

IRON-FOLIC ACID SUPPLEMENTATION IN PREGNANCY: PROGRAM LOGIC MODEL

Background

Anaemia during pregnancy is associated with maternal mortality and perinatal mortality.¹ Evidence suggests that anaemia in pregnancy increases the risk of having low birth weight and preterm babies.¹ Fortunately, evidence has shown that preventative iron supplementation reduces maternal anaemia at term by 70%.² The World Health Organization (WHO) recommends daily iron-folic acid supplementation in pregnancy (IFASP) with a dose composition of 30–60mg elemental iron, along with 13 other nutrition recommendations as part of woman-centered, comprehensive, and individualized antenatal care (ANC).³ ANC provides a platform for essential and potentially life-saving healthcare functions, including IFASP.

Nutrition International is a global organization dedicated to delivering proven nutrition interventions to those who need them most. One of Nutrition International's main objectives is to improve the survival and health of women and their newborn babies by supporting optimal nutrition at critical stages, such as throughout pregnancy and postpartum. Nutrition International advocates for the improvement of IFASP programs by supporting national governments to improve their commitment, supply chains, demand creation, and to mitigate other issues affecting access to IFA supplements.

Often, issues with both coverage and adherence are barriers to successful IFASP programming. Coverage refers to the reach of the program, highly dependent on national and regional buy-in, availability of trained and motivated front line health workers, product availability, and efficient supply chains. Adherence refers to the beneficiaries' compliance with the prescribed dose and scheme of the program, highly dependent on product acceptability, social norms, access to trained and motivated front line health workers, perceived benefits and risks, and relevant and accurate knowledge for the beneficiaries and their influencers.

Why a program logic model?

A logic model is a visual illustration of a program's resources, activities and expected outcomes, and can be used as a tool to simplify complex relationships between various program components during planning,

implementation, and evaluation. The WHO/Centre for Disease Control (CDC)'s *Logic Model for Micronutrient Interventions in Public Health* depicts the program theory and possible relationships between inputs and outcomes for micronutrient interventions in public health that can be adapted to different contexts.⁴ The logic model suggests that major investments are required to build the enabling environment necessary for programmatic success; a theory which was validated by previous NI-supported IFASP work. NI has adapted the WHO/CDC logic model to reflect the particularities of IFASP programs.

How it works:

The adapted logic model depicts the following inputs and activities required as a foundation for outputs and outcomes in IFASP programs: government commitment and leadership, technical expertise, financial resources, infrastructure, human resources, and contributions from other partners (inputs); and, budgeting and finance, policies, product and supply, delivery, evidence-informed behaviour change interventions, and timely forecasting, ordering, and distribution of stocks (activities). According to the logic model, after the necessary inputs and activities are sufficiently implemented, expected outputs shall include: availability of IFA supplements in country that meet quality and standard specifications, availability of universal, quality ANC, providers and influencers having knowledge and motivation to support pregnant women, adequate access to and coverage of the program, and appropriate beneficiary knowledge and use of the program. The desired outcome is that pregnant women receive and consume the right dose of IFA at the right time, leading to an improved iron status and reduced anaemia, decreased mortality and morbidity, and improved productivity. The ultimate outcome is contribution to the Sustainable Development Goals and the World Health Assembly's second nutrition target of halving the prevalence of anaemia in women of reproductive age by 2025.⁵

The implementation activities depicted in the logic model (original and adapted) show that with a comprehensive approach to aspects of the enabling environment it is possible to make meaningful change in coverage and adherence to IFAS among pregnant women.

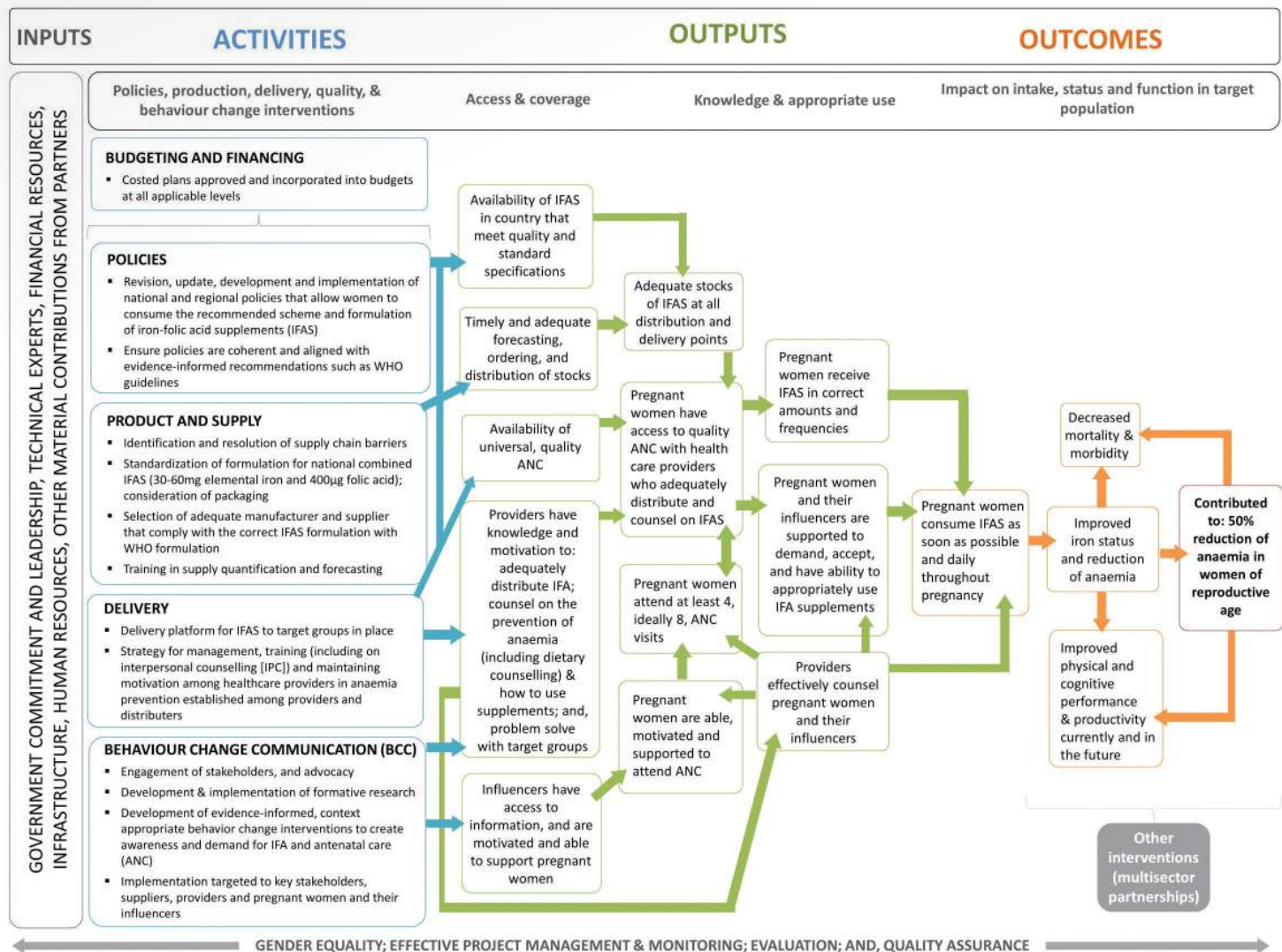


Figure 1 : Program logic model for iron-folic acid supplementation in pregnancy programs delivered through quality, universal antenatal care in low- and middle- income countries to prevent and control iron deficiency anaemia and contribute to WHA target 2

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IRON-FOLIC ACID SUPPLEMENTATION IN PREGNANCY: KEY CONSIDERATIONS FOR PROGRAM SUCCESS

Background

Anaemia during pregnancy is associated with maternal mortality and perinatal mortality.¹ Evidence suggests that anaemia in pregnancy increases the risk of having low birth weight and preterm babies.¹ In 2011, the World Health Organization (WHO) estimated that 29% (469 million) of non-pregnant women of reproductive age (WRA), and 38% (32.4 million) of pregnant women were anaemic, with sub-Saharan African and Southeast Asian countries bearing higher anaemia burdens.² Iron deficiency is a major cause of anaemia.

In 2014, the World Health Assembly (WHA) endorsed six global nutrition targets as part of a comprehensive implementation plan on maternal, infant and young child nutrition. Due to anaemia's grave negative consequences for maternal and child health, significant contribution to years lost to disability, and impairment of physical work capacity and performance, the second global nutrition target calls for a 50% reduction of anaemia in women of reproductive age (WRA) by 2025.³ Global progress has been stagnant, and at the current rate of change it is forecasted that we will reach the global target of halving anaemia in WRA closer to the year 2125 than 2025.⁴

Iron requirements are difficult for pregnant women to meet through food alone. The recommended daily intake of iron for pregnant women is 27mg – almost triple the requirement for males aged 19–50 and almost double the requirement for non-pregnant females. For reference, a cup of rice, a common staple in many Asian countries, contains less than 1mg of iron. In addition, iron rich foods are often expensive and/or may fall outside plant-based food practices. Fortunately, evidence has shown that preventative iron supplementation reduces maternal anaemia at term by 70%.⁵ The WHO recommends daily iron-folic acid supplementation in pregnancy (IFASP) with a dose composition of 30–60mg elemental iron, beginning as early as possible and throughout the duration of pregnancy in all settings, along with 13 other nutrition recommendations as part of woman-centered, comprehensive, and individualized antenatal care (ANC).⁶ IFASP programs should be delivered with dietary counselling. Despite the existence of this cost-effective, evidence-based intervention, IFASP programs are often neglected due to poor program success.

Often, issues with both coverage and adherence are barriers to successful IFASP programming. Coverage refers to the reach of the program, highly dependent on national and regional buy-in, availability of trained and motivated front line health workers, product availability, and efficient supply chains. Adherence refers to the beneficiaries' compliance with the prescribed dose and scheme of the program, highly dependent on product acceptability, social norms, access to trained and motivated front line health workers, perceived benefits and risks, and relevant and accurate knowledge for the beneficiaries and their influencers. There are no clear cut offs for non-adherence; however, missing two or more doses consecutively is typically considered non-adherence.⁷ While *daily* consumption of an iron-folic acid supplement throughout pregnancy (~266 days) is the ideal,⁶ consumption of ≥90 IFA tablets during pregnancy may be used to model that anaemia in pregnancy has been averted.

Nutrition International is a global organization dedicated to delivering proven nutrition interventions to those who need them most. One of Nutrition International's main objectives is to improve the survival and health of women and their newborn babies by supporting optimal nutrition at critical stages, such as throughout pregnancy and postpartum. A continued and strengthened focus on evidence-informed nutrition actions from conception to the child's second birthday (i.e. the first 1000 days) is required to make long-lasting improvements in the health of vulnerable populations; ANC provides a crucial window of opportunity to support the nutrition and health of mothers and their unborn babies. In 2011, the Government of Canada awarded funding which allowed Nutrition International (formerly the Micronutrient Initiative) to work with governments and partners throughout the period of 2011–2015 to improve coverage of and adherence to IFASP programs in eight high-burden anaemia countries: Afghanistan, Bangladesh, Ethiopia, Indonesia, Kenya, Nepal, Nigeria, and Senegal. Following impressive results for coverage and adherence in the eight above-listed countries, Nutrition International aimed to identify the key program activities that led to IFASP program success.

Nutrition International's Experience

Program inputs and activities

Nutrition International formed partnerships and built on existing relationships with the Ministries of Health, regional governments and other implementation partners in the target countries to advocate for increased expenditure on IFASP programs and strengthened ANC and health systems. Specifically, Nutrition International advocated for the improvement of IFASP programs by way of increased government commitment, improved supply chains, and the mitigation of other issues affecting coverage and adherence. Strategies used included workshops with government stakeholders and national level advocacy meetings with donors and other partners. The overall aim was to garner government buy in and improve ownership of their IFASP programs. Nutrition International provided technical expertise and financial resources with a focus on activities to most improve coverage and adherence rates.

By 2015, six of the eight targeted countries (Afghanistan, Bangladesh, Indonesia, Kenya, Nigeria and Senegal) had aligned their IFA policies with WHO recommendations. The same six countries had also aligned their policies to procure IFA supplements according to the WHO recommended formulation (i.e. 60mg of elemental iron and 400µg of folic acid) – the product manufacturer and supplier was each country's decision. Six of eight countries (Bangladesh, Ethiopia, Indonesia, Kenya, Nepal and Nigeria) integrated IFASP indicators into their health monitoring information systems (HMIS). In addition, improvements in the physical appearance of the product packaging was completed in Indonesia to enhance product attractiveness, increasing the likelihood of adherence. In addition, 58 000 community health workers were trained in all aspects of IFASP programs across the eight countries. Although access to IFA supplements improved, in the last year of implementation, stock outs remained a challenge in Indonesia, Ethiopia, Kenya and Senegal.

Program outputs and outcomes

After five years of Nutrition International support in selected areas of eight high burden countries, 16 million pregnant women received any IFA supplements due to the presence of Nutrition International in the target areas, and 6.4 million additional pregnant women received any IFA supplements due to Nutrition International support. In terms of adherence (defined for modeling purposes as consumption of at least 90 IFA supplements), 3.9 million women from the target areas reported to consume at least 90 supplements during their previous pregnancy, and an additional 1.6 million pregnant women reported to consume at least 90 IFA supplements due to Nutrition International support.

While these are exciting results on their own, what is especially interesting is the exponential nature of the results with each passing year of implementation. During the last year of implementation (2014 for Indonesia, and 2015 for Afghanistan, Bangladesh, Ethiopia, Kenya, Nepal, Nigeria and Senegal) an additional 2.3 million pregnant women were reached with IFA supplements due to Nutrition International support. Furthermore, 5.6 million pregnant women received any IFA supplements due to Nutrition International support in target areas. In terms of adherence, 1.5 million pregnant women reported to consume at least 90 IFA supplements in Nutrition International target areas, and over 736 000 additional women reported to consume at least 90 IFA supplements due to Nutrition International support.

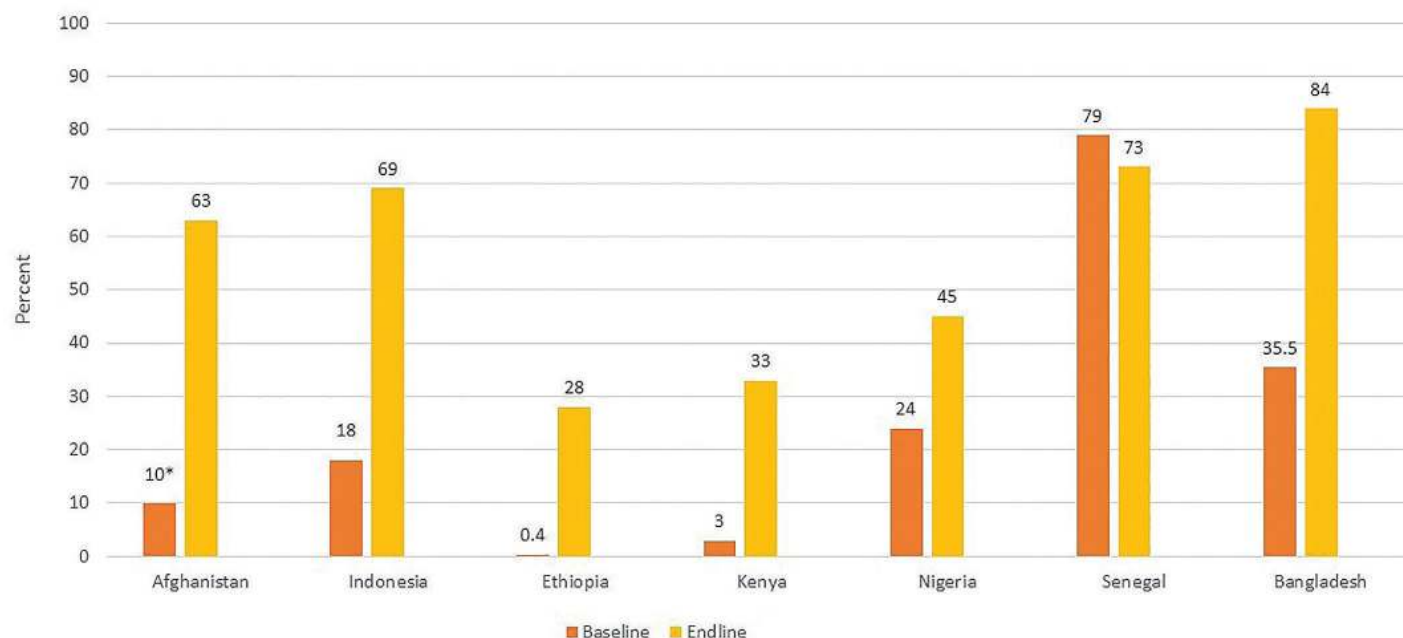
In 2014, 70% and 74% of pregnant women in Indonesia and Nigeria, respectively, were exposed to behavior change messaging on maternal anaemia and the importance of IFASP. In 2015, 95% pregnant women were exposed to behavior change messaging in Senegal, 45% in Kenya, 30% in Ethiopia, and 69% in Afghanistan. There is no data for Bangladesh or Nepal. By 2015, 81% of pregnant women in Indonesia, 79% in Ethiopia,

and 92% in Senegal were able to describe at least one major benefit and one way to manage side effects of daily IFASP. In Indonesia, 94% of women were able to discuss the benefits of IFASP.

In Indonesia and Bangladesh, Nutrition International supported demonstration and scale-up projects for IFASP. One of the key components of the projects was to build capacity of health staff with a focus on improved interpersonal counselling (IPC) to increase adherence rates. In both countries among all women interviewed, those who were exposed to improved IPC were two to seven times more likely to consume more than 90 IFA supplements throughout their previous pregnancy. Nutrition International has taken these lessons learned and continues to support IFASP programs across sub-Saharan Africa and Asia.

Conclusion

Intense technical, financial, and operational support is required to make IFASP programs effective and sustainable, and much of these investments are required up front. The implementation activities discussed show that with a comprehensive approach focusing on the enabling environment, procurement and adequate supply management, context-tailored delivery strategies, and developing and disseminating an evidence-informed BCI strategy it is possible to make meaningful change in coverage of and adherence to IFASP programs. It was only after important and specific investments and changes were made in the beginning of the implementation phase that impressive results in coverage and adherence rates were seen; during the last year of implementation, the IFASP programs supported by Nutrition International reached more than 2 million women across eight high burden countries with the proper dose of IFA.



*Estimate based on 2010 Afghanistan Mortality Survey where only 38% of pregnant women received any number of IFA supplements. Nepal not included because programming was at national level – not comparable.

Figure 1: Percent of women reported to consume at least 90 IFA supplements during their last pregnancy before and after NI support

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