

Iron Deficiency in Early Childhood

Childhood iron deficiency is a common nutritional deficiency in America—affecting 2.4 million US children. Iron is a mineral important for healthy blood and brain development. Our bodies need iron to make hemoglobin, a protein that gives color to red blood cells. Hemoglobin functions as a carrier of oxygen in the body.

What are the consequences?

The most well-known consequence of iron deficiency is anemia. Anemia can cause developmental delays and behavioral disturbances such as decreased motor activity, social interaction and attention to tasks. Several studies show an increased likelihood of mild or moderate mental retardation associated with iron deficiency, even if it has not progressed to the point of anemia.

Childhood lead poisoning is a well-documented cause of neurological and developmental problems such as lower IQ, learning disabilities and behavioral abnormalities. Iron deficiency contributes to the problem through increased absorption of lead.

Iron Deficiency Anemia (IDA)

There are several types of anemia, all with different causes. IDA is the most common type, happens when people do not have enough iron in their body. When children do not get enough iron, they may have slow weight gain, pale skin, decreased appetite, irritability, tiredness, shortness of breath, rapid heartbeat and feeling of being lightheaded.

What are the causes?

A child can have a low iron level because of insufficient iron in the diet, poor absorption of iron by the body or ongoing blood loss.

Who is at risk?

Premature and low-birth-weight children: Children need different amounts of iron at different ages and

stages. Infants are born with a reserve of iron from their mother's blood, which can meet their needs until 4 to 6 months of age. After that, they need to get iron from food or supplements. Since premature and low-birth-weight children have little iron stored in their bodies, they are at greater risk for iron-deficiency.

Infants and toddlers: A fast rate of growth together with inadequate dietary iron puts children less than 24 months of age at the highest risk for iron deficiency. Young children are at risk if:

- their nutrition is poor
- they have lead in their blood
- they drink too much cow's milk or are introduced to whole cow's milk before 1 year of age
- they are breastfed longer than 4 to 6 months without receiving complimentary iron-rich solid foods or iron supplements
- they are fed with low-iron formula
- they are living at or below the poverty line

Tips for preventions

- Exercise exclusive breast-feeding (without supplementary liquid, formula or food) for the first 4-6 months.
- If breast-feeding is not possible, use only iron-fortified infant formula.
- Add complimentary foods with sources of iron at 4 to 6 months of age.
- Avoid use of regular cow, goat or soy milk before age 12 months.
- Discourage children aged 1-5 years from consuming more than 24 oz of cow's milk.
- Provide foods with Vitamin C as it helps the body absorb iron.
- Offer foods such as red meat, lentils, iron fortified bread, leafy green vegetables and dried fruits since they are rich in iron.
- Provide breakfast cereals that are fortified with iron—check ingredients on the package.

References and Resources

CCHP Health and Safety Note: Anemia, Lead Poisoning and Child Care at <https://cchp.ucsf.edu/content/health-and-safety-notes>

Centers for Disease Control and Prevention (CDC), Recommendations to Prevent and Control Iron Deficiency in the United States

American Academy of Pediatrics (AAP) at www.aap.org



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2008