Indian Academy of Pediatrics (IAP)

GUIDELINES FOR PARENTS

My Child is Pale (Anemia)

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10 FAQs on MY CHILD IS PALE (ANEMIA)

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Under the Auspices of the IAP Action Plan 2020–2021

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My Child is Pale (Anemia)

Q1

What is the meaning of anemia?

The blood in the human body is made up of several things, one of the most important being the red blood cells. The red blood cells contain hemoglobin, commonly called Hb. Hemoglobin is an iron-containing substance that gives the red color to the blood. The red blood cells are the transport vehicles that carry oxygen from the lungs to every nook and corner of the body and bring carbon dioxide back from the body to the lungs. Indeed, the hemoglobin containing red blood cells have an essential function in the human body.

Anemia refers to a reduction in red blood cells or hemoglobin. The normal range of hemoglobin values changes as the child grows. The average normal and lower hemoglobin limit below which anemia is defined by your doctor is shown in **Table 1**.

TABLE 1: Normal and cut-off hemoglobin values that your doctor uses to diagnose anemia in children.

Age	*6 months to 5 years*	*5–12 years*	*12–14 years*	*14–19 years*
	Hemoglobin report (g/dL)			
Normal: Approximate average hemoglobin	12	13	*Girls*: 13 *Boys*: 13.5	*Girls*: 13 *Boys*: 15
Anemia	<11	<11.5	<12	*Girls*: <12 *Boys*: <13

Q2

What are the harmful effects of anemia to my child?

Anemia, mostly when mild, is not easily noticed by the parents or even your doctor. It often does not cause obvious concerns. The body of the child gets used to a low level of hemoglobin. However, children's growing body and brain continue to suffer harm even when the anemia is mild.

Anemia is harmful to the developing brain. Children with anemia have lower scores in memory, reading, speaking, and mathematic skills. Some of these brain changes may remain permanent despite treating the child with iron. Anemia is harmful as it affects the mental processes involved in gaining knowledge and comprehension. The ability of thinking, knowing, remembering, judging, and problem-solving is affected. These are not readily obvious, as the harmful effects on a growing brain happen slowly and are not easily noticed.

Anemia also causes weakness, poor appetite, reduced capacity for playing, running, and low productivity. It lowers the immunity of the child and increases the chances of infections and even brain strokes.

Q3

As a parent, how will I know that my child has anemia?

Anemia is widespread in children in India. Overall, 41% of preschoolers (age 1–4 years), 24% of school-age children (age 5–9 years), and 28% of adolescents (age 10–19 years) have anemia in India (*Source of information*: Comprehensive National Nutrition Survey: 2016–18, Ministry of Health and Family Welfare, Government of India).

As a parent, you will often not be able to assess easily that your child has anemia. The problems caused by anemia are typically apparent only when the anemia is severe (below 7–8 g/dL). When the anemia is mild, it is possible to know only by a blood test. When the anemia is severe, the child becomes pale or light-colored **(Fig. 1)**. It leads to weakness, easy fatigability, poor appetite, and reduced capacity for playing, exercising, and reading. Younger children may be eating mud or soil, white-wash (Chuna or lime of walls), paint, paper, chalk pencil, raw rice or lick dust, etc. They may often be drinking more milk, with less interest in regular solid food. Contact your pediatrician if you think your child has anemia.

Fig. 1: An example of a child with anemia (left side). He has pale-colored palms as compared to his father (right side).

Q4

Why is my child getting anemia?

The most common reason for anemia in children is a lack of iron in the diet. This is commonly due to a lack of a balanced diet. Iron is a nutrient that is necessary for building red cells. Intake of excess animal milk is a common cause of iron-deficiency anemia. A breastfed baby is well-protected by iron present in mother's milk. Other common reasons are a diet containing low folic acid (folate) or vitamin B_{12}. This may be common in adolescent age due to poor diet, excess junk food, and food fads. The presence of worms in the tummy also contributes to anemia.

There are other less common causes of anemia, such as suboptimal absorption of food, as in celiac disease (wheat allergy), bleeding due to any reason, thalassemia, other blood diseases, etc.

Q5

As a parent, what can I do to prevent the occurrence of anemia in my child?

The age at which anemia is most likely to occur is the period of changeover of the baby's diet from breastmilk to solid food. Thus, a child is most likely to have anemia from 6 months to 2 years of age. Breastmilk is indeed the best for your child. However, breastmilk by itself is *not enough* after 6 months of age. It is common for parents in India to give too much milk or milk-products to children and provide inadequate solid food to babies after 6 months. Children aged 1–5 years should *not* be given >500 mL (about two cups) of milk or equivalent milk products everyday **(Fig. 2)**. If more milk is fed, then it will reduce the appetite of the child for nutritious solid food. Animal milk, as such, is low in iron content.

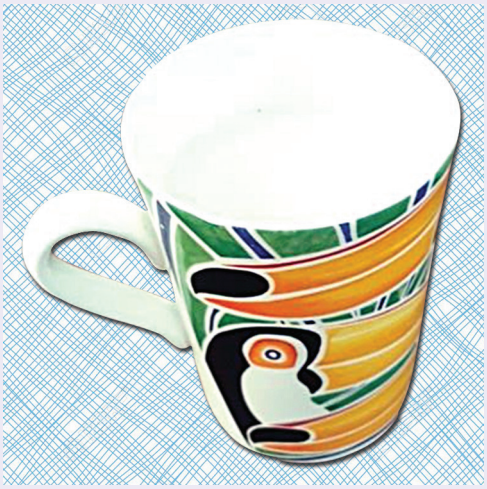

Fig. 2: Children aged 1–5 years should *not* be given >500 mL (about two cups) of milk everyday. One average-sized cup contains about 250 mL.

A home-based, culture-appropriate balanced semi-solid diet *must* be started from 6 months of age, including khichdi, porridge, wheat payasam, mashed dal, kheer, banana, etc. Chapatti softened in milk, green leafy vegetables added to dal or khichdi (add little oil to all the above preparations), idli, and upma are several options. Nonvegetarian foods such as soft-boiled egg, minced meat may be introduced at the age of 6 months if culturally acceptable. By 9 months, a child should eat all food (smashed) that is cooked for the family.

Q6

Is a balanced diet enough to prevent anemia in my child? Is iron medicine necessary for my child? She/he is otherwise well and active.

A balanced diet is helpful, but not enough to prevent anemia in growing children. All normal children *must* be started on iron medicine from 4 months of age (1 mg/kg/day of elemental iron). As anemia is widespread, the Government of India runs the Intensified National Iron Plus Initiative Program. It is a part of *"Anemia Mukt Bharat",* under the umbrella of *Poshan Abhiyaan* and National Health Mission. All children from 6 months to 5 years should be given iron syrup (1 mL iron folic acid syrup = 20 mg elemental iron + 100 µg folic acid) twice a week, regularly. Children 5–19 years should be given iron tablets once a week (*5–10 years:* 45 mg elemental iron + 400 µg folic acid; *10–19 years:* 60 mg elemental iron + 500 µg folic acid) regularly.

The iron medicine is available free of cost from the civil hospitals and dispensaries of Government of India. They can, of course, also be purchased from a chemist shop. It is a misconception that the iron and folic acid medicine available from government sources are not of good quality. An iron medicine purchased from a chemist shop is not superior to those available free of cost from the government sources **(Fig. 3)**.

Thus, it is vital to give iron supplementation to all children from 4 months to 19 years of age.

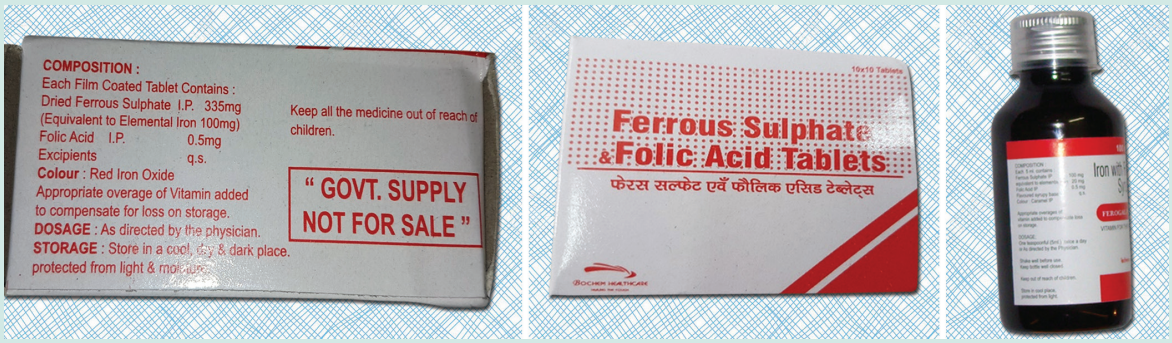

Fig. 3: The syrups and tablets of iron-folic acid are available free of cost from government-run civil hospitals and dispensaries. It is a misconception that the iron medicine purchased from chemist shops is better than from government supply.

Q7

I often receive circulars from the school asking for signatures for giving medicine for worms to my child. Should I say yes? Is it necessary to give it so often?

All children (*Age:* 1–19 years) should be given the medicine for worms, called albendazole (400 mg), twice a year. Bi-annual mass deworming for children is carried out on designated dates: 10th February and 10th August every year under the National Deworming Day Program. It is an essential step for preventing anemia in your child. As a parent, you should be happy to provide consent for the useful measure or buy from the chemist and give if you wish so.

Q8

From the above question, I have understood how to prevent anemia? Now, please explain how to treat anemia if it has already set in.

- Your doctor will prescribe iron-folic acid syrup or tablets. The dose is 3 mg/kg/day of elemental iron for a minimum of 3 months.
- Reduce the intake of milk and milk products.
- Provide a balanced diet to your child including green leafy vegetables, pulses, chick-peas, soybean, tofu, peanuts, jaggery, etc. The nonvegetarian options of egg, meat, and fish are good sources of iron.

Q9

The doctor has prescribed iron medicine for my child. How best should it be given? Any precautions?

- Iron medicine is preferably taken fasting (in-between meals) for better absorption.
- Iron syrups can cause staining of teeth. Ask the child to rinse the mouth with water a few times after taking medicine.
- Unlike in adults, iron intake in children does not cause tummy upset, constipation, or loose stools. Side-effects from taking iron in children are rare.
- *Do not* interrupt or stop iron medicine for minor fevers, cold-coughs, loose-stools, or constipation. It is important to give iron regularly without interruptions.
- It is usual for stool to become dark-colored while taking iron. Do not be worried about this change.

Q10

Despite giving iron medicine, the hemoglobin of my child is still not normal. What should I do?

Common reasons for the lack of increase in hemoglobin are: (a) the iron medicine has not been given regularly, or (b) excessive milk and milk products are still being provided to the child, or (c) a balanced diet is not provided, especially proteins and other vitamins which are equally important in making hemoglobin. Your doctor may investigate other reasons for anemia including celiac disease (wheat allergy), thalassemia, other blood diseases, etc.

Anemia in a Nutshell

- Anemia refers to a reduction in red blood cells or hemoglobin.
- Anemia is harmful to the developing brain and body of the growing child.
- Children with anemia resulting from a lack of iron have lower scores in memory, reading, speaking, and mathematic skills, some of which may be permanent.
- Anemia also causes weakness, poor appetite, and reduced productivity.
- Anemia is mild in the majority and can often be known only by a blood test.
- The common cause of anemia in young children is an excessive intake of milk and inadequate complementary food.
- Anemia can be easily prevented as well as treated by a balanced diet and regular intake of iron-folic acid medicine.
- If your child remains pale despite treatment, consult your doctor to rule out other causes of anemia.