

# **National Strategy**

**For the Control of Anemia among Women and Children  
in Nepal**

**Department of Health Services  
Ministry of Health (MoH), Nepal**

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**Background:**

Anemia has severe nutritional and health consequences, including high maternal mortality, inadequate growth and impaired mental development in children. Anemia during pregnancy increases the risk of fetal growth retardation and low birth weight, premature delivery, increased perinatal mortality, and reduced resistance to infection of both mother and baby. Anemia also results in decreased work capacity, including reduced care giving and general productivity.

Anemia is an extremely serious public health problem in Nepal. The 1998 Nepal Micronutrient Status Survey reported an overall anemia prevalence of 68% among women. The prevalence of anemia among pregnant women was even higher (75%). In other words, three out of four pregnant women in Nepal are anaemic. Furthermore, the survey also found a prevalence of 78% among pre-school children, while virtually all infants between 6-11 months of age were anemic (90%), which is a period of rapid physical and mental growth.

The etiology of anemia is complex. While an inadequate consumption of iron rich foods and bioavailable iron is the primary cause of anemia, worm infection, malaria, Kala-azar and dietary deficiency of other micronutrients can cause and exacerbate anemia.

The Ministry of Health has acknowledged that reducing anemia is a great public health challenge that cannot be ignored and requires coordinated efforts in order to address its multiple causes. While reducing the prevalence of anemia during pregnancy is a key priority, the control of anemia among young children should also be addressed through the identification and implementation of appropriate intervention strategies.

This document outlines the key components for the control of Anemia in Nepal and provides a comprehensive strategic framework for future programme strengthening and implementation.

**Goal:**

**To reduce prevalence of anemia among women and children of Nepal**

**Objectives:**

1. To increase coverage and compliance of iron/folate supplementation for pregnant women
2. To reduce burden of parasitic infections (helminth and malaria) [among women and children](#)
3. To control vitamin A deficiency in children and pregnant women [\(written as women only\)](#).
4. To identify and implement food fortification to increase dietary iron intake, focusing on [commercial as well as small-scale community-based<sup>\[S1\]</sup>](#) fortification initiatives
5. [To promote dietary modification to improve the quality and diversity of food consumed with an emphasis on bio available iron<sup>\[S2\]</sup>](#)
6. To promote maternal care practices and services to improve health and nutritional status of mothers and their babies
7. To identify and implement effective modalities to address iron deficiency in young children, adolescent and non-pregnant reproductive aged women
8. To develop a systematic approach to the monitoring and evaluation of anemia control programme activities

<b>Objective 1</b>	<b>To increase coverage and compliance of iron/folate supplementation for pregnant women</b>
<b>Strategy</b>	<p>1. To ensure availability of iron/folate supplements at all health facilities and out reach clinics.</p> <ul style="list-style-type: none"> <li>• To strengthen delivery system of iron/folate tablets.</li> <li>• To strengthen reporting and dispatching mechanisms <a href="#">of iron tablets</a> with coordination of District Health Offices, Logistics Management Division, <a href="#">DHS[s3]</a>, and related partners.</li> <li>• To strengthen routine logistics monitoring.</li> </ul>
	<p>2. To increase demand for iron/folate tablets by creating awareness of anemia and importance of iron supplementation during pregnancy with coordination related programmes</p> <ul style="list-style-type: none"> <li>• To promote IEC campaigns through mass media such as TV, radio spots on a national scale.</li> <li>• To promote nutrition education and IEC activities as an integrated part of primary health care services, including outreach clinics, as well as activities of community based organisations.</li> </ul>
	<p>3. To develop sustainable and effective mechanism to increase accessibility of iron/folate at the family and community level</p> <ul style="list-style-type: none"> <li>• <a href="#">strengthening[s4]</a>/ introducing re-packaging</li> <li>• To identify mechanisms to effectively and constantly provide iron supplements for pregnant and postnatal women at the community level through community-based volunteers such as female community health volunteers (FCHVs), trained traditional birth attendants (TTBAs) and community mobilizers.</li> <li>• To improve the function of outreach clinics to make the supplements more accessible from health workers.</li> </ul>

**Note:**

During pregnancy, fetal growth and development increases the physiological requirement for iron. However, it is difficult for most pregnant women in Nepal to eat a diet that supplies the amount of iron to meet the minimum requirements, let alone establish sufficient stores. Therefore, an effort to increase iron intake through iron supplementation is recognized as the key intervention to address the problem of anemia during pregnancy. Given the fact that folate deficiency also causes and exacerbates anemia and increase a risk of neural tube defects in newborns, iron/folate supplements have been recommended for pregnant women.

### ***National Protocol on Iron Supplementation for Pregnant Women***

***Dose:*** 60 mg iron + 400 µg folic acid, daily

***Duration:*** From the beginning of the second trimester in pregnancy (6 months) till 45 days postpartum (total 225 days).

Note: It is also globally recommended that if 6 months duration cannot be achieved in pregnancy, continue to supplement during the postpartum for 6 months or increase the dose to 120 mg iron in pregnancy (Source: Rebecca J. Stoltzfus and Michele L. Dreyfus., *Guidelines for the use of iron supplements to prevent and treat iron deficiency anemia*, INACG, WHO and UNICEF., 1998.).

<b>Objective 2</b>	<b><i>To reduce burden of parasitic infections (helminth and malaria) in children and pregnant women</i></b>
<b>Strategy</b>	<p>1. To promote the control of intestinal parasitic infection (<a href="#">Kala azar and Malaria</a>) among pregnant women and children.</p> <ul style="list-style-type: none"> <li>• To develop a comprehensive long-term work plan to coordinate tablet procurement and distribution, including operational guidelines for training and IEC with all concerned partners.</li> <li>• To expand the biannual deworming for preschool children (2-5 years) done in conjunction with national vitamin A distribution to all districts of the country.</li> <li>• To develop deworming programme for pregnant women after the first trimester to enhance the impact of iron/folate supplementation during pregnancy.</li> </ul>
	<p>2. To promote the programme of malaria and Kala-azar prevention and control</p> <ul style="list-style-type: none"> <li>• To coordinated with the existing malaria and Kala-azar control programme.</li> </ul>
	<p>3. To promote awareness of preventive measures that improve living condition, sanitation, water supplies and people’s knowledge on health and hygiene in collaboration with related sectors.</p>

**Note:**

Helminth infection is a major public health problem in children as well as pregnant women in Nepal. It is well recognized that hookworm is a significant cause of anemia and exacerbates the impact of iron deficiency. Therefore, any public health intervention aimed at reducing anemia prevalence in Nepal should incorporate specific program elements to reinforce efforts to control helminths.

<b>Objective 3</b>	<b><i>To Control vitamin A deficiency in children and pregnant women</i></b>
Strategy	<ul style="list-style-type: none"> <li>Promote vitamin A deficiency control programme for children and pregnant women</li> </ul>

Epidemiological studies have demonstrated that the prevalence of anemia is high in population affected by vitamin A deficiency in developing countries. In addition, it has been proven that vitamin A status plays a critical role in combating anemia as well as reducing child mortality. Therefore, the promotion of vitamin A deficiency control programme is essential to reduce anemia prevalence among children and women in Nepal.

<b>Objective 4</b>	<b><i>To identify and implement food fortification to increase dietary iron intake, focusing on commercial as well as small-scale community-based fortification initiatives</i></b>
Strategy	<ol style="list-style-type: none"> <li>To use existing operations research to identify vehicles and appropriate technology for pilot testing and implementation</li> <li>To develop a comprehensive and systematic plan for the production and distribution of fortified foods</li> <li>To conduct additional operational research to identify appropriate community-specific vehicles for iron fortification <ul style="list-style-type: none"> <li>To explore feasibility for iron fortification of common foods at community level.</li> <li>To examine feasibility for fortification of complementary foods at community level.</li> </ul> </li> </ol>

	<p>4. To devise necessary policies to successfully implement fortification activities</p> <ul style="list-style-type: none"><li>• To increase awareness about the importance of fortification to policy makers, food industries, and consumers.</li><li>• To revise food regulations/standards in order to make fortification activities mandatory in some cases such as wheat flour fortification</li><li>• To establish monitoring mechanism to ensure quality of fortified foods</li></ul>
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**Note:**

Fortification is the most cost-effective long-term solution for the prevention of anemia, and has the potential to reach all age groups of the population. Special efforts should be made to identify vehicles which may be targeted to preschool children and women of reproductive age, especially pregnant women, because they are at high risk of anemia in Nepal.

<b>Objective 5</b>	<b><i>To promote locally appropriate dietary modification with an emphasis on bioavailable iron</i></b>
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1. To intensify and expand nutrition education to increase awareness about iron rich foods, both animal and vegetable sources. <ul style="list-style-type: none"> <li>• To develop locally appropriate IEC methods and materials.</li> </ul> </li> <li>2. To promote dietary practices and behaviours that improve the content and bioavailability of iron in diet.</li> <li>3. To advocate for equity among gender [S5]to have access and control over household foods.</li> </ol>

**Note:**

It is understood that food-based approaches may not be the exclusive strategy to solve the problem of iron deficiency anemia in many developing countries, because the bioavailability of iron from vegetables, which are the main locally available sources of iron, is quite low. However, it is important to emphasise that the promotion of dietary modification is needed to improve nutritional status, especially iron status, on a long-term basis. The overall increase in nutritional intakes and improvement in dietary diversification is an important complement to all other efforts to prevent anemia and improve nutritional status of women and children in Nepal.

<b>Objective 6</b>	<b><i>To promote maternal care practices and services to improve health and nutritional status of pregnant/ lactating women and babies</i></b>
<b>Strategy</b>	1. To create awareness of the importance of increased food intake and reduced workload during pregnancy to improve maternal nutritional status. <ul style="list-style-type: none"> <li>• To identify ways to coordinate with existing gender programmes to create awareness for both women and men.</li> <li>• To promote maternal health and nutrition education and IEC activities at all levels.</li> </ul>
	2. To promote advocacy campaigns to delay the age of first pregnancy, ensure safe delivery as well as increase birth spacing to reduce a risk of maternal malnutrition. <ul style="list-style-type: none"> <li>• To coordinate with the existing family planning programme.</li> </ul>
	3. To develop a scheme for screening and diagnosing high risk women with severe anemia and for providing treatment and follow-up care.
	4. Strengthen and integrate with existing Reproductive Health Coordination Committee and related programmes
	5. Update the knowledge of health workers at all levels

**Note:**

Low birth weight is one of the major factors associated with early childhood anemia due to their inadequate iron stores at birth. To prevent low birth-weight, it is very important to improve maternal nutritional status, to reduce heavy workload, and to eliminate severe anemia for pregnant women. Inadequate food intake and heavy workload are also contributing to the occurrence of anemia during pregnancy. Pregnant women require more energy and other nutrients intake for maintaining fetal growth.

### ***Guidelines for Oral Iron and Folate Therapy to Treat Severe Anemia***

<b>Age group</b>	<b>Dose</b>	<b>Duration</b>
<2 years	25 mg iron + 100~400 µg folic acid daily	3 months
2 – 12 years	60 mg iron + 400 µg folic acid daily	3 months
Adolescents and adults, including pregnant women	120 mg iron + 400 µg folic acid daily	3 months

- After completing 3 months of therapeutic supplementation, pregnant women and infants should continue preventive supplementation regimen.
- Children with kwashiorkor or marasmus should be assumed to be severely anemic. However, oral iron supplementation should be delayed until the child regains appetite and starts gaining weight, usually after 14 days.

Source: Rebecca J. Stoltzfus and Michele L. Dreyfuss, *Guidelines for the Use of Iron Supplements to Prevent and Treat Iron Deficiency Anemia*, INACG, WHO and UNICEF, 1998.

<b>Objective 7</b>	<b><i>To identify and implement effective modalities to address iron deficiency in young children, adolescents and non-pregnant reproductive aged women</i></b>
<b>Strategy</b>	1. Conduct and promote required research regarding anemia
	2. To review the possibility of extending iron/folate supplementation from pregnant women to other high-risk groups, such as young children, adolescents and non-pregnant women of reproductive age.
	3. To conduct operational research in order to identify effective programmatic interventions to improve the iron status of children, adolescent and non-pregnant women.

**Note:**

WHO recommends that young children, adolescents and non-pregnant women of reproductive age who live in high risk areas of anemia should take iron supplements. Therefore, as community-based delivery mechanisms are improved for supplementation, it may be possible to extend the supplementation to these population groups, or to develop alternative approaches.

<b>Objective 8</b>	<b><i>Develop a systemic approach to monitoring and evaluation of anemia control programme activities</i></b>
<b>Strategy</b>	1. Strengthen HMIS and LMIS to routinely monitor, supervise and report on programme implementation at various levels
	2. To Evaluate and measure the impact of the programme through periodic surveys and identify 'hot spots' where program intensification and further efforts need to be prioritised.
	3. To strengthen a capacity of health workers in monitoring and evaluation of anemia control programme.
	4. To develop a capacity in screening anemia by measuring haemoglobin at field testing tools.

**Note:**

Monitoring is an essential part of any public health programme. Indeed, monitoring must be simple at all levels of the system and should include indicators on supplement supply, coverage, compliance consumption, as well as attitude and behaviour change. Without adequate documentation, little can be learned from success or failure. Those responsible for managing programmes should be encouraged to document and share experiences, highlight constraints faced and remedies explored, and disseminate these findings.

Evaluation of the programme must be designed in a way that can demonstrate the impact of the programme efforts on physiological status and knowledge, attitude and practice. Feedback mechanism should also be established for further improvement in on-going activities and future efforts.