GUIDELINES

National Guidelines for Prevention and Control of Iron Deficiency Anemia in India

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Abstract

Anaemia is a serious public health challenge in India with more than 50% prevalence across vulnerable groups such as pregnant women, infants, young children and adolescents. It has adverse effects on health, physical and mental productivity affecting quality of life. Guideline is any document containing recommendations about health interventions, whether these are clinical, public health or policy recommendations. The National Anemia Prevention and control guidelines have been developed taking cognizance of the current scientific evidence. The National Iron+ Initiative guidelines have been developed by the Adolescent Division of the Ministry of Health and Family Welfare (MoHFW), Government of India. Prevention and control of anaemia is one of the key strategies of the Health, Nutrition and Population Sector Programmes for reducing maternal, neonatal and childhood mortality and improving maternal, adolescent and childhood health status. It is estimated that anaemia causes 20 per cent of maternal deaths in India.

Introduction

Anaemia is a serious public health challenge in India with more than 50% prevalence across vulnerable groups such as pregnant women, infants, young children and adolescents (1,2). It has adverse effects on health, physical and mental productivity affecting quality of life. Anaemia could translate into significant health related morbidities amongst affected individuals and consequent socio-economic losses for the country. In India, where anaemia is very prevalent, the lifetime costs of iron-deficiency anaemia between the ages of 6 and 59 months amounted to 8.3 million disability-adjusted life-years (DALYs) and annual production losses of US$ 24 billion in 2013 (corresponding to 1.3% of GDP) (3).

Prevention and control of anaemia is one of the key strategies of the Health, Nutrition and Population Sector Programmes for reducing maternal, neonatal and childhood mortality and improving maternal, adolescent and childhood health status. It is estimated that anaemia causes 20 per cent of maternal deaths in India.

National Guidelines for Control of Iron Deficiency Anaemia were developed to identify strategies and comprehensive actions needed across the life cycle to eliminate anemia as a major public health problem among pregnant women, infants, young children and adolescents (4-6). These guidelines were developed with four main objectives:

1. To bring to the attention of program managers of health and health related activities the serious negative consequences of anaemia for the health and physical, mental, and economic productivity of individuals and populations.
2. To layout Iron and Folic Acid (IFA) supplementation protocols across the life cycle

3. To define a minimum standard treatment protocol for facility-based management of mild, moderate and severe anaemia segregated by levels of care.
4. To broadly identify platforms of service delivery and indicate roles of service providers

The aim is to reach the following age groups for supplementation of Iron & Folic Acid:

1. Bi-weekly iron supplementation for children in the age group of 6–60 months
2. Bi-weekly iron supplementation for preschool children 6 months to 5 years
3. Weekly supplementation for children from 1st to 5th grade in Govt. & Govt. Aided schools
4. Weekly supplementation for out of school children (5–10 years) at Anganwadi Centres
5. Weekly supplementation for adolescents (10–19 years)
6. Daily supplementation for pregnant and lactating women
7. Weekly supplementation for women in reproductive age

The IFA supplementation programme is to cover the entire life cycle under which beneficiaries are to receive iron and folic acid supplementation irrespective of their iron/Hb status. (Table 1) The age-specific interventions are based on WHO recommendations, synthesis of global evidence on IFA supplementation and the recommendations of national experts

Implementation Strategy

i. **Supplementation for Children 6–60 months**

The onset of anaemia in young children is generally after 6 months of age. Before this, iron in breast milk is sufficient to meet the needs of a breastfed child. Thereafter the incidence of anaemia increases from 6–8 months till the child is 1 year old. In India, diets for children in the age group 6–23 months are predominantly plant-based and provide insufficient amounts of micronutrients to meet the recommended nutrient intakes. One ml of IFA syrup containing 20 mg of elemental iron and 100 mcg of folic acid biweekly for 100 doses in a year. Iron folic acid supplement is supplied in bottles of 100 ml each and composition, preparation, dose and duration of IFA supplementation is same as the existing guidelines. The bottles have an auto-dispenser so that only 1 ml of syrup will be dispensed at a time. Prophylaxis with iron is withheld in case of acute illness (fever, acute diarrhoea, pneumonia etc.), Severe Acute Malnutrition (SAM) and in a known case of haemoglobinopathy/ history of repeated blood transfusion. IFA supplement is administered under the direct supervision of an Accredited Social Health Activist (ASHA) on fixed days on a biweekly basis. A particular child receives the supplement on the fixed day (Monday and Thursday), though it can vary for the groups of children depending on the home visits schedule prepared at block/district level.

ii. **Supplementation for Children 5–10 years**

Iron deficiency during childhood is often caused by inadequate dietary intake, absorption or utilisation of iron, increased iron requirements during the growth period, or blood loss due to parasitic infections such as malaria and soil-transmitted worm infestations. Tablets containing 45 mg of elemental iron and 400 mcg of folic acid is given once a week throughout the 5–10 years period. In addition to IFA supplements. Albendazole (400 mg) tablets for de-worming is administered twice a year for anti-helminthic treatment. The platform of school and AWC is utilised to provide IFA supplementation and de-worming tablets to children in the age group 5–10 years through involvement of teachers and Anganwadi workers (AWWs). ASHA is involved in mobilization of these children at community level.

iii. **Supplementation for Adolescent Girls and Boys (10–19 Years)**

Adolescents (age 10–19 years) are at high risk of iron deficiency and anaemia due to accelerated increase in requirements for iron, poor dietary intake of iron, high rate of infection and worm infestation as well as the social norm of early marriage and adolescent pregnancy. During this stage the requirement of nutrition and micronutrients is relatively high. Therefore, adolescents, especially girls, particularly those between the ages of 12–15 years, are vulnerable to iron deficiency mainly because requirements are at a peak. Administration of supervised weekly IFA supplementation (100 mg elemental iron and 500 mcg folic acid) is cnducted throughout the calendar year, i.e., 52 weeks

each year. Albendazole (400 mg) tablets for de-worming are administered twice a year for anti-helminthic treatment. Information and counselling for improving dietary intake and for prevention of intestinal worm infestation is given to the adolescents.

Weekly Iron and Folic Acid Supplementation (WIFS) is implemented in urban and rural areas for adolescent boys and girls in school (10–19 years) through the platform of Government/Government aided/ municipal schools. WIFS also reaches out-of-school girls in the age group 10–19 years through the platform of Anganwadi Kendras. The strategy involves a "fixed day – Monday'' approach for IFA distribution. Teachers and AWWs supervise the ingestion of the IFA tablet by the beneficiaries.

iv. **Supplementation Programme for Pregnant Women and Lactating Mothers-**

IFA tablets are being distributed through sub-centres, primary health centres (PHCs), community health centres (CHCs) and district hospitals (DHs) to all pregnant women and lactating mothers. IFA supplementation (100 mg elemental iron and 500 mcg of folic acid) is provided every day for at least 100 days, starting after the first trimester, at 14–16 weeks of gestation followed by the same dose for 100 days in post-partum period. Provision of IFA tablets to pregnant women is conducted during routine antenatal visits at subcentre/ PHC/CHC/DH. ASHA ensures the provision of IFA supplements to pregnant women who are not able to come for regular antenatal checkups through home visits. She also monitors compliance of IFA tablets consumption through weekly house visits.

v. **Supplementation of Iron for Treatment of Anemia throughout the Life Cycle**

The treatment of anemia for all age groups has been described in Tables 3 to 5. After completion of treatment of anaemia and attaining normal Hb level (Table 2), the preventive dose for IFA supplementation is resumed. Treatment of anaemia with iron is withheld in case of acute illness, severe acute malnutrition and in a known case of haemoglobinopathy. Anaemia in these cases should be treated as per the standard treatment guidelines, by the attending physician, as per the merit of the individual case.

- Treatment of Anemia in Age Group of 6 months to 5 years(Table-3).
- Treatment of Anemia in Children in the age group of 5-10 years (Table 4).
- The Treatment of Anemia in Adolescents in the Age Group of 10-19 years (Table 5)
- Treatment of Anemia in Pregnant and Lactating Women (Table-6)

Conclusion

The National Anemia Prevention and control guidelines have been developed taking cognizance of the current scientific evidence. The life cycle approach has been adopted covering all age groups of life.It has been built on past and continuing work on anaemia prevention and control of anemia. The existing policies and strategies undertaken in the health, nutrition and population sectors have been considered.

The National Iron+ Initiative builds on the gains of the National Health Mission for children of class I to class V in Government/Government aided schools, a weekly schedule of IFA supplementation has been initiated. The adolescents from class VI to class XII will receive weekly IFA supplementation in school under the supervision of School teachers. The women in reproductive age group who are neither pregnant nor lactating, will be covered by The strong work force of more than 10,00,000 ASHAs for providing IFA supplementation.

References

1. International Institute for Population Sciences (IIPS) and Macro International. 2016. National Family Health Survey (NFHS-4), 2015–16, Volume 1.
2. National Nutrition Monitoring Bureau (NNMB). Diet and nutritional status of rural population and prevalence of hypertension among adults in rural areas. NNMB Technical Report No. 24. Hyderabad: National Institute of Nutrition; 2006.
3. Plessow R, Arora NK, Brunner B, Tzogiou C, Eichler K, Brügger U et al. Social costs of iron-deficiency anemia in 6–59-month- old children in India. PLoS One. 2015;10(8):e0136581.
4. MoHFW. Government of India. Guidelines for control of iron deficiency anemia. Available athttp://www.unicef.org/india/10._National_Iron_Plus_Initiative_ Guidelines_for_Control_of_IDA.pdf (accessed on 29 Mar 2013)

5. MoHFW. Government of India. Operational framework weekly iron and folic acid supplementation programme for adolescents. Available at http://www.mohfw.nic.in/
6. Kapil U, Bhadoria AS. National Iron-plus initiative guidelines for control of iron deficiency anaemia in India, 2013. Natl Med J India. 2014;27(1):27-9.

Tables

TABLE 1: IFA SUPPLEMENTATION PROGRAMME AND SERVICE DELIVERY

Age group	Intervention/Dose	Regime	Service delivery
6–60 months	1 ml of IFA syrup containing 20 mg of elemental iron and 100 mcg of folic acid	Biweekly throughout the period 6–60 months of age and de-worming for children 12 months and above.	Through ASHA Inclusion in MCP card
5–10 years	Tablets of 45 mg elemental iron and 400 mcg of folic acid	Weekly throughout the period 5–10 years of age and biannual de-worming	In school through teachers and for out-ofschool children through Anganwadi centre (AWC) Mobilization by ASHA
10–19 years	100 mg elemental iron and 500 mcg of folic acid	Weekly throughout the period 10–19 years of age and biannual de-worming	In school through teachers and for those out-of-school through AWC Mobilization by ASHA
Pregnant and lactating women	100 mg elemental iron and 500 mcg of folic acid	1 tablet daily for 100 days, starting after the first trimester, at 14–16 weeks of gestation. To be repeated for 100 days post-partum.	ANC/ ANM /ASHA Inclusion in MCP card
Women in reproductive age (WRA) group	100 mg elemental iron and 500 mcg of folic acid	Weekly throughout the reproductive period	Through ASHA during house visit for contraceptive distribution

TABLE 2: HAEMOGLOBIN LEVELS TO DIAGNOSE ANAEMIA (G/DL)

Age groups	No Anaemia	Mild	Moderate	Severe
Children 6–59 months of age	≥11	10–10.9	7–9.9	<7
Children 5–11 years of age	≥11.5	11–11.4	8–10.9	<8
Children 12–14 years of age	≥12	11–11.9	8–10.9	<8
Non-pregnant women (15 years of age and above)	≥12	11–11.9	8–10.9	<8
Pregnant women	≥11	10–10.9	7–9.9	<7

Source: Haemoglobin concentration for the diagnosis of anaemia and assessment of severity. WHO

TABLE 3: MANAGEMENT OF ANAEMIA ON THE BASIS OF HAEMOGLOBIN LEVELS IN CHILDREN 6 MONTHS–5 YEARS

Level of Hb	Treatment	Follow-up	Referral
No Anaemia (>11 gm/dl)	20 mg of elemental iron and 100 mcg of folic acid in biweekly regimen		
Mild Anaemia (10–10.9 gm/dl)	3 mg of iron/ Kg/ day for 2 months	Follow-up every 14 days by ANM Hb estimation after completing 2 months of treatment to document Hb>11 gm/dl	In case the child has not responded to the treatment of anaemia with daily dose of iron for 2 months, refer the child to the FRU/DH with F-IMNCI trained MO/ Paediatrician/Physician for further investigation
Moderate Anaemia (7–9.9 gm/dl)	3 mg of iron/ Kg/ day for 2 months	Follow-up every 14 days by ANM Hb estimation after completing 2 months of treatment to document Hb>11 gm/dl	In case the child has not responded to the treatment of anaemia with daily dose of iron for 2 months, refer the child to the FRU/DH with F-IMNCI trained MO/ Paediatrician/Physician for further investigations

Severe Anaemia (<7 gm/dl)	Refer urgently to DH/FRU		

TABLE 4: MANAGEMENT OF ANAEMIA ON THE BASIS OF HAEMOGLOBIN LEVELS IN CHILDREN 5–10 YEARS

Level of Hb	Treatment	Follow-up	Referral
Mild Anaemia (11–11.4 gm/dl)	3 mg of iron/Kg/ day for 2 months	Follow-up every 14 days Hb estimation after completing 2 months of treatment to assess if Hb estimates are >11.5 gm/dl.	In case the child has not responded to the treatment of anaemia with daily dose of iron for 2 months, refer the child to the FRU/DH with F-IMNCI trained MO/ Paediatrician/Physician for further investigation
Moderate Anaemia (8–10.9 gm/dl)	3 mg of iron/Kg/ day for 2 months	Follow-up every 14 days Hb estimation after completing 2 months of treatment to assess if Hb estimates are >11.5 gm/dl.	In case the child has not responded to the treatment of anaemia with daily dose of iron for 2 months, refer the child to the FRU/DH with F-IMNCI trained MO/ Paediatrician/Physician for further investigations
Severe Anaemia (<8 gm/dl)	Refer urgently to DH/FRU		

TABLE 5: MANAGEMENT OF ANAEMIA ON THE BASIS OF HAEMOGLOBIN LEVELS AMONG ADOLESCENTS 10–19 YEARS

Level of Hb	Treatment	Follow-up	Indication for referral
Mild Anaemia (11–11.9 gm/dl)	60 mg of elemental iron daily for 3 months	Follow-up every month Hb estimation after completing 3 months of treatment to assess if Hb estimates are >12 gm/dl.	In case of no improvement in Hb levels after 3 months of treatment, adolescent will be referred to DH/FRU for further investigation
Moderate Anaemia (8–10.9 gm/dl)	60 mg of elemental iron daily for 3 months	Investigate Follow-up every 14 days Hb estimation after completing 3 months of treatment to assess if Hb estimates are >12 gm/dl.	In case of no improvement in Hb levels after 3 months of treatment, adolescent will be referred to DH/FRU for further investigation
Severe Anaemia (<8 gm/dl)	Refer urgently to DH/FRU	Severely anaemic adolescents would be line listed by ANM	

TABLE 6: MANAGEMENT OF ANAEMIA ON THE BASIS OF HAEMOGLOBIN LEVELS AMONG PREGNANT AND LACTATING WOMEN

Haemoglobin Levels	Level of facility	Therapeutic regimen
9–11 gm/dl	Sub-centre Signs and symptoms (generalized weakness, giddiness, breathlessness, etc.) Clinical examination (pallor eyelids, tongue, nail beds, palm, etc.) Confirmation by laboratory testing	Hb level between 9–11 gm/dl • 2 IFA tablets (1 in the morning and 1 in the evening) per day for at least 100 days (at least 200 tablets of IFA). • Hb levels should preferably be reassessed at monthly intervals. If on testing, Hb has come up to normal level, discontinue the treatment. • If it does not rise in spite of the administration of 2 tablets of IFA daily and dietary supplementation, refer the woman to the next higher health facility for further management.
7–9 gm/dl	PHC/CHC Signs and symptoms	Hb level between 8–9 gm/dl • Before starting the treatment, the woman should be investigated to detect the cause of anaemia.

	(generalized weakness, giddiness, breathlessness, etc.) Clinical examination (pallor of eyelids, tongue, nail beds, palm, etc.) Confirmation by laboratory testing	• Oral IFA supplementation as for Hb level 9–11 gm/dl. Hb testing to be done every month. • Depending on the response to treatment, same course of action as prescribed for Hb level between 9–11 gm/dl. Hb level between 7–8 gm/dl • Before starting the treatment, the woman should be investigated to diagnose the cause of anaemia. • Injectable Intramuscular (IM) iron preparations (parenteral iron) should be given if iron deficiency is found to be the cause of anaemia. • IM iron therapy in divided doses along with oral folic acid daily if women do not have any obstetric or systemic complication; repeat Hb after 8 weeks. If the woman has become non-anaemic, no further medication is required: if Hb level is between 9–11 gm/dl, same regimen of oral IFA prescribed for this range. • If woman with Hb between 7–8 gm/dl comes to PHC/CHC in the third trimester of pregnancy, refer to FRU/MC for Multiple dose regime Intramuscular (IM) - Test dose of 0.5 ml given deep IM and woman observed for 1 hour. Iron dextran or iron sorbitol citrate complex given as 100 mg (2 ml) deep IM in gluteal region daily. Recommended dose is 1500–2000 mg (IM in divided doses) depending upon the body weight and Hb level If parenteral iron therapy is contraindicated e.g. in CHF, H/O allergy, asthma, eczema; Haemochromatosis, liver cirrhosis,rheumatoid arthritis and acute renal failure etc, refer thewoman to FRU/MC
<7 gm/dl	FRU/DH/MC Signs and symptoms (generalized weakness, giddiness, breathlessness, etc.) Clinical examination (pallor eyelids, tongue, nail beds, palm, etc.) Confirmation by laboratory testing	Hb level between 5-7 gm/dl • Continue parenteral iron therapy as for Hb level between 7–8 gm/dl. Hb testing to be done after 8 weeks • If the woman becomes non-anaemic, no further medication is required: if Hb level is between 9–11 gm/dl, same regimen of oral IFA prescribed for this range • Depending on the further response to treatment, same course of action as prescribed for Hb level between 9–11 gm/dl Hb level less than 5 gm/dl • Evidence for injectable IV sucrose preparation: under Randomised Control Trial of GOI • Immediate hospitalisation irrespective of period of gestation in hospitals where round-the-clock specialist care is available for intensive personalised care and decision for blood transfusion (packed cell transfusion)