtered to MMS programming or to IFA programming, but they did not have the option to respond to both sets of questions. Where countries had more than one respondent, responses sometimes differed, or even conflicted. This meant some questions were more appropriate for being picked up by later key informant interviews, rather than illustrated as over-simplified survey responses. We have therefore chosen to report a selection of the most informative survey questions in our survey results section, focusing on a sub-selection of questions related to MMS programming. The remaining MMS-related questions were used, together with the responses on IFA programming, to further guide the case study and key informant interview guides, and to help shape key themes that are summarised in Section 4 of this report.

We might have been able to obtain more engagement if we had also supplied the survey in French and Arabic, instead of just in English and Spanish.

Case studies

Pakistan and Somalia were selected as examples of two contrasting country contexts to illustrate key themes in depth. UNICEF headquarters introduced the ENN researcher team to the in-country UNICEF offices, who in turn then helped with the selection of key informants from relevant contacts from governments, other United Nations agencies, NGOs, and the private sector. An interview guide was developed (*Annex 2*) and was used to guide conversations in both countries. Interviews lasted 45–60 minutes. All interviews with key informants from Somalia were conducted remotely online (from June to August 2023), whereas the majority of interviews in Pakistan were conducted in person in Islamabad and Karachi, with a few supplementary interviews conducted online (in August 2023). Key findings on barriers and opportunities were summarised by WHO health system building blocks. All key respondents provided oral consent for the interviews to be recorded for the purposes of note-taking. Key respondents reviewed the final draft of the case studies to check for accuracy and to provide their final consent for their inclusion by name in the acknowledgements. We present a short summary of each case study in this report and we refer readers to the accompanying separate case study reports for full details (**Somalia** and **Pakistan**).

Additional key informant interviews

To gain additional understanding on MMS programming from a wider range of humanitarian contexts, and to cover countries that were not yet using MMS, additional key informant interviews were conducted. A selection of key informants were approached from among those who had given consent to be contacted for further information during the MMS survey. The aim was to ensure we captured perspectives from key informants amongst country-level stakeholders in programmes that a) provided IFA but not MMS in humanitarian emergencies, and b) provided MMS. A range of humanitarian contexts was covered, including those characterised by refugee responses, conflict, economic crisis, and natural disasters.

Key informants who provided information about current IFA programming and barriers to MMS scale-up represented work in Bangladesh, Cameroon, Chad, Ethiopia, Kenya, Madagascar, Nigeria and Sri Lanka. Key informants providing information about MMS programming represented work in Afghanistan, Uganda and the Democratic Republic of Congo (DRC). However, the majority of the country experiences that were described actually used a combination of IFA and MMS at different scales and stages of transition. Interviews covered programmatic aspects, barriers to switching from IFA to MMS, barriers to scale-up of MMS, and recommendations on what would be needed to improve MMS delivery. See *Annex 2* for interview guides. Consent processes were the same as described above for the case studies.

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Section 1: Background

MMS

MMS is formulated to provide a combination of essential vitamins and minerals that are needed for overall health and well-being. The specific formulation can vary depending on the target population, the purpose of the supplement, and the prevailing nutritional deficiencies in a particular region.

The formula recommended for use in pregnancy, and which therefore forms much of the evidence base relevant to this report, is the United Nations International Multiple Micronutrient Antenatal Preparation (UNIMMAP) (*Table 1*). UNIMMAP MMS is formulated to contribute towards the Recommended Dietary Allowance of 15 micronutrients in pregnant women.

Table 1: UNIMMAP formulation of MMS

Micronutrient	Dose per tablet
Iron	30 mg
Zinc	15 mg
Copper	2 mg
Selenium	65 µg
Iodine	150 µg
Vitamin A	800 µg retinol equivalent (RE)
Vitamin B1	1.4 mg
Vitamin B2	1.4 mg
Vitamin B3	18 mg
Vitamin B6	1.9 mg
Vitamin B9 (folic acid)	400 µg
Vitamin B12	2.6 µg
Vitamin C	70 mg
Vitamin D	200 IU
Vitamin E	10 mg

The MMS Technical Advisory Group (MMS-TAG) is an interdisciplinary group of experts in nutrition, maternal health, and public health, founded in 2018 to interpret emerging evidence on MMS and to provide high-fidelity guidance and support to stakeholders, including national actors. It has recently published a summary of the existing evidence base on MMS, demonstrating the impact MMS has on maternal and infant outcomes. Readers are referred to this summary of the evidence by the MMS-TAG, which is both comprehensive and accessible (8). When compared to the use of IFA, MMS reduces low birthweight by 15%, stillbirth by 9%, preterm birth by 4%, and small-for-gestational-age deliveries by 7% (9). MMS, as compared to iron with or without folic acid, has similar benefits in regard to preventing maternal anaemia (10).

Sub-analysis has shown additional benefits of MMS for anaemic or underweight women[5] (11). Furthermore, MMS has been shown to improve gestational weight gain[6] (12), and adolescent pregnant women also benefit substantially from MMS (13).

The 2023 Copenhagen Consensus Report underscores the considerable economic advantages of replacing IFA with MMS, estimating an overall annual benefit exceeding USD 3.1 billion and a return on investment of USD 37 for every USD 1 spent (14). Additionally, recent studies have predicted the potential cost-effectiveness of MMS were it to be introduced at scale. For example, a team from the University of Washington developed a microsimulation model to investigate what the effect of various antenatal interventions would be on disability-adjusted life years (DALYs) and incremental costs. In the model looking at the effect of 90% coverage of MMS in ANC it was estimated that mortality and morbidity would be improved amongst children aged under two years, at an incremental cost of USD 52 per DALY saved for Pakistan, USD 70 for India and USD 253 for Tanzania (15). Nutrition International has also developed several resources on the cost-effectiveness of MMS, including an interactive tool that can help decision-makers see a tailored scenario of the impact of switching from IFA to MMS (see *Annex 1* for more resources).

> *"The 2023 Copenhagen Consensus Report underscores the considerable economic advantages of replacing IFA with MMS, estimating an overall annual benefit exceeding USD 3.1 billion and a return on investment of USD 37 for every USD 1 spent."*

5 For women with anaemia (haemoglobin <110g/L), receiving MMS was associated with reductions in low birthweight by 19%, versus 9% for non-anaemic women. Small-for-gestational-age was reduced by 8% and six-month infant mortality by 29% in anaemic women, versus no effect for both outcomes in non-anaemic women. For underweight women with body mass index <18.5 kg/m^2, those receiving MMS had preterm birth reduced by 16%, versus 6% for women who were not underweight.

6 Women receiving MMS in the intervention arm had a greater percentage adequacy of gestational weight gain (GWG) [weighted mean difference (WMD): 0.86%], a higher GWG at delivery (WMD: 209 g), and a 2.9% reduced risk of severely inadequate GWG compared to those in the control arm.

Current policy and guidance for MMS

In 2007, WHO, the World Food Programme (WFP), and UNICEF issued a joint statement on preventing and controlling micronutrient deficiencies in populations affected by an emergency, including recommendations on the use of MMS for pregnant and breastfeeding women (1). The statement says:

- "*Pregnant and lactating women should be given this supplement [MMS] providing one Recommended Nutrient Intake of micronutrients daily, whether they receive fortified rations or not.*"
- "*MMS should be given until the emergency is over and access to nutrient rich foods is restored.*"

Since the 2007 joint statement, the recommendations have been implemented to varying degrees around the world, but data on what micronutrient supplementation women are receiving in humanitarian emergencies is lacking. Note that in the context of routine ANC care, WHO (2016) recommendations for a positive pregnancy experience detail the provision of IFA supplementation for all pregnant women in varying therapeutic and preventive doses, depending on whether anaemia has been diagnosed or not (16). A 2020 update to this guidance recommends MMS only in the context of rigorous research (17). Recently, MMS has been added to the WHO EML as an antenatal supplement for pregnant women. Readers are referred to ENN's 2022 State of Play for a comprehensive summary of all policies related to micronutrient supplementation for adolescent girls and women (4).

> *"Since the 2007 joint United Nations statement, the recommendations have been implemented to varying degrees around the world, but data on what micronutrient supplementation women are receiving in humanitarian emergencies is lacking."*

Women's nutrition in humanitarian emergencies

The Global Humanitarian Overview in 2023 estimated that 339 million people were in need of humanitarian assistance (18). Women and girls are disproportionately affected by conflict and disasters due to their increased nutritional needs and vulnerabilities (*Box 3*). In 2023, the United Nations Population Fund (UNFPA) appealed for an estimated USD 1.2 billion to provide life-saving health and protection services to over 66 million women, girls and young people in 65 countries (19). In June 2023, the United Nations High Commissioner for Refugees (UNHCR) reported that as at the end of 2022 there were an estimated 108.4 million people in the world who had been forcibly displaced from their homes because of conflict and persecution, including 35.3 million refugees and 62.5 million internally displaced people, around 26% of whom were women aged 18–59 years and 20% of whom were girls aged 0–17 years (20). The scale and scope of humanitarian crises is increasing worldwide, characterised by complex crises, protracted crises, sudden-onset disasters, and slow-onset disasters. For example, the number of acutely malnourished pregnant and breastfeeding women rose by 25% from 2020 to 2022, from 5.5 million in 2020 to 6.9 million in 2022, across 12 countries heavily affected by current food and nutrition crises (21). Many countries move in and out of crises periodically, and current humanitarian crises are longer, more intense, and more disruptive than ever before. *Box 3* provides a summary of some of the ways in which the vulnerability of women and girls are heightened during humanitarian crises.

The essential right for women to access a nutritionally adequate diet is addressed in several human rights instruments, as summarised in UNICEF's 2023 "Undernourished and Overlooked" report and further expanded in *Box 4*.

Box 3: Women's and adolescent girls' increased vulnerabilities during humanitarian emergencies. Summarised from Lelijveld *et al.* (2022) (4).

Increased nutritional requirements and reduced intakes

Humanitarian crises, such as climate events, may impact women's allocation of labour and/or intensify workloads, increasing daily energy and nutrient requirements and the risk of maternal undernutrition and micronutrient deficiencies. This, in turn, increases the risk of adverse infant outcomes for pregnant and breastfeeding women and girls, as well as disrupting infant and young child feeding practices and childcare. The risk of diarrhoeal and infectious disease increases during humanitarian crises, which often results from mass migration and overcrowding, economic and environmental degradation, increased poverty, limited access to safe water, poor sanitation and waste management, the absence of shelter, and poor access to healthcare (22). This can lead to the malabsorption or loss of nutrients, increasing requirements for micronutrients and causing, or exacerbating, micronutrient deficiencies. Women and adolescent girls are often the ones who are most likely to restrict their food intake in favour of other family members during times of short supply, either voluntarily or due to ongoing social and gender inequalities (22).

Increased risks for women and adolescent girls

Gender-based violence often increases during humanitarian crises as women's status in society makes them more vulnerable to exploitation, violence and abuse (23). Forced transactional sex and early marriage may also be more likely, resulting in more adolescent pregnancies and associated risks for maternal (and infant) nutrition and health. Some evidence indicates that women may be at greater risk of mental health problems, such as anxiety and depressive disorders and post-traumatic stress disorders, during crisis situations (24).

Disruption of services and support

Access to routine health services (e.g., reproductive health services, ANC and obstetric care, and prevention of mother-to-child transmission of HIV services) is often disrupted during humanitarian crises. Reduced access may increase the risk of unwanted pregnancies, HIV transmission, reduced access to interventions such as prenatal micronutrient supplementation, and pregnancy and delivery complications for mother and baby. This may be particularly problematic in settings where reproductive and maternal health services are already sub-optimal. Women's health and nutrition is also affected by reduced access to safe water and sanitation, which is commonly seen in emergency situations, along with poor-quality housing (25).

For the purposes of this report, we propose an operational definition of a humanitarian emergency as:

> *"An event or series of events that represents a critical threat to the health, safety, security or well-being of a community or other large group of people, usually over a wide area."*

Box 4: The human right to adequate food and nutrition

The right to adequate food and nutrition is addressed in various international human rights instruments. These instruments collectively contribute to the recognition and protection of the right to adequate food and nutrition at the international level. Countries that are parties to these treaties are expected to take measures to respect, protect and fulfil these rights. Some of the key instruments and documents include the following:

Universal Declaration of Human Rights (1948): encompasses the right to a standard of living that is adequate for health and well-being, which includes access to food, and mentions the entitlement to special care and assistance for mothers and children (26).

International Covenant on Economic, Social and Cultural Rights (ICESCR, 1966): explicitly recognises the right to an adequate standard of living, including adequate food, clothing and housing (27).

International Covenant on Civil and Political Rights (ICCPR, 1966): contributes to the right to adequate food by emphasising certain aspects of non-discrimination and the inherent right to life (28).

Universal Declaration on the Eradication of Hunger and Malnutrition (1974): describes the right of every individual to be free from hunger and malnutrition in order to develop and maintain full physical and mental health (29).

Convention on the Elimination of all Forms of Discrimination Against Women (1979): emphasises women's right to access adequate healthcare services and highlights the importance of ensuring women's right to adequate nutrition during pregnancy and breastfeeding (30).

Declaration on the Right to Development (1986): recognises the right to development as an economic, social, cultural and political process, with a focus on the realisation of the right to food. It describes how women should have an active role in the development process (31).

Convention on the Rights of the Child (1989): addresses the right of the child to the highest attainable standard of health, including the right to adequate nutritious foods and clean drinking water, as well as appropriate prenatal and postnatal healthcare for mothers (32).

Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security (2005): provide a framework for governments to implement the right to adequate food, with Guideline 10 focusing on nutrition (33).

Definition of humanitarian emergencies

Various terms are used to describe different types of emergencies and humanitarian contexts. These terms frequently overlap and are used interchangeably. Some of the most common terms are set out in *Annex 3*. For the purposes of this report, we propose an operational definition of a humanitarian emergency as "*an event or series of events that represents a critical threat to the health, safety, security or well-being of a community or other large group of people, usually over a wide area*".[7]

This definition was chosen as it acknowledges that humanitarian emergencies may be caused by multiple concurrent events, it does not impose a time restriction on the resolution of the emergency, and it encompasses the health and well-being of communities. Using this definition, the recommendations from the 2007 United Nations joint statement on the use of MMS in emergencies would remain applicable (see *Box 5*).

7 This term is used by sources including WHO, UNFPA, and the Humanitarian Coalition. See *Annex 3* for more details and references.

Box 5: Can the United Nations joint statement from 2007 apply to all humanitarian contexts?

The United Nations joint statement (2007) describes emergencies as transient situations that may be resolved within a defined timeframe before populations return to being able to access nutrient-rich diets: "*MMS should be given until the emergency is over and access to nutrient rich foods is restored*" (1). However, it is known that many populations may face years of food insecurity due to protracted conflicts, natural disasters (increasingly linked to climate change) or a combination of these events. Unless access to an adequate diet is achieved, the requirements for micronutrient supplementation will likely remain. Even in non-emergency settings, obtaining the recommended dietary intake of micronutrients from food sources within an affordable diet is extremely difficult for pregnant women (34).

Where possible, context-specific analyses of the nutritional status of pregnant women and adolescent girls is, of course, the preferred way to determine what nutrition programming requirements are. The guiding principles in regard to which interventions to prioritise should consider the baseline nutritional status, the vulnerabilities of women and girls in humanitarian emergencies (*Box 3*) and the human right to adequate nutrition (*Box 4*).

The humanitarian system

While MMS provision is a suggested practice within humanitarian emergencies (*Box 5*), not all humanitarian emergencies are covered by the 'humanitarian system' nor by 'international humanitarian action'. It is important to note, therefore, that there is no single system or platform to leverage that will reach all those in need in humanitarian emergencies. The ALNAP network have some useful definitions, taken from their "State of the Humanitarian System" report (35):

- "*Humanitarian action is the principled provision of assistance and protection in order to save lives, prevent and reduce suffering and preserve people's dignity in crises arising from armed conflict, hazards and other causes.*"
- "*Humanitarian action is international when these activities involve resources (financial, technical or in-kind) provided by sources in one country to respond to a crisis in another. International humanitarian action excludes responses that are fully resourced within the country experiencing the crisis, which fall within the domain of domestic crisis management.*"

It can therefore be helpful to think about responses to humanitarian emergencies in two main categories:

1. international humanitarian action (led by the nutrition cluster);
2. domestic crisis management (government-led).

From the outset it must be noted that the humanitarian system is complex and the above two categories are not mutually exclusive. For example, in many countries, government representatives are central to the coordination of the nutrition cluster, and in other countries United Nations agencies may offer specific technical support within a government-led domestic crisis management approach. However, given the fact that the two broad categories have different funding mechanisms, and often different operational approaches, it can be helpful to bear these broad distinctions in mind when thinking about MMS scale-up.

International humanitarian action

International humanitarian action is undertaken or supported when local and national resources are, on their own, insufficient to meet the needs of a population in crisis. Since 2005, the global and country-level responses to humanitarian crises have been coordinated through the Inter-Agency Standing Committee- (IASC-) endorsed global cluster and country-level cluster systems. The cluster system supports country coordination mechanisms in strategic decision-making, planning and strategy development, capacity strengthening, advocacy, monitoring and reporting, and contingency planning/preparedness. Each of the main sectors has a designated Global Cluster Lead Agency that is responsible for ensuring response capacity is in place for its sector and that humanitarian activities are implemented in coordination with partners and following agreed standards and guidelines. Women's and girls' nutrition predominantly sits within the Nutrition Cluster, which is led by UNICEF.

The decision to activate a cluster is only taken when there are response and coordination gaps due to a deteriorating humanitarian situation that exceeds the national government's existing capacity.[8] Furthermore, clusters are not permanent coordination mechanisms; thus, at the end of a crisis phase, the aim is to either resume or re-establish national coordination systems. Cluster activities are informed by HRPs that outline the shared vision of how to respond to the needs of the population in crisis and are based on a Humanitarian Needs Overview or other joint needs assessment and analysis processes. HRPs are developed by humanitarian country teams, which include the coordinators of each cluster.

Funding, including funding for women's nutrition, comes through several mechanisms, many of which are tracked through a financial tracking service hosted by the United Nations Office for the Coordination of Humanitarian Affairs. Cluster partners commit resources to carry out specific activities identified in the cluster response plans that are based on the country HRP.

UNICEF also releases annual HAC appeals. These detail the needs of children and women in humanitarian emergencies. Current commitments under HAC appeals relevant to maternal micronutrient supplementation state that "*Pregnant women and breastfeeding mothers – with special attention to pregnant adolescent girls and other nutritionally at-risk mothers – have access to a package of interventions that includes at a minimum: iron and folic acid/multiple micronutrient supplementation*". Hence, countries may procure either IFA or MMS, depending on the practice of the nutrition cluster in-country.

Readers are referred to Lelijveld *et al.* (2022) for more details on the international humanitarian system (4).

> *"Data on actual MMS adherence in humanitarian emergencies is, at best, limited, and, at worst, completely lacking."*

Domestic crisis management

"*Focusing on the international humanitarian system to understand how people survive and recover from a crisis is akin to viewing a large landscape through a pin-sized hole.*"
(ALNAP, 2022) (35)

In many countries that are experiencing humanitarian emergencies, the proportion of financial resources from non-grant government revenue and remittances can dwarf the amount received from international humanitarian assistance. Domestic crisis management refers to situations where the government leads all aspects related to the planning, financing and implementation of humanitarian responses. The responses will follow national development plans, policies and protocols. Most external funding for governments comes from bilateral donors through development aid (this also includes the World Bank). Note that several countries show signs of exerting increasing control over how humanitarian responses are delivered, and by which agencies.

"*In some contexts, governments feel in direct competition with an international system that actively disregards them.*"
(ALNAP, 2022) (35)

The number of women and adolescent girls reached by MMS in humanitarian emergencies

There is currently no publicly available data on MMS delivery in humanitarian emergencies. MMS delivery is not captured routinely in Demographic and Health Surveys (DHSs) or in monitoring platforms such as DHIS-2, nor is it routinely captured in GNC annual reports. In 2022, it is estimated that Kirk Humanitarian donated 2.9 million bottles of MMS and WFP donated 100,000 bottles of MMS (6). However, it is not known how many bottles from this amount reached areas experiencing humanitarian emergencies, nor the actual receipt of MMS bottles at healthcare facilities or distribution to pregnant adolescent girls and women. Data on actual MMS adherence in humanitarian emergencies is, at best, limited, and, at worst, completely lacking.

8 The decision to activate a cluster is taken by the IASC-appointed Emergency Relief Coordinator, collaborating with the relevant Humanitarian Coordinator in-country.

Photo credit: © WFP/Geneva Costopulos

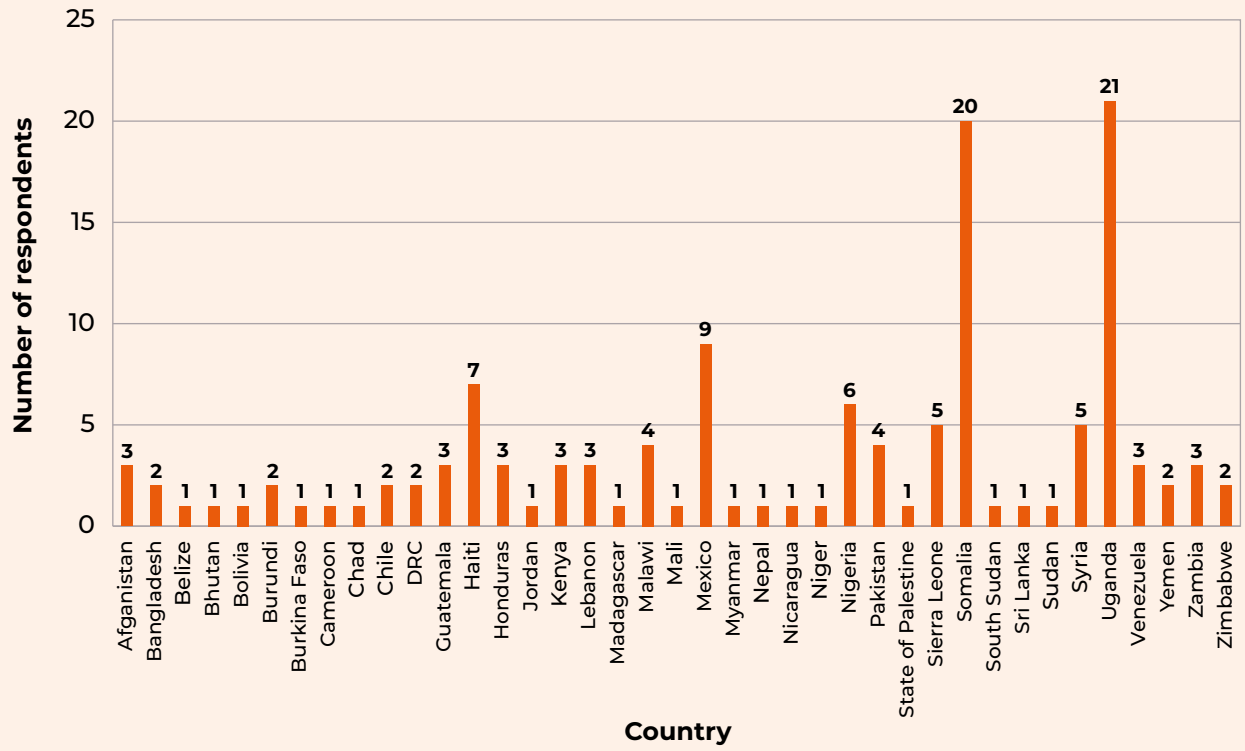
Section 2: Mapping MMS across humanitarian emergencies

Survey response profile

The survey was sent to respondents from 46 eligible countries. A total of 131 individual responses were recorded, from 39 (85%) of the 46 countries. *Figure 1* provides an overview of responses, although they were not equally distributed across countries. There were a particularly high number of responses from Uganda and Somalia.

The majority of the 131 responses came from individuals working for NGOs (63%), followed by individuals in UNICEF country offices (24%), governments (5%) and others (8%).

Figure 1: Number of respondents per country



Survey findings

Table 2 shows that of the 39 countries that responded, respondents from 28 countries reported that they distributed MMS to women in humanitarian programmes and 11 stated they did not yet provide MMS. Of the 11 countries that indicated there was no MMS provision, respondents from seven countries reported plans to implement MMS programming in the next year, respondents from two countries (Chile and Sudan) were not sure of future plans for MMS distribution, and a respondent from one country (Mali) reported plans for future implementation research. Finally, a respondent from one country (Zambia) reported no plans for future distribution.

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Table 2: MMS provision

Countries	Are MMS provided for women/adolescent girls in humanitarian emergencies?	Do you have plans to implement MMS programming in the next year?*
Afghanistan	Yes	Not applicable
Bangladesh	Yes	Not applicable
Belize	Yes	Not applicable
Bhutan	No	Yes
Bolivia	Yes	Not applicable
Burundi	Yes	Not applicable
Burkina Faso	Yes	Not applicable
Cameroon	No	Yes
Chad	Yes	Not applicable
Chile	No	Not sure
DRC	Yes	Not applicable
Guatemala	Yes	Not applicable
Haiti	Yes	Not applicable
Honduras	Yes	Not applicable
Jordan	Yes	Not applicable
Kenya	Yes	Not applicable
Lebanon	Yes	Not applicable
Madagascar	No	Yes
Malawi	Yes	Not applicable
Mali	No	Pilot or implementation research
Mexico	Yes	Not applicable
Myanmar	Yes	Not applicable
Nepal	No	Yes
Nicaragua	Yes	Not applicable
Niger	No	Yes
Nigeria	Yes	Not applicable
Pakistan	Yes	Not applicable
State of Palestine	Yes	Not applicable
Sierra Leone	Yes	Not applicable
Somalia	Yes	Not applicable
South Sudan	No	Yes
Sri Lanka	No	Yes
Sudan	No	Not sure
Syria	Yes	Not applicable
Uganda	Yes	Not applicable
Venezuela	Yes	Not applicable
Yemen	Yes	Not applicable
Zambia	No	No
Zimbabwe	Yes	Not applicable

Legend: Yes · No · Pilot or implementation research · Not sure · Not applicable

*Responses exclusive to respondents stating that their agency was not currently providing MMS to women/adolescent girls.

Who receives the MMS?

In most countries (27 out of 28), all respondents stated that MMS in humanitarian programmes was given to pregnant women. Twenty of these countries also had respondents that said MMS was given to breastfeeding women. A much smaller proportion of respondents suggested that they additionally gave MMS to non-pregnant women (six countries: Guatemala, Malawi, Mexico, State of Palestine, Somalia and Uganda) and adolescent girls (nine countries: Lebanon, Malawi, Mexico, Pakistan, State of Palestine, Somalia, Syria, Uganda and Yemen).

Barriers to programming MMS in humanitarian emergencies

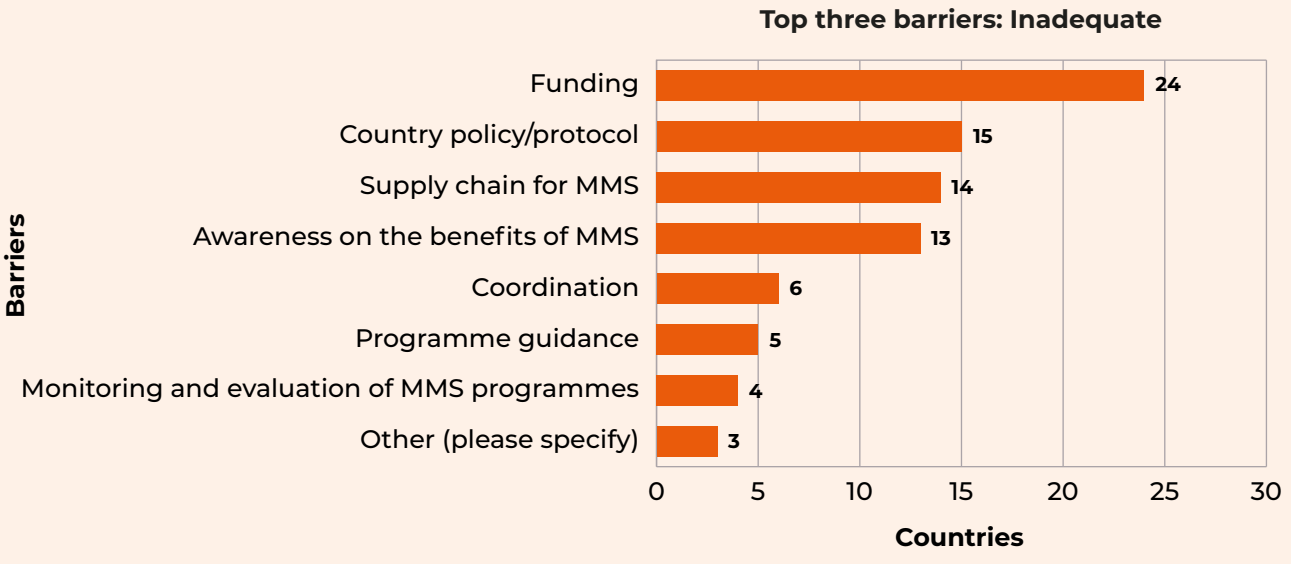
Figure 2 describes the barriers to MMS programming at scale. Respondents were asked to state the top three barriers to programming MMS at scale in their country and the figure shows the number of countries in which at least one respondent ranked the stated barrier in their top three. Financing of MMS programming was the most commonly stated barrier across countries, by a large margin, followed by three similarly ranked barriers: inadequate country policy/protocols, inadequate supply chain, and inadequate awareness among healthcare workers and target populations of the benefits of MMS. Monitoring and evaluation of MMS was ranked least commonly as a barrier to scale-up across countries.

MMS on the EML

Regarding the question of whether MMS appears in the national EML, survey data recorded Yes (n= 19 countries), No (n=14 countries), In process (n=5 countries), Don't know (n=1 country). However, when cross-checking with country's published EMLs, there were cases in which MMS did not appear on the list even where survey respondents stated "yes". This may be due to some confusion around the process of at what stage products are confirmed to be on the EML.

> *"Financing of MMS programming was the most commonly stated barrier across countries, followed by inadequate country policy/protocols, inadequate supply chain, and inadequate awareness among healthcare workers and target populations of the benefits of MMS."*

Figure 2: Top three barriers to programming MMS at scale in humanitarian emergencies



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Section 3: Case study summaries

Here we provide summaries of the two case studies. We refer readers to the accompanying, separate case study reports for full details (**Somalia** and **Pakistan**).

Somalia

Somalia has been in a state of protracted crisis for many years, characterised by a complex political environment, extreme poverty, food insecurity, conflict and instability. In recent years, Somalia has faced devastating drought emergencies, mainly as a result of reduced rainfall in most parts of the country. In some areas, escalated insecurity in recent years has resulted in new waves of displacements. Alongside drier than normal conditions that reduce milk availability below normal levels, as well as the recent food price rises, the deteriorating security situation has aggravated the already-poor nutrition situation.

MMS programming has been included as part of ANC services in Somalia since the launch of the 2014 National Micronutrient Deficiency Control Strategy. MMS programming has also been included in the national Maternal, Infant, Young Child & Adolescent Nutrition (MIYCAN) strategy. Somalia has 74 districts in total, of which 69 are labelled “accessible” and the national MIYCAN programme is active in all 69 accessible districts. While geographic coverage of MMS through the MIYCAN programme is therefore high, population coverage of women reached with any kind of ANC services remains low, at 31%. The MMS supply chain has been reasonably stable under UNICEF’s management and the distribution system established both through health facilities and community platforms, where staff and resources allow, works well.

However, there were some MMS supply breaks during 2023 due to funding challenges; UNICEF is working with the government on resource mobilisation to help address these.

An earlier strategy (the Somalia National Micronutrient Deficiency Control Strategy 2014–2016), dedicated to micronutrient deficiency control in Somalia, did feature the use of MMS for pregnant and breastfeeding women as one of the priority interventions to be implemented and referred to the United Nations 2007 joint statement on MMS use in emergencies. It is unclear why MMS was not written into the updated (2020) national nutrition and linked strategies, but this does not appear to have affected its inclusion in ANC components of the national nutrition programme. It is likely, however, to have limited the development of clear programme guidance and protocols for the use of MMS, both of which need considerable improvement. There is now work ongoing that will help with this, including an update to the Reproductive, Maternal, Neonatal, Child and Adolescent Health Strategy 2020–2024 by the Ministry of Health and the development of updated guidance for the current national MIYCAN programme.

Key informants suggested that the primary reasons for the low population coverage of ANC services include the need for more financial resources and community-based staff who can access and mobilise women to increase demand for, and access to, these ANC services. However, key informants felt that if demand were to increase, it may be a challenge to ensure sufficient supply, particularly as current stocks are entirely donor-/UNICEF-dependent.

In summary, the key issues to address for scaling up MMS in Somalia include the following: the revision of national strategy and improving programme guidance to clarify the protocols for MMS within ANC provision; improving health worker motivation and understanding to prioritise nutrition and MMS within services for pregnant and breastfeeding women; increasing demand among women through more community mobilisation and improved access to ANC services; stabilisation of supply issues through support for buffer stocks of MMS at facility level; and more reliable funding support from donors for the prevention of micronutrient deficiencies and poor pregnancy and birth outcomes.

Pakistan

Pakistan, the world's fifth most populous country, has shown progress in recent years with reducing poverty, mortality rates, and increasing primary school enrolment and immunisation coverage. However, persistent challenges such as population growth and underdevelopment are being intensified by recurring emergencies related to food insecurity, climate change, and the recent COVID-19 pandemic. In 2022, severe monsoons affected over 33 million people, leaving 20.6 million, including 9.6 million children, in need of humanitarian assistance. Also in 2022, heavy rainfall in the southwest led to flash floods, fatalities, and infrastructure damage, compounding vulnerabilities. Gender inequality, exceptionally high fertility rates, particularly in the poorest wealth quintiles, and limited access to essential services further impacted child and maternal nutrition and mortality outcomes.

Whilst Pakistan is in the early stages of programming for MMS, a strong enabling environment has recently shaped political, institutional and policy processes for improving maternal nutrition. Pakistan's Maternal Nutrition Strategy 2022-2027 aims to protect and promote diets, practices and services that support the optimal nutrition, health, and well-being of all women. The provision of MMS is a core intervention outlined in this strategy, which includes a target to reach 50% of all women with MMS programming by the end of 2027.

As part of health and nutrition services in Pakistan, all MMS programming is overseen by the Ministry of National Health Services, Regulations, and Coordination (MoNHSR&C). There are several organisations that have supported MoNHSR&C to deliver MMS as part of wider maternal nutrition programming to date, including UNICEF, Nutritional International, the Bill and Melinda Gates Foundation, and many implementing partners. MMS programming in districts experiencing humanitarian emergencies have been delivered through routine ANC services and as a separate emergency response.

Routine ANC programming delivered through the country's health service and supported by UNICEF, Nutrition International and other implementing partners have delivered MMS across some of the flood-affected districts and in Polio high risk Union Councils (scattered across several districts). Sufficient MMS to cover 500,000 pregnant women was procured and distributed. Ongoing support for routine ANC programming has spanned the nexus between humanitarian and longer-term maternal and child nutrition programming.

Distribution of MMS, as part of the emergency floods response across two Provinces (Sindh and Balochistan), started at the beginning of 2023. Kirk Humanitarian donated sufficient MMS to cover 2.2 million pregnant women. Over half of this donation was distributed initially through small pilot studies across seven districts, and then through the National Disaster Management Association (NDMA) of Pakistan as part of the emergency response. The delivery of this MMS was initially organised by the provincial level health directorate to all pregnant women without being integrated into ANC platforms. However, subsequently it has been agreed that the remaining supply (sufficient MMS to cover 1 million pregnant women) will be delivered through the MoNHSR&C to ensure standard protocols for MMS programming within ANC programmes can be followed.

Important learning for MMS programming across all settings in Pakistan is emerging from the emergency distribution of MMS, alongside several implementation research studies. The challenge now is to translate the momentum on MMS programming into policy and strategy, ensuring that any learning is embedded into updated programme guidance, along with effective delivery within ANC programming across a complex devolved health system.

This is a real opportunity to improve the quality, coverage and demand for ANC services, and stakeholders in Pakistan have identified key priorities to support this. Resource mobilisation is critically important and will require the leveraging of mechanisms such as the nutrition match funds and emergency donor support. Integrating MMS programming into the existing health system will need the development of clear guidance and capacity building of health workers (both facility and community based) to support the switch from iron-folic acid to MMS. The inclusion of MMS on the national essential medicines list that was achieved in December 2023, should support procurement, financing and supply management, and key informants are hopeful that initial explorations of local MMS production could potentially start to bring costs of the product down.

Through collaborative efforts and strategic prioritisation, Pakistan can continue to strengthen and scale up ANC services, including MMS programming, and hence have a positive impact on the nutritional status of women and their children across all the diverse regions of the country.

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Section 4: Summary of key findings

The key findings from the survey, case studies and additional key informant interviews are compiled and summarised here by WHO health system building block. While all of the barriers identified here were described by key informants in the context of humanitarian emergencies, they are not necessarily exclusive to these settings but rather reflect recurring themes found across the spectrum of humanitarian and development contexts.

Building block 1
Leadership and governance

According to most key informants, MMS programming is increasingly recognised by governments as important for addressing micronutrient deficiencies among women.

Support from non-government actors, such as United Nations agencies, NGOs, researchers, and donors with expertise in nutrition and micronutrient supplementation, is often key to supporting governments in many countries to integrate MMS programming into national nutrition policy and strategy.

Barriers

While the absence of MMS programming in national policy and strategy has not always prevented its programming in humanitarian emergencies (e.g., in Somalia), it has often been mentioned as a barrier to the development of clear protocols and implementation guidance. **Survey respondents ranked inadequate country policy and protocols as one of the top three barriers to the programming of MMS in humanitarian emergencies in 15 out of 28 countries.**

Key informants from some countries described how current global guidance was confusing, ranging from stipulating that MMS should only be used in ANC within the context of rigorous research, to describing its use within humanitarian emergencies in addition to IFA (Section 1). They reported that this confusion may be contributing to the lack of progress on integrating MMS programming into national policy. In turn, unless national policy indicates the use of MMS, it can be difficult to scale up programming even in humanitarian emergencies, especially those managed domestically.

Concerns that providing MMS to women in some contexts may lead to over-supplementation or micronutrient toxicity can act as a potential barrier to including MMS programming in national policy. Such concerns were raised by two key informants in countries where, in some refugee settings, food items were already fortified with micronutrients, such as iron and vitamin A, or other fortified supplementary food items were used. According to one of the key informants, these concerns were also relevant to higher-income urban settings, where women have access to higher-dose, over-the-counter micronutrient supplements in private pharmacies. However, all other key informants confirmed that they had no concerns about the risk of over-supplementation, especially in the context of humanitarian emergencies.

Opportunities

The recent integration of MMS into national policy, strategy and guidelines in many countries is an important step towards scaling up delivery and improving programme guidance for both humanitarian and development settings. There is increasing evidence (Section 1) and information available on the benefits of switching from IFA to MMS. Tools such as HMHB's recently released advocacy brief (36) can help to galvanise support for MMS at national level.

> *"Unless national policy indicates the use of MMS, it can be difficult to scale up programming **even** in humanitarian emergencies, especially those managed domestically."*

To support the development of clear national guidance, it is important to update and improve global guidance. This would help to clarify protocols for both routine and humanitarian settings and address concerns such as over-supplementation in the context of the range of programmes and services delivering micronutrients. Some of this guidance is beginning to emerge, including the newly released interim guidance on integrating antenatal MMS with anaemia treatment in pregnant women (37).

Since 2022, UNIMMAP MMS has been included on the WHO global EML, which several key informants reported makes it easier for MMS to be procured, especially in the context of international humanitarian responses. MMS is also beginning to be integrated into national EMLs – although in many countries this is still in process. There is broad understanding that this will support the scale-up of MMS more generally through leveraging domestic resources for its purchase where there is sufficient fiscal space, and by mobilising further political commitment for its integration into ANC programming. This could also help to address breaks in MMS supply chains (see below).

Building block 2
Service delivery

Information from case studies and interviews indicates that micronutrient supplementation is almost always integrated into health service provision, mainly ANC. This is the case both in international humanitarian response and domestic crisis management. Even during humanitarian emergencies, micronutrient supplementation often continues to be delivered via health facilities that are generally government-run. Apart from Somalia and the DRC, where MMS is programmed at scale through the national health and nutrition programme, MMS is largely delivered by smaller-scale programmes and implementation research or pilot projects, and is not yet part of routine government programming at a national scale. For example, many countries have a national IFA programme and smaller-scale MMS programming/implementation research or pilot projects in several subnational locations – such as in Bangladesh, Ethiopia, Madagascar, Nigeria, Sri Lanka and Pakistan.

All key informants stated that MMS is currently provided free of charge in their countries through humanitarian programming, and is most commonly distributed for the prevention of micronutrient deficiencies to pregnant women on a monthly basis as part of routine ANC. Frequency of distribution can vary when access is restricted (e.g., in Somalia), when a two- or three-month supply is given in some locations to overcome access issues. The target group for MMS also includes breastfeeding women up to six months post-partum in many countries, and this is most commonly a continuation of supplementation that has started during pregnancy. A much smaller number of survey respondents suggested that MMS has also been given to other groups, such as non-pregnant women in some areas, although follow-up would be needed for confirmation of the exact circumstances.

Barriers

Coverage of MMS among pregnant and breastfeeding women in many humanitarian programmes is limited due to a combination of different factors, many of which are similar to the barriers faced by other interventions (particularly IFA supplementation) delivered in these settings:

- Inadequate awareness among both healthcare workers and target populations of the importance and benefits of taking micronutrients while pregnant. This was identified as one of the top three barriers to MMS programming in humanitarian settings in 13 out of 28 countries (see *Figure 2*).
- Restricted access: both communities' access to health services and health staff's access to populations.
- The generally poor quality of ANC services, through which much of the MMS in humanitarian emergencies is delivered.
- Breaks in the MMS supply chain (see building block 5 below).
- Inadequate financing (see building block 3).
- Fears/misconceptions among pregnant and breastfeeding women and their families around the risks of supplementation increasing the size of their baby and around the side effects of supplementation (although, as discussed below, in practice this appears to be less of a problem than fears and misconceptions associated with IFA).

There is also some confusion at service delivery level over the different uses of MMS versus IFA for prevention and treatment of anaemia. This is linked to the lack of clear implementation guidance for MMS in many countries (see above) and health worker capacity challenges (see building block 4 below), especially around issues such as the effective diagnosis of, and treatment protocols for, anaemia at community level.

Opportunities

Improving guidance for MMS programming at global level, along with the integration of MMS into national strategies, would help to support the development of improved implementation guidance at national level, where this does not currently exist.

There is broad agreement among implementers from many countries that once women are reached through outreach and informed mobilisation, they are keen to participate in, and are able to understand the value of, broader ANC services, and they understand the importance of taking micronutrients during pregnancy. There are examples, particularly from Somalia and Madagascar, of leveraging existing community health worker infrastructure to improve mobilisation and outreach for ANC.

Some key informants stated the inclusion of MMS in ANC packages reportedly encourages women to attend health facilities. Furthermore, some key informants provided anecdotal evidence suggesting women prefer MMS over IFA due to fewer reported side effects; e.g., key informants from Madagascar, DRC, Somalia and Pakistan. This has also been noted elsewhere (38), a contributing factor is likely to be that UNIMMAP MMS contains a lower level of iron (30 mg of elemental iron per tablet) than IFA, which usually contains 60 mg of elemental iron per tablet.

"All key informants stated that MMS is currently provided free of charge in their countries through humanitarian programming, and is most commonly distributed for the prevention of micronutrient deficiencies to pregnant women on a monthly basis as part of routine ANC."

Building block 3
Health system financing

Currently, resources to support all aspects of MMS delivery through ANC in humanitarian programming are largely donor-dependent. MMS supplies are usually resourced through non-government agencies, such as UNICEF (Somalia, Madagascar, Nigeria, Chad, Afghanistan, Ethiopia, Sri Lanka), and Kirk Humanitarian (often via NGOs) (Sri Lanka, Chad, Afghanistan, DRC, Pakistan). **The survey findings indicate that financing is by far the most commonly reported barrier (see Figure 2), with respondents in 24 out of 28 countries placing it in the top three barriers to taking MMS programming to scale in humanitarian settings.** Lack of adequate financing impacts all components of MMS programming, including the ability to purchase supplies and providing adequate health worker training.

Barriers

Some key informants from the case studies described how meeting financial requirements for programming MMS within humanitarian emergencies is challenging, explaining that there were other critical nutrition programmes, such as those treating child wasting, also remaining underfunded. **Sustainable funding opportunities for MMS programming within ANC is therefore an urgent priority, recognising that this will need to part of a wider discussion on how to prioritise which interventions to fund in complex situations with constrained resources.**

At the time of writing, the majority of MMS tablets distributed at country level are imported from overseas suppliers (see building block 5). Key informants reported that the cost of purchasing MMS is considerably higher than IFA. The factors underlying this vary by country, but commonly include the additional cost of MMS, which contains 15 different micronutrients (versus only two in IFA), the need to import MMS (versus IFA, which is often locally produced), and importation tax on MMS in some countries.

Opportunities

In recent years, increased attention has been given to, and there has been increased understanding of, the need for the prevention of child undernutrition in humanitarian contexts, among both researchers, donors and practitioners (39).

Correspondingly, there is growing momentum and evidence generation on the role of improved maternal nutrition to reduce the risks of wasting and stunting in early childhood by reducing the prevalence of poor birth outcomes, such as low birth weight (40). Scaled-up MMS provision could play a vital role in prevention efforts.

Funding initiatives are emerging, such as UNICEF's Child Nutrition Fund (Box 6), that could help to mobilise domestic funds for nutrition commodities including MMS. There is also ongoing research in some countries (e.g., Pakistan and Nigeria) that is beginning to explore the feasibility and cost advantage of local production of MMS.

Box 6: The Child Nutrition Fund

UNICEF's Child Nutrition Fund (CNF) is a new initiative that unites governments, donors and implementing in supporting country-driven initiatives that focus on the prevention, identification, treatment, and ultimate eradication of child wasting.

The fund support five key actions in 23 countries affected by a high prevalence of child wasting:

- Weight gain monitoring, nutrition counselling, micronutrient supplements (including MMS), deworming, and malaria control for women, particularly during pregnancy.
- Support for exclusive and continued breastfeeding in the first two years of life.
- Adequate complementary foods, with micronutrient supplements.
- Food supplements for young children under five years of age and for women – particularly those who are pregnant and breastfeeding.
- Early detection of child wasting and treatment with ready-to-use therapeutic foods.

Several of the 23 countries have pockets of humanitarian crises, many of which are/will be managed domestically. While the CNF does not have a specific funding initiative tied to humanitarian emergencies, governments that receive matching funds from the CNF could leverage these resources in crisis-affected areas of their countries.

For more information, see: https://www.childnutritionfund.org/

Building block 4
Health workforce

In many humanitarian emergencies MMS is delivered through ANC services, usually provided by government health staff. Occasionally – e.g., in Pakistan and Somalia – staff in some locations are recruited and supported by NGOs/United Nations agencies where government health service capacity is reduced. Regardless of which agencies are leading the health service response in humanitarian emergencies, some common themes related to the health workforce emerged in the key informant interviews, and these are summarised below.

Barriers

In humanitarian emergencies, health staff knowledge on the benefits of, and delivery protocols for, MMS within ANC (and how this is integrated with or replaces IFA programming) is currently highly dependent on in-service training and support. However, this training and support tends to be limited, often only covering a small proportion of the overall need, and is largely reliant on NGO-/United Nations agency-funded programmes that include an ANC/MMS support component.

As highlighted above in relation to building block 1, training and orientation for the delivery of MMS in humanitarian programmes is challenging in the absence of national strategy, protocols and/or guidance to support this, and this has led to confusion around delivery protocols in some places.

Health staff capacity (both in terms of availability of staff, their existing workload and task prioritisation) for a preventive intervention such as MMS was flagged by key informants as a challenge in many countries. This is particularly evident in humanitarian emergencies where sometimes staff have had to make the choice to prioritise life-saving interventions, such as treatment of wasting, and have needed to de-prioritise interventions such as prevention of micronutrient deficiencies due to the limited funding and staff capacity. Several key informants described how community health outreach staff, who constitute a critical resource for mobilisation and improving coverage of MMS, already have heavy workloads. Further, in countries where additional nutrition interventions have previously been implemented along with incentives, it can be difficult to integrate new activities when the remuneration of community outreach health staff is inadequate.

Opportunities

Improved in-service training, implementation guidance and updated job descriptions could help to strengthen health worker capacity to deliver MMS, with associated nutrition education and counselling as a key component of ANC.

Similar to the opportunities with financing, the recent increased focus on the prevention of child undernutrition in humanitarian settings (see building block 3) could be leveraged here. This would provide opportunities for the scale-up of support for the delivery of MMS through both facility-based and community-based workforces.

Building block 5
Supplies and technology

Information gathered for this report suggests that MMS used in humanitarian programmes is currently wholly imported from overseas, sourced either through the UNICEF supply chain or via Kirk Humanitarian, and then procured by UNICEF country offices and NGOs, such as the Vitamin Angels Alliance, in-country. Where funding is not an issue and UNICEF or other international agencies manage the procurement and distribution to government and implementing partner facilities and programmes, the supply chain works relatively well: for example, in Somalia. However, there were also reports from three key informants describing situations where demand has grown quickly and supply has struggled to keep up and/or takes time to reach programme locations. **Additionally, survey respondents ranked inadequate supply chain as one of the top three barriers to the programming of MMS in humanitarian settings in 14 out of 28 countries (see *Figure 2*).**

Barriers

Breaks in the supply of MMS at programme level are relatively common in some places (e.g., Ethiopia and Nigeria) but less so in others (e.g., Somalia and Sri Lanka). **Supply chain breaks are most commonly linked to insufficient availability on the global market, funding challenges (see building block 3 above), and/or to challenges with reporting and estimating need at health service level.**

MMS tablets are supplied in bottles of 100 tablets from the UNICEF supply catalogue and in bottles of 180 tablets by Kirk Humanitarian. Many countries adopt a protocol according to which the whole bottle is given at once, so that the desiccant inside the bottle continues to keep the tablets dry, and so as to reduce the risk of tablets becoming discoloured over time.

However, some key informants described how in order to align distribution with eight ANC contacts (i.e., monthly visits during pregnancy), sometimes the tablets from the bottles are decanted into smaller packages at facilities for distribution, adding to health staff workload. While blister packs of 30 are available through the UNICEF supply catalogue, they are more expensive than the bottles, and this can be a barrier to their purchase.

Opportunities

There is considerable work being undertaken by UNICEF Supply Division and key partners, including Kirk Humanitarian and the Bill & Melinda Gates Foundation, to develop a more reliable global supply of MMS. **Key actions needed include investment to strengthen and support a network of regional producers, the adoption of a global set of common product standards (41), and encouraging more procurement commitments through mechanisms such as the Child Nutrition Fund (Box 6).** Linked to this, the ongoing efforts in some countries to develop local production of MMS (see building block 3) could help to shorten the supply chain and ease some of the supply challenges. As demand for MMS increases from countries that become interested in MMS programming, this may encourage suppliers to increase their production capacities.

To help alleviate breaks in supply at health facility level due to unforeseen increases in demand and/or reporting issues, a buffer stock of MMS, held by facilities/pharmacies, could offer a potential solution, accompanied by proper forecasting and training on supply chain management.

The inclusion of MMS on national EMLs could facilitate the procurement and distribution of the supplement as part of national health and nutrition programmes (see building block 1). This is of particular relevance for humanitarian emergencies that are responded to by domestic crisis management and therefore follow national government protocols.

Building block 6
Information systems

Monitoring of the coverage of MMS programming is only just beginning to be integrated into national health information systems in a few humanitarian settings, e.g., Somalia. In most places, where it exists, monitoring and evaluation for MMS programming relies on programme data collection and reporting, usually put in place by UNICEF, and this can be parallel to government systems.

Monitoring and evaluation of MMS was ranked as the least common barrier to the programming of MMS in humanitarian settings by survey respondents (see *Figure 2*). This may be due to most countries being in the early stages of MMS programming, when addressing the issue of delivery is perceived as more of a priority than monitoring and evaluation.

Barriers

Data from parallel (to government) systems for reporting on MMS in programmes – i.e., those managed by non-governmental agencies – are reportedly not always easy to access for some implementing partners. There were also reports from some key informants of MMS and IFA being reported under the same indicator – for example, through UNICEF reporting systems in Pakistan – which can make it challenging to interpret the data that is available. National surveys, such as the DHS and national nutrition surveys, currently only examine availability and self-reported adherence of iron-containing tablets/syrups for pregnant women. In addition, there were no reports from stakeholders interviewed for this report of systems in place to collect qualitative data on underlying determinants of adherence to MMS.

All of this means that there are currently large gaps in data, and therefore in our knowledge of the coverage of MMS, at both national and humanitarian programme level. Given that HRPs rely first and foremost on an estimation of the number of people in need, these data gaps could be a barrier to ensuring MMS programming is built into HRPs, fundraised for, and delivered.

Opportunities

The integration of MMS into DHIS2 in all countries where it is programmed, as well as into relevant national surveys, is important to strengthen our understanding of coverage of MMS programming. This is already beginning to happen in some places – e.g., Somalia and Pakistan – and these early experiences and pilots will hopefully contribute learning for other countries. **In humanitarian emergencies, improved monitoring and evaluation should lead to better forecasting, better inclusion in HRPs and a greater chance of MMS programming being funded.** Developing approaches to monitor adherence to MMS will be also important to understand the effectiveness of MMS programming within ANC.

Photo credit: © UNICEF Somalia

Section 5: Summary and conclusions

The overlap between humanitarian and development programming for MMS

The information compiled for this report highlights a significant and growing interest in MMS programming in humanitarian emergencies, yet MMS programming is currently not being delivered at scale in these contexts. We have summarised the key themes coming from the survey, case studies and key informant interviews, all in the context of humanitarian emergencies. As previously mentioned, these themes are not necessarily exclusive to these humanitarian emergencies, as they describe recurring topics found across the spectrum of humanitarian and development contexts. Furthermore, when humanitarian crises are responded to under government-led (i.e., domestic) crisis management approaches, the activities are largely based on national protocols. Whether domestically led or nutrition cluster-led under an international humanitarian response, the platforms for MMS delivery are largely the same, with some nuances in staffing, procurement, planning and funding details.

All of this means that there is a large overlap in the challenges to, and opportunities for, micronutrient supplementation within humanitarian emergencies and routine programming. To illustrate this point further, *Table 3* provides a summary of the key themes explored in this report and provides two scenarios: the first assumes an entirely internationally led humanitarian response through the nutrition cluster system, using MMS programming; the second assumes the opposite end of the spectrum, where a government is fully leading the response with domestic management and resourcing. We then provide a 'reality check' in a separate column to illustrate the real-life complexities and variations found. In a final column, we describe how, regardless of the modality of humanitarian response, the key messages are broadly similar.

Table 3: Summary of MMS programming by different types of humanitarian response and associated key messages

Theme	Topic	Scenario A: 100% international humanitarian response Hypothetical scenario where MMS is used	Scenario B: 100% domestic crisis management Hypothetical scenario where MMS is used	What the reality can look like:	Key messages Regardless of scenario
Leadership and governance	Who leads the response?	Nutrition Cluster, mostly UNICEF-led, UNHCR in refugee settings.	Government, ministry of health/nutrition departments.	Wide variety of leadership representation and combinations; e.g., government-led with UNICEF secondments filling capacity gaps; UNICEF-led with close government support; technical advisory groups made up of government and non-government members; etc.	Whoever is leading overall, it is essential for relevant nutrition and health teams to closely coordinate to ensure programming of MMS is adequately planned for, budgeted and resourced within ANC services.
	What guidelines/ protocols are applicable?	2007 United Nations joint statement.	National ANC guidelines and protocols.	The 2007 United Nations joint statement is inconsistently applied, even in Nutrition Cluster-led approaches. Choice of micronutrient supplement used varies according to decision-making by country nutrition cluster-leads. Global (WHO) ANC guidelines influence national ANC guideline development to varying degrees – some countries take the lead from global WHO guidelines; other countries have already updated national ANC guidelines to include MMS implementation.	MMS programming needs to be written into national ANC protocols if it is to be scaled up, especially in government-led responses to humanitarian emergencies. ANC guidelines at global level also need updating. Increased clarity within global WHO ANC guidelines on the use of MMS in general, as well as for humanitarian emergencies, will help reduce potential confusion. User-friendly implementation guidance for MMS programming is required for healthcare workers.

Table 3: Summary of MMS programming by different types of humanitarian response and associated key messages continued

Theme	Topic	Scenario A: **100% international humanitarian response** Hypothetical scenario where MMS is used	Scenario B: **100% domestic crisis management** Hypothetical scenario where MMS is used	What the reality can look like:	Key messages Regardless of scenario
Service delivery	Who is targeted with MMS programming and how often?	Pregnant women and adolescent girls. MMS tablets procured in bottles of 100/180 tablets or blister packs of 30 tablets. Mainly monthly supplies are distributed, occasionally three-monthly supplies in areas with poor access to healthcare.	Pregnant women and adolescent girls. MMS tablets procured in bottles of 100/180 tablets or blister packs of 30 tablets. Mainly monthly supplies are distributed, occasionally three-monthly supplies in areas with poor access to healthcare.	There is very little data on who is targeted for MMS programming in humanitarian emergencies and what the coverage is. Adolescent girls are often not disaggregated in available data. Often, larger bottles (100 or 180 tablets) of MMS are procured; reports in some countries of tablets being decanted into smaller monthly batches, unless monthly blister packs are used.	The current reality is that MMS programming is not being delivered at scale in humanitarian emergencies. IFA is more commonly used at national scale, with MMS being used in some subnational pockets of high need, or in implementation research.
	What delivery platforms are used?	Through ANC at health facility level: NGO or United Nations-run. Limited use of community health worker (CHW) distribution at household level; NGO or United Nations staff.	Through ANC at health facility level; government-run. Limited use of CHW distribution at household level; government staff.	Community-level mobilisation for MMS programming is currently weak; use of CHWs to deliver MMS at household level is still largely at implementation research level. Training and orientation for delivery of MMS is challenging in the absence of guidance based on national protocols.	Increased investment in, and use of, community-based healthcare structures is needed to improve coverage of MMS programming. Clear guidance and job aids for use by frontline health workers are required.

Table 3: Summary of MMS programming by different types of humanitarian response and associated key messages continued

Theme	Topic	Scenario A: **100% international humanitarian response** Hypothetical scenario where MMS is used	Scenario B: **100% domestic crisis management** Hypothetical scenario where MMS is used	What the reality can look like:	Key messages Regardless of scenario
Financing	Who funds MMS programming?	United Nations and other donors.	Government, United Nations and other donors.	Currently, all MMS programming is financed by United Nations, NGOs and philanthropies such as Kirk Humanitarian, although match fund initiatives are underway that may provide mixed government and donor funding for MMS programming, including in areas that are vulnerable to humanitarian emergencies. In some countries that currently use IFA at the national scale, government funding is used, with occasional top-up from donors in acute emergencies. In other countries, IFA programming is still donor-dependent.	If MMS programming is to be scaled up across all humanitarian emergencies, sustainable financing will be a critical issue given the level of current donor dependence. Match funds, such as the Child Nutrition Fund, will hopefully provide opportunities for domestic and donor funds to be directed towards MMS supplies and programming costs.
	How are resources planned for, budgeted and fundraised for?	HRPs	National nutrition plans	Too often the nutritional needs of women and adolescent girls are not adequately quantified in planning documents for humanitarian responses. Without better data and documentation of the needs it is then difficult – or even impossible – to adequately cost and fundraise for the identified needs, especially where funding is limited.	Whether in humanitarian or national plans, the nutritional needs of women and adolescent girls should be consistently captured in documents that are used for fundraising and activity prioritisation purposes. Funding is also required for nutrition surveys/needs assessments, to underpin the estimation of realistic targets.

Table 3: Summary of MMS programming by different types of humanitarian response and associated key messages continued

Theme	Topic	Scenario A: **100% international humanitarian response** Hypothetical scenario where MMS is used	Scenario B: **100% domestic crisis management** Hypothetical scenario where MMS is used	What the reality can look like:	Key messages Regardless of scenario
Supplies and technology	Who supplies the MMS and how is it procured?	Largely sourced from Kirk Humanitarian and/or UNICEF and delivered through non-government implementing partners. All MMS procured internationally; MMS now on global EML, which is helpful.	Largely sourced by Kirk Humanitarian and/or UNICEF and delivered through government health staff. All MMS procured internationally, MMS now on some national EMLs, which is helpful.	In many countries, MMS is not yet on the national EML. Some countries want to scale up MMS programming, including in humanitarian emergencies, but are concerned that global supply is a bottleneck.	Regional/local production of MMS could ease issues with import and procurement from the global market. Including MMS in national EMLs may also help with procurement and national supply chain issues.
Information systems	How is MMS coverage monitored?	DHIS-2, where MMS coverage indicator is included. Parallel United Nations or NGO monitoring systems.	DHIS-2, where MMS coverage indicator is included.	The reality is that not all countries have updated DHIS-2 nutrition modules to capture MMS coverage. DHS and Standardised Monitoring and Assessment of Relief and Transitions (SMART) surveys do not collect information on MMS coverage or adherence. either	DHIS-2 should be updated to include an indicator on MMS coverage and training should be provided for health staff on use of the DHIS-2 nutrition module at different levels of data entry and analysis. Inclusion of MMS coverage indicators in SMART and DHS surveys will also help with generating required data for planning, scale-up and monitoring.

Conclusions

MMS, a much-improved product in terms of effectiveness for improving nutrition, is seen by many as a welcome opportunity to improve maternal health and pregnancy outcomes, including through the opportunity to revitalise quality ANC services more generally. However, replacing IFA with MMS cannot happen successfully without investment in overcoming numerous barriers that span programming across the humanitarian development nexus (see *Table 3*).

Some of the most critical actions required to overcome these barriers include:

- integrating MMS programming into national policy and strategy;
- investing in training health staff and sensitising target populations on the significant benefits of MMS for both maternal and birth outcomes.

Reducing the costs of, and improving the overall financing for, MMS programming is essential for improving coverage, and, as part of this, improvements in the global supply chain and further exploration of regional and local production are needed. Recognition of the importance of, and improvements in, monitoring and evaluation to measure MMS coverage is also required. This will help produce more accurate estimates of the number of people in need and related costings for inclusion in humanitarian response planning, national nutrition plans, and associated funding cycles.

Addressing these barriers is, of course, daunting in humanitarian emergencies, yet there is relevant documentation from implementation research from several countries, including Madagascar (5), Haiti and Ethiopia (38), that is helping to generate context-specific evidence on what works that others can learn from. Furthermore, the MMS programming constraints and opportunities described here are not new – there is a large amount of learning already generated around the challenges of IFA programming that is particularly relevant, given that the platforms for delivery of both IFA and MMS are the same (42).

This report has provided a snapshot of the state of MMS programming in humanitarian emergencies but undoubtedly has not captured all relevant programme experiences and contexts. We encourage readers to engage with us to share additional experiences and thoughts: some suggested ways to do so are outlined in *Box 7*.

In conclusion, while humanitarian emergencies undeniably present additional, complex barriers to MMS programming coverage, what is needed to address them in these contexts remains fundamentally the same as what is needed in all settings: namely, using the lens of health systems strengthening to make MMS programming as effective as possible within quality ANC services. The opportunities this will bring are essential for the overall health and well-being of pregnant women and adolescent girls, and will help ensure we fulfil our obligations to fully support their human right to adequate nutrition.

Box 7: Ways for readers to share their experiences of MMS programming in humanitarian emergencies

If you are involved in programming MMS in humanitarian emergencies and see that your mode of programme delivery or specific humanitarian context has not been captured in this report, we would love to hear from you so that your learning can be shared with others.

You could submit an article to Field Exchange, our technical publication that shares experiences in nutrition programming and policymaking, or feel free to tag us on X (Twitter@ennonline) or LinkedIn to start a conversation. We look forward to hearing from you.

> *"While humanitarian emergencies present complex barriers to MMS programming, what is needed to address them remains fundamentally the same as in all settings: namely, using the lens of health systems strengthening to make MMS programming as effective as possible within quality ANC services."*

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Annex 1: Collation of selected MMS resources

Resource title	Resource type	Year of publication	Institution (name of authors)	Link
Antenatal multiple micronutrient supplements versus iron-folic acid supplements and birth outcomes: Analysis by gestational age assessment method	Original article	2023	Filomena Gomes, Sufia Askari, Robert E. Black *et al.*	Link
Interim Guidance for Concurrent Antenatal Multiple Micronutrient Supplementation and Anemia Treatment in Pregnant Women	Guidance	2023	HMHB and MMS-TAG	Link
Addressing micronutrient deficiencies amongst women and girls in humanitarian or emergency contexts	Policy brief	2023	HMHB and Micronutrient Forum	Link
Small Vulnerable Newborns	Journal series	2023	The Lancet	Link
Undernourished and Overlooked: A global nutrition crisis in adolescent girls and women	Report	2023	UNICEF	Link
Women's nutrition: A summary of evidence, policy and practice including adolescent and maternal life stages	Review	2022	ENN	Link
Nutrition of women and adolescent girls in humanitarian contexts – Case study: Madagascar	Case study	2022	ENN	Link
Nutrition of women and adolescent girls in humanitarian contexts: Current state of play	Review	2022	ENN	Link
Micronutrient supplements in pregnancy: an urgent priority	Correspondence	2022	Filomena Gomes, Robert E Black, Emily Smith *et al.*, on behalf of the MMS-TAG	Link
Multiple micronutrient supplements versus iron-folic acid supplements and maternal anemia outcomes: an iron dose analysis	Original article	2022	Filomena Gomes, Rina Agustina, Robert E. Black *et al.*	Link
Effect of multiple micronutrient supplements v. iron and folic acid supplements on neonatal mortality: a reanalysis by iron dose	Commentary	2022	Filomena Gomes, Rina Agustina, Robert E. Black *et al.*	Link
Multiple Micronutrient Supplementation: Frequently Asked Questions	FAQs	2022	HMHB	Link
Advocating for Safe, Affordable, and Cost-effective Nutrition Interventions to Improve Maternal Health	Advocacy brief	2022	HMHB	Link

Resource title	Resource type	Year of publication	Institution (name of authors)	Link
MMS Advocacy Slide Deck	Advocacy slide deck	2022	HMHB	Link
UNIMMAP MMS for National Health Systems: Considerations for Developing a Supply Strategy	Guidance document	2022	Kirk Humanitarian	Link
Focusing on Multiple Micronutrient Supplements in Pregnancy: Second Edition	Special report	2022	Sight and Life	Link
Maternal Nutrition: Prevention of malnutrition in women before and during pregnancy and while breastfeeding	Programming guidance	2022	UNICEF	Link
Counselling to Improve Maternal Nutrition: Considerations for programming with quality, equity and scale	Technical brief	2022	UNICEF	Link
Multiple Micronutrient Supplementation: An approach to improving the quality of nutrition care for mothers and preventing low birthweight	Advocacy brief	2022	UNICEF	Link
Formative Research Guidance: Introducing Multiple Micronutrient Supplements (MMS)	Guidance document	2022	UNICEF	Link
Formative Research to Tailor Maternal Nutrition Services: Introducing Multiple Micronutrient Supplements (MMS) for Pregnant Women in Rural Madagascar	Poster abstract	2022	UNICEF	Link
Global anaemia reduction efforts among women of reproductive age: impact, achievement of targets and the way forward for optimizing efforts	Desk review	2022	WHO	Link
Interventions to increase adherence to micronutrient supplementation during pregnancy: a systematic review	Systematic review	2021	Filomena Gomes, Shannon E. King, Diana Dallmann *et al.*	Link
A Step Forward for Women's Nutrition During Pregnancy Multiple Micronutrient Supplementation (MMS): The WHO's Model List of Essential Medicines (EML) An FAQ and Advocacy Brief for Inclusion of MMS into the WHO's Model List of Essential Medicines	FAQs and advocacy brief	2021	HMHB, MMS-TAG, and the New York Academy of Sciences (NYAS)	Link
Maternal Nutrition and Multiple Micronutrient Supplementation: A Commitment Guide for Tokyo's 2021 Nutrition for Growth Summit	Commitment guide	2021	HMHB	Link
Multiple-micronutrient supplementation in pregnant adolescents in low- and middle-income countries: a systematic review and a meta-analysis of individual participant data	Systematic review	2021	Emily C. Keats, Nadia Akseer, Pravheen Thurairajah *et al.*	Link

Resource title	Resource type	Year of publication	Institution (name of authors)	Link
A tool to aid decision-making transitioning from IFAS to MMS	Learning resource	2021	Nutrition International	Link
Impact of scaling up prenatal nutrition interventions on human capital outcomes in low- and middle-income countries: a modelling analysis	Research article	2021	Nandita Perumal, Mia M. Blakstad, Günther Fink, Mark Lambiris, Lilia Bliznashka, Goodarz Danaei, and Christopher R. Sudfeld	Link
Harnessing Participatory Formative Research to Inform Women's Preferences on Multiple Micronutrient Supplement (MMS) Design Considerations Across Four Country Contexts	Poster abstract	2021	UNICEF	Link
Multiple Micronutrient Supplements (MMS) for Pregnant Women Considerations for Accessing MMS Product Supplies for National Programs	Presentation	2020	Clayton A. Ajello	Link
Impact of Antenatal Multiple Micronutrients on Women's Health and Pregnancy Outcomes	Presentation	2020	Robert E. Black	Link
Global policy and update: translating evidence to action	Presentation	2020	Parul Christian	Link
A Landscape Analysis of Multiple Micronutrient Supplementation Legislation, Activity, and Priorities	Stakeholder consultation	2020	Kirk Humanitarian and Micronutrient Forum	Link
Multiple Micronutrient Supplementation: Webinar series	Presentation	2020	Micronutrient Forum	Link
The use of multiple micronutrient supplementation (MMS) for maternal nutrition and birth outcomes during the COVID-19 pandemic	Brief	2020	MMS-TAG	Link
Expert consensus on an open-access United Nations International Multiple Micronutrient Antenatal Preparation–multiple micronutrient supplement product specification	Technical consultation	2020	MMS-TAG and Micronutrient Forum	Link
Cost-effectiveness analyses for the WHO review on multiple micronutrient supplements during pregnancy: Technical Report	Technical report	2020	Nutrition International	Link
WHO recommendations on antenatal nutrition: an update on multiple micronutrient supplements	Editorial	2020	Özge Tuncalp, Lisa M Rogers, Theresa Anne Lawrie *et al.*	Link
Nutrition, For Every Child: UNICEF Nutrition Strategy 2020–2030	Strategy	2020	UNICEF	Link
Core Commitments for Children	Strategy	2020	UNICEF	Link

Resource title	Resource type	Year of publication	Institution (name of authors)	Link
Essential Medicines List Application for Multiple Micronutrient Supplements During Pregnancy	Application for inclusion of MMS in EML	2020	Vitamin Angel Alliance, NYAS MMS-TAG and the Micronutrient Forum	Link
Protecting Maternal Diets and Nutrition Services and Practices in the Context of COVID-19	Brief	2020	WFP, UNICEF, GNC and The Global Technical Assistance Mechanism for Nutrition (GTAM)	Link
WHO antenatal care recommendations for a positive pregnancy experience. Nutritional interventions update: multiple micronutrient supplements during pregnancy	Guideline	2020	WHO	Link
Benefits of supplementation with multiple micronutrients in pregnancy	Commentary	2019	Robert E. Black and Kathryn G. Dewey	Link
Antenatal multiple micronutrient supplementation: call to action for change in recommendation (letter to the editor)	Letter to editor	2019	Megan W. Bourassa, Saskia J.M. Osendarp, Seth Adu-Afarwuah *et al.*	Link
Review of the evidence regarding the use of antenatal multiple micronutrient supplementation in low- and middle-income countries	Review	2019	Megan W. Bourassa, Saskia J.M. Osendarp, Seth Adu-Afarwuah *et al.*	Link
Multiple Micronutrient Supplementation to Support a Healthy Start in Life	White paper	2019	DSM	Link
The upper level: examining the risk of excess micronutrient intake in pregnancy from antenatal supplements	Review	2019	Alison D. Gernand	Link
Setting research priorities on multiple micronutrient supplementation in pregnancy	Research article	2019	Filomena Gomes, Megan W. Bourassa, Seth Adu-Afarwuah *et al.*	Link
Multiple-micronutrient supplementation for women during pregnancy	Review	2019	E.C. Keats, B.A. Haider, E. Tam, Z.A. Bhutta	Link
eBriefing: Improving Birth Outcomes with Multiple Micronutrient Supplementation	Brief	2019	MMS-TAG and NYAS	Link
New Evidence Should Inform WHO Guidelines on Multiple Micronutrient Supplementation in Pregnancy	Report	2019	Christopher R. Sudfeld and Emily R. Smith	Link
Situation analysis of procurement and production of multiple micronutrient supplements in 12 lower and upper middle-income countries	Supplement article	2018	Eva C. Monterrosa, Kalpana Beesabathuni, Kesso G. van Zutphen.	Link
Multiple micronutrient supplements in pregnancy: Implementation considerations for integration as part of quality services in routine antenatal care. Objectives, results, and conclusions of the meeting	Supplement article	2018	Maria Nieves Garcia-Casal, Diana Estevez, Luz Maria De-Regil.	Link

Resource title	Resource type	Year of publication	Institution (name of authors)	Link
Antenatal multiple micronutrient supplementation: benefits beyond iron-folic acid alone	Commentary	2017	Jeannine Baumgartner	Link
Multiple-micronutrient supplementation: Evidence from large-scale prenatal programmes on coverage, compliance and impact	Supplement article	2017	Cristiana Berti, Michelle F. Gaffey, Zulfiqar A. Bhutta, Irene Cetin	Link
Modifiers of the effect of maternal multiple micronutrient supplementation on stillbirth, birth outcomes, and infant mortality: a meta-analysis of individual patient data from 17 randomised trials in low-income and middle-income countries	Meta-analysis	2017	Emily R. Smith, Anuraj H. Shankar, Lee S-F Wu *et al.*	Link
Supplementation with multiple micronutrients for breastfeeding women for improving outcomes for the mother and baby	Review	2016	Abe, S.K., Balogun, O.O., Ota, E., Takahashi, K., Mori, R.	Link
Effect of multiple micronutrient supplementation during pregnancy on maternal and birth outcomes	Systematic review	2011	Batool Azra Haider, Mohammad Yawar Yakoob, Zulfiqar A Bhutta	Link
Preventing and controlling micronutrient deficiencies in populations affected by an emergency	Joint statement	2007	WHO, WFP and UNICEF	Link
Multiple micronutrients in pregnancy and lactation: an overview	Overview	2005	Lindsay H Allen	Link
Composition of a multi-micronutrient supplement to be used in pilot programmes among pregnant women in developing countries	Technical document	1999	UNICEF, United Nations Universities and WHO	Link
Interim Country-level Decision-making Guidance for Introducing Multiple Micronutrient Supplementation for Pregnant Women	Guidance document	Online undated article	MMS-TAG	Link
Technical Reference Materials: Logistics of implementation MMS in Pregnancy	Technical reference material	Online undated article	The Sacklers Institute for Nutritional Sciences, Bill and Melinda Gates Foundation (BMGF), UNICEF and Vitamin Angels	Link
Formative Research Guidance Introducing Multiple Micronutrient Supplements (MMS)	Guidance	Online undated article	UNICEF, Penn State, and Sight and Life	Link
Frequently Asked Questions to address often-raised concerns about the switch from iron and folic acid supplementation to multiple micronutrient supplementation	FAQs	Online undated article	Vitamin Angels	Link

Annex 2: Key informant interview guides

Background on humanitarian setting

1. To start, could you give a brief summary of the humanitarian setting in which you are delivering MMS?

Programme delivery

Now I would like to learn more about the MMS programme supported by your agency.

2. Who is/are the target population(s) of the programme?
3. Where is the programme located (i.e., in what geographical area(s) is MMS being distributed)?
4. What is the scale of each programme (i.e., roughly how many women are reached through each programme?)
5. Through what platform(s) is MMS delivered (e.g., facility-based, community outreach by community health workers, private hospitals, private pharmacies or dispensaries, food distributions)?
    a. Are other women's health interventions delivered alongside the MMS (e.g., ANC) or is it stand-alone?
    b. How are pregnant women identified in this setting (e.g., visual assessment, history of last menstrual period)?
6. What is the format of the MMS delivered in your programme (e.g., number of tablets per bottle, monthly blister packs, etc)?
    a. What is the frequency of distribution (e.g., one-time distribution, multiple visits)?
    b. What is the recommended dose (e.g., 90+ tablets throughout pregnancy)?
7. How are pregnant women encouraged to adhere to consuming MMS?
    a. What is the level of uptake of MMS among pregnant women? (*Probe for reasons why high or low*)
8. Are you able to provide any reports or data linked to this programme?
9. Who are the main partners that you work with in MMS programmes – for example, government, other United Nations agencies, implementing partners?
    a. What roles is each partner expected to play?
10. Do you know about any other agency that supports the delivery of MMS in programmes in [insert country name]?
    a. *If yes, ask for contact information*

Challenges and opportunities for scaling up MMS

Now I would like to ask about challenges to, and opportunities for, scaling up MMS programming in [*insert country name*].

11. First, could you give some examples of successful practices in MMS programming (or support for programming) that have helped to overcome any barriers/challenges to implementation and allowed the programme to be successful in [*insert country name*]?
12. Now could you tell me what you think are the remaining challenges/barriers to scaling up MMS programming in [*insert country name*]?
13. Do you have any thoughts on how some of these key remaining challenges/barriers might be addressed?

Other questions (if time allows)

14. If MMS is delivered as part of ANC, do you feel that it helps improve adherence to other aspects of ANC?
    a. Are healthcare providers trained on the importance of MMS?
    b. Do healthcare workers promote MMS to their patients?
15. What kind of monitoring and evaluation system is in place for MMS in [*insert country name*]?
    a. What is the routine data collection process on MMS? (*Hint: any indicator to capture MMS consumption data in DHIS or under routine nutrition programming*)

Annex 3: Terminology referring to humanitarian emergencies

Term	Definition	Source
Complex emergency	A humanitarian crisis in a country, region or society where there is a total or considerable breakdown of authority resulting from internal or external conflict, and which requires an international response that goes beyond the mandate or capacity of any single agency and/or the ongoing United Nations country programme.	IASC UNHCR
Disaster	A serious disruption of the functioning of a community or a society, causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope with using its own resources.	ReliefWeb glossary of humanitarian terms
Emergency	A sudden and usually unforeseen event that calls for immediate measures to minimise its adverse consequences.	ReliefWeb glossary of humanitarian terms
Humanitarian crisis	Any circumstances where humanitarian needs are sufficiently large and complex to require significant external assistance and resources, and where a multisectoral response is needed, with the engagement of a wide range of international humanitarian actors. This may include smaller-scale emergencies: in countries with limited capacities, the threshold will be lower than in countries with strong capacities.	UNICEF **Other agencies that use this term:** UN Human Rights
Humanitarian emergency	An event or series of events that represents a critical threat to the health, safety, security or well-being of a community or other large group of people, usually over a wide area.	Humanitarian Coalition **Other agencies that use this term:** UNFPA, WHO
Man-made emergency	Armed conflict, plane and train crashes, fires and industrial accidents.	Humanitarian Coalition
Natural disaster	Geophysical (e.g., earthquakes, tsunamis and volcanic eruptions), hydrological (e.g., floods, avalanches), climatological (e.g., droughts), meteorological (e.g., storms, cyclones), or biological (e.g., epidemics, plagues) disasters.	Humanitarian Coalition
Protracted emergency	Characterised as a situation where “a significant part of the population is acutely vulnerable and dependent on humanitarian assistance over a prolonged period of time”.	Danish Refugee Council
Slow-onset crisis	A disaster that happens gradually over time, often resulting from several factors rather than a distinct event: for example, a drought.	Danish Refugee Council
Sudden-onset crisis	A disaster (natural or man-made) that is triggered by a hazardous event that emerges quickly or unexpectedly.	Danish Refugee Council

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