WHO/NMH/NHD/14.4

Global Nutrition Targets 2025

Anaemia Policy Brief

TARGET:

50% reduction of anaemia in women of reproductive age

WHAT'S AT STAKE

In 2012, the World Health Assembly Resolution 65.6 endorsed a *Comprehensive implementation plan on maternal, infant and young child nutrition (1)*, which specified six global nutrition targets for 2025 *(2)*. This policy brief covers the second target: **a 50% reduction of anaemia in women of reproductive age**. The purpose of this policy brief is to increase attention to, investment in, and action for a set of cost-effective interventions and policies that can help Member States and their partners in reducing the rates of anaemia among women of reproductive age.

Anaemia (see Boxes 1 and 2) impairs health and well-being in women and increases the risk of maternal and neonatal adverse outcomes. Anaemia affects half a billion women of reproductive age worldwide. In 2011, 29% (496 million) of non-pregnant women and 38% (32.4 million) of pregnant women aged 15–49 years were anaemic *(3)*. The prevalence of anaemia was highest in south Asia and central and west Africa *(3)*. While the causes of anaemia are variable, it is estimated that half of cases are due to iron deficiency. In some settings, considerable reductions in the prevalence of anaemia have been achieved; however, overall, progress has been insufficient. Further actions are required to reach the World Health Assembly target of a 50% reduction of anaemia in women of reproductive age by 2025 *(4, 5)*.

BOX 1: WHAT IS ANAEMIA?

Anaemia is a condition in which the number and size of red blood cells, or the haemoglobin concentration, falls below an established cut-off value, consequently impairing the capacity of the blood to transport oxygen around the body. Anaemia is an indicator of both poor nutrition and poor health.

Anaemia and iron deficiency reduce individuals' well-being, cause fatigue and lethargy, and impair physical capacity and work performance. Median losses in physical productivity due to iron deficiency are important *(6)*. Failure to reduce anaemia worldwide consigns millions of women to impaired health and quality of life, generations of children to impaired development and learning, and communities and nations to impaired economic productivity and development. Maternal anaemia is associated with mortality and morbidity in the mother and

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1,000 DAYS

baby, including risk of miscarriages, stillbirths, prematurity and low birth weight.

Globally, the prevalence of anaemia fell by 12% between 1995 and 2011 – from 33% to 29% in non-pregnant women and from 43% to 38% in pregnant women, indicating that progress is possible but presently insufficient to meet these goals. It is therefore urgent that countries review national policies, infrastructure and resources and act to implement strategies for the prevention and control of anaemia. The World Health Organization (WHO) has published revised guidelines that support policies for the prevention and control of anaemia *(7)*. Once implemented, these interventions work to restore appropriate haemoglobin concentrations in individuals and reduce the prevalence of anaemia in a population. Successful reduction in the prevalence of anaemia in women of reproductive age will improve children's school performance and women's work productivity, and improve pregnancy outcomes for mothers and infants, resulting in intergenerational benefits for individual health, well-being and economic potential and community development.

Anaemia is interlinked with the five other global nutrition targets (stunting, low birth weight, childhood overweight, exclusive breastfeeding and wasting). In particular, the control of anaemia in women of childbearing age is essential to prevent low birth weight and perinatal and maternal mortality, as well as the prevalence of disease later in life. It is therefore in policy-makers' interests to make necessary investments in anaemia now, as a means to promote human capital development and their nations' economic growth and long-term health, wealth and well-being. Policy-makers should consider prioritizing the following actions, in order to reach the global nutrition target of a **50% reduction of anaemia in women of reproductive age**:

- improve the identification, measurement and understanding of anaemia among women of reproductive age and scale up coverage of prevention, control and treatment activities;
- create partnerships between state and non-state actors for financial commitment, and a supportive environment for the implementation of comprehensive policies for nutrition and nutrition-sensitive actions that facilitate prevention and control of anaemia in women of reproductive age;
- ensure that development policies and programmes beyond the health sector include nutrition as well as other major causes of anaemia relevant to the country context, specifically the agriculture and education sectors;
- monitor and evaluate the implementation of anaemia control programmes.

BOX 2: WHAT CAUSES ANAEMIA?

- The most common cause of anaemia worldwide is iron deficiency, resulting from prolonged negative iron balance, caused by inadequate dietary iron intake or absorption, increased needs for iron during pregnancy or growth periods, and increased iron losses as a result of menstruation and helminth (intestinal worms) infestation. An estimated 50% of anaemia in women worldwide is due to iron deficiency *(3)*.
- Other important causes of anaemia worldwide include infections, other nutritional deficiencies (especially folate and vitamins B_{12}, A and C) and genetic conditions (including sickle cell disease, thalassaemia – an inherited blood disorder – and chronic inflammation).
- Anaemia is common in severe malaria and may be associated with secondary bacterial infection.
- Anaemia is a particularly important complication of malaria in pregnant women. In moderate- and high-transmission settings, pregnant women, especially women who are pregnant for the first time, are susceptible to severe anaemia.
- Pregnant adolescents are particularly vulnerable to anaemia because they have dual iron requirements, for their own growth and the growth of the fetus, and are less likely to access antenatal care.

FRAMEWORK FOR ACTION

Public health strategies to prevent and control anaemia include improvements in dietary diversity; food fortification with iron, folic acid and other micronutrients; distribution of iron-containing supplements; and control of infections and malaria. Achieving a 50% reduction in the prevalence of anaemia among women of reproductive age by 2025 will require a relative reduction in the prevalence of anaemia in this group of 6.1% per year. Recognizing the complexity of anaemia can lead to the establishment of effective strategies. An integrated, multifactorial and multisectoral approach is required to achieve this global target *(9)*.

WHO has developed guidelines for the prevention, control and treatment of anaemia in women of reproductive age.

These guidelines are based on objective, comprehensive systematic reviews of the literature, and were developed using WHO methodology for evidence-informed guideline development *(7)*. Guidelines are available on a central electronic platform: the WHO e-Library of Evidence for Nutrition Actions *(10)*. Box 3 summarizes current WHO recommendations targeting anaemia in women. Appropriate implementation of these recommendations can produce a marked reduction in the prevalence of anaemia in target populations.

The beneficiaries include the infant and the mother (i.e. longer amenorrhoea, increased birth spacing), as well as the neonate (breast milk is an important source of iron, which is very well absorbed).

BOX 3: SUMMARY OF CURRENT WHO RECOMMENDATIONS FOR THE PREVENTION, CONTROL AND TREATMENT OF ANAEMIA IN WOMEN

- Intermittent iron and folic acid supplementation is advised in menstruating women living in settings where the prevalence of anaemia is 20% or higher.
- Daily oral iron and folic acid supplementation is recommended as part of antenatal care, to reduce the risk of low birth weight, maternal anaemia and iron deficiency. In addition to iron and folic acid, supplements may be formulated to include other vitamins and minerals, according to the United Nations Multiple Micronutrient Preparation (UNIMAP), to overcome other possible maternal micronutrient deficiencies.
- In areas where the prevalence of anaemia among pregnant women is lower than 20%, intermittent iron and folic acid supplementation in non-anaemic, pregnant women is advised, to prevent anaemia and to improve pregnancy outcomes.
- In the postpartum period, iron supplementation, either alone or in combination with folic acid, for at least 3 months, may reduce the risk of anaemia by improving the iron status of the mother.
- Fortification of wheat and maize flours and rice with iron, folic acid and other micronutrients is advised in settings where these foods are major staples.
- In malaria-endemic areas, the provision of iron and folic acid supplements should be made in conjunction with public health measures to prevent, diagnose and treat malaria.
- In emergencies, pregnant and lactating women should be given the United Nations Children's Fund (UNICEF)/ WHO micronutrient supplement providing one RNI (recommended nutrient intake) of micronutrients daily (including 27 mg iron), whether or not they receive fortified rations. Iron and folic acid supplements, when already provided, should be continued.
- All pregnant women with active tuberculosis should receive multiple micronutrient supplements that contain iron and folic acid and other vitamins and minerals, according to the UNIMAP, to complement their maternal micronutrient needs.
- Exclusive breastfeeding of infants up to 6 months of age should be protected, promoted and supported. The beneficiaries include the infant and the mother (i.e. longer amenorrhoea, increased birth spacing), as well as the neonate (breast milk is an important source of iron, which is very well absorbed).
- A diet containing adequate amounts of bioavailable iron should underpin all efforts for prevention and control of anaemia.

INTERVENTIONS FOR PREVENTION AND CONTROL OF ANAEMIA

- A diet containing adequate amounts of bioavailable iron should underpin all efforts for prevention and control of anaemia.

- Malaria control: chemoprophylaxis/intermittent preventative treatment, insecticide-treated nets and vector elimination.

- Deworming: periodic treatment with anthelminthic (deworming) medicines, without previous individual diagnosis, for all women of childbearing age (including pregnant women in the second and third trimesters and breastfeeding women) living in endemic areas. For non-pregnant women, treatment should be given once a year when the prevalence of soil-transmitted helminth infections in the community is over 20%, and twice a year when the prevalence of soil-transmitted helminth infections in the community exceeds 50%.

- Delayed cord clamping (not earlier than 1 min after birth) is recommended for improved maternal and infant health and nutrition outcomes, including increased iron stores in term infants, reducing the need for blood transfusions for low blood pressure or anaemia in preterm neonates.

- Early interventions targeting adolescent girls for prevention of iron deficiency anaemia are critical, especially in areas with high adolescent birth rates and early marriages.

- Basic hygiene reduces the risk of infection; therefore, water and sanitation interventions can be integrated, in order to reduce nutritional losses incurred by infection, and also reducing inflammation.

- Education must encompass the component of reproductive health and family planning services for women and adolescent girls, to encourage dialogue and promote adequate birth spacing. Education will help promote gender equality and female empowerment.

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SUCCESS IS POSSIBLE

Improvements in the prevalence of anaemia among women of reproductive age have been seen in countries around the world: for example, Burundi (64.4% to 28% in 20 years); China (50.0% to 19.9% in 19 years); Nepal (65% to 34% in 8 years); Nicaragua (36.3% to 16.0% in 10 years); Sri Lanka (59.8% to 31.9% in 13 years); and Viet Nam (40.0% to 24.3% in 14 years). Boxes 4–6 illustrate examples from three countries that have successfully implemented strategies for prevention and control of anaemia.

BOX 4: PREVENTION OF ANAEMIA IN VIET NAM

In 2006, a pilot project distributing weekly iron-folic acid, together with de-worming for all women of reproductive age, was implemented in two districts of Yen Bai province, covering approximately 50 000 women aged 15 to 45 years. Following an evaluation survey after 12 months, the programme was expanded to target all women of reproductive age in the province (250 000 women), with management of the programme led by provincial health authorities. The prevalence of anaemia fell from 38% at baseline to 19% after 12 months and 18% after 54 months of intervention; the prevalence of iron deficiency anaemia fell from 18% at baseline to 3% at 12 months and remained at 4% at 54 months, confirming that this condition had essentially been eliminated in this population *(8)*.

BOX 5: PREVENTION OF ANAEMIA IN VENEZUELA

In 1992, Venezuelan health authorities began a programme to fortify precooked maize and wheat flours with iron and other vitamins. The authorities achieved success by selecting an effective and well-absorbed iron compound, choosing food vehicles that are consumed daily, and maintaining quality control over the process. Precooked maize was fortified to 50 mg/kg and white wheat to 20 mg/kg. The prevalence of anaemia in children aged 7, 11 and 15 years fell by 50% within 12 months of introduction of this programme, and average ferritin concentrations had almost doubled in the first 6 years since implementation *(11)*.

BOX 6: PREVENTION OF ANAEMIA IN INDIA

A programme of weekly iron–folic acid supplementation for adolescent girls was piloted in 52 districts in 13 states. The programme reached both school-attending and non-attending girls aged 10–19 years. Evaluation of the pilot programmes indicated a 24% reduction in the prevalence of anaemia after 1 year of implementation. For example, in Gujarat, implementation of intermittent (weekly) iron–folic acid supplementation to over 1.2 million adolescent girls led to a reduction in the prevalence of anaemia, from 74.2% to 53.5% within 1 year, with estimated compliance of over 90%. The cost of the programme was estimated at US$ 0.58 per adolescent per year. The project was expanded to cover 11 entire states by the end of 2011. In 2013, the Government of India introduced national implementation of weekly iron–folic acid supplementation to approximately 120 million adolescent girls *(12)*.

Interventions for the prevention and control of anaemia can be implemented by leveraging existing health, education and food-production systems as a delivery platform in the ways listed next.

- Intermittent iron supplementation for non-pregnant women can be delivered via a range of community and health systems, including schools (to adolescent girls using weekly "iron days"), local health workers (via the primary health system), and community-based social marketing (via the local health system and/or local vendors).

- Antenatal iron and folic acid supplementation (daily or intermittent) can be delivered via medical facilities, social marketing or community health workers, as part of routine antenatal care.

- Food fortification can be delivered through mass fortification, with the addition of iron to staple foods commonly consumed by the general public, such as wheat flour, maize flour and corn meals, rice and condiments such as soy sauce or fish sauce, or targeted fortification adding iron to foods consumed by populations at particular risk of anaemia (e.g. fortified biscuits for schoolchildren, adolescents and women).

ACTIONS TO DRIVE PROGRESS IN REDUCING ANAEMIA

Appropriate and context-sensitive implementation of evidence-informed recommended interventions, such as the WHO-recommended interventions described above, will effectively reduce the prevalence of anaemia among women of reproductive age.

Poverty and exclusion are the driving forces of health inequities in the general population and among women of reproductive age. The extent of health inequities is typically proportionate to the level of disadvantage, with populations experiencing poverty and social exclusion having fewer opportunities for health than those in more privileged positions.

The following actions should facilitate the adoption and implementation of these guidelines and create an environment in which the target can be achieved.

1. **Improve the identification, measurement and understanding of anaemia among women of reproductive age and scale up coverage of prevention and treatment activities.**

- Include required interventions with an effect on anaemia in national health, education, agriculture and development plans as appropriate, addressing nutritional and non-nutritional causes of anaemia and their determinants, as well as nutrition strategies.

2. **Create partnerships between state and non-state actors for financial commitment, and a supportive environment for the implementation of comprehensive food policies for nutrition and nutrition-sensitive actions that facilitate prevention and control of anaemia in women of reproductive age.**

3. **Ensure development policies and programmes beyond the health sector include nutrition as well as other major causes of anaemia relevant to the country context, specifically the agriculture and education sectors.**

- Community mobilization and social marketing can be used to raise awareness of the value of iron supplementation in women of reproductive age and other actors involved in the supply chain. For example, local women's groups and health networks can improve the uptake by encouraging women to purchase and use the intervention.

4. **Monitor and evaluate the implementation of anaemia control programmes.**[1]

[1] Primary outcome indicators include: prevalence of anaemia (haemoglobin lower than 120 g/L, adjusted for altitude and smoking) among non-pregnant women aged 15–49 years; and prevalence of anaemia among pregnant women (haemoglobin lower than 110 g/L, adjusted for altitude and smoking). Intermediate outcome indicators include: proportion of adolescent girls with haemoglobin lower than 120 g/L; and proportion of children aged under 5 years with haemoglobin lower than 110 g/L. Process indicators include: proportion of pregnant women receiving supplements containing iron and folic acid; percentage of households consuming iron-fortified staple foods or condiments; and proportion of children aged under 5 years receiving iron supplements.

WORLD HEALTH ORGANIZATION NUTRITION TRACKING TOOL

To assist countries in setting national targets to achieve the global goals – and tracking their progress toward them – WHO's Department of Nutrition for Health and Development and partners have developed a web-based tracking tool that allows users to explore different scenarios to achieve the rates of progress required to meet the 2025 targets. The tool can be accessed at www.who.int/nutrition/trackingtool *(13)*.

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Essential nutrition actions – improving maternal, newborn, infant and young child health and nutrition (http://www.who.int/nutrition/publications/infantfeeding/essential_nutrition_actions/en/, accessed 7 October 2014)

This document summarizes the rationale and the evidence for nutrition interventions targeting the first 1000 days of life and describes the actions required to implement them. It uses a life-course approach, from preconception throughout the first 2 years of life, and includes guidance for anaemia control in pregnant and non-pregnant women of reproductive age.

SOURCES OF DATA

Key national health and nutrition surveys frequently include measurement of haemoglobin in women of reproductive age and children aged under 5 years (e.g. demographic and health surveys, national micronutrient surveys). Data on distribution of iron supplements may also be included. Specific surveys to measure these indicators may be required.

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For more information, please contact:

Department of Nutrition for Health and Development
World Health Organization

Avenue Appia 20, CH-1211 Geneva 27, Switzerland
Fax: +41 22 791 4156
Email: nutrition@who.int
www.who.int/nutrition

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