Iron Deficiency - Children

Iron is an important dietary mineral that is involved in various bodily functions, including the transport of oxygen in the blood. This is essential in providing energy for daily life. Iron is also vital for brain development.

Babies, toddlers, preschoolers and teenagers are at higher risk of iron deficiency, mainly because their increased needs for iron may not be met by their diets. Without intervention, a child whose diet does not provide them with enough iron will eventually develop iron deficiency anaemia. See your doctor if you suspect your child may be iron deficient.

Warning!
Iron is toxic in large doses. Avoid the temptation to self-diagnose and give your child over-the-counter iron supplements, because an overdose of iron can cause death. In infants and young children, 20mg per day is the safe upper limit – most iron supplements contain around 100mg per tablet! It is important to keep iron supplements tightly capped and away from children's reach, as iron tablets are often mistaken as lollies by children. If you suspect an iron overdose, call your doctor or the Poisons Information Centre immediately or visit your local hospital emergency department.

Signs and symptoms
The signs and symptoms of iron deficiency anaemia in children can include:

- Behavioural problems
- Repeat infections
- Loss of appetite
- Lethargy
- Breathlessness
- Increased sweating
- Strange 'food' cravings (pica) like eating dirt
- Failure to grow at the expected rate.

Causes of iron deficiency in children
Major risk factors for the development of iron deficiency in children include:

- Prematurity and low birth weight
- Exclusive breastfeeding beyond six months
- Introduction of cows milk as the main drink before 12 months
- High intake of cows milk
- Low or no meat intake
- Poor diet in the second year of life
- Possible gastrointestinal diseases
- Lead poisoning.

Babies, children and teenagers undergo rapid growth spurts, which increase their need for iron. The main causes of iron deficiency in children by age group include:

- **Babies less than six months old** – newborns receive their iron stores in the uterus (womb), which means the mother's diet during pregnancy is very important. Low birth weight or premature babies are at increased risk of iron deficiency and will need iron supplements (under medical supervision only). See your doctor for further advice.
- **Babies aged six months to one year** – baby's iron stores run low in the second half of their first year. Iron deficiency can result if their diet doesn't include enough iron-rich solid food. At age six months, two servings per day of plain, iron-fortified infant cereal can start to be given. Around approximately seven to nine months of age, plain pureed meats can be offered. Late introduction of solids into the baby's diet is a common cause of iron deficiency in this age group.
- **Children aged one to five years** – breast milk contains iron but prolonged breastfeeding can lead to iron deficiency if breast milk replaces solid foods in the diet. Low iron milks such as cows milk, goats milk and soymilk should not be given until 12 months of age. Children who drink milk in preference to eating solid foods are in danger of iron deficiency.
- **Teenagers** – adolescent girls are at risk because of a number of factors including growth spurts at puberty, iron loss through periods (menstruation) and risk of undernutrition due to fad dieting that restricts the eating of a healthy range of foods.
- **In general** – gastrointestinal disorders, such as coeliac disease, are a rare but possible cause of anaemia in children.

Suggestions for parents – babies

Suggestions to prevent iron deficiency in babies less than 12 months of age include:

- Eat an iron-rich diet during pregnancy. Red meat is the best source of iron.
- Tests to check for anaemia should be conducted during pregnancy. If your doctor prescribes iron supplements, take them only according to instructions.
- Breastfeed your baby or choose iron-fortified milk formulas.
- Don't give your baby cows milk or other fluids that may displace iron-rich solid foods before 12 months of age.
- Don't delay the introduction of solid foods. Start giving your baby pureed foods when they are around six months of age. Fortified baby cereal made with iron-fortified formula or breast milk can be given, at first along with pureed fruit and vegetables. Gradually include finely minced meat at one mealtime at around eight months.

Suggestions for parents – young children

Suggestions to prevent iron deficiency in toddlers and preschoolers include:

- Meat, poultry and fish are important sources of iron in your child's daily diet. If you have a vegan or vegetarian diet, you may need to seek advice from a dietitian to ensure you are meeting all your child's dietary needs.
- Vitamin C helps the body to absorb more iron, so make sure your child has plenty of fruit and vegetables.
- Encourage solid foods at mealtimes and take care that toddlers are not 'filling up' on drinks between meals.
- Chronic diarrhoea can deplete your child's iron stores, while intestinal parasites such as worms can cause iron deficiency. See your doctor for prompt diagnosis and treatment.
- Fussy eaters may be at risk due to poor intake or lack of variety in the foods they eat. Seek advice from your dietitian, local doctor or child health nurse on how to manage a fussy eater, or browse the Better Health Channel site for more information.

Suggestions for parents – teenagers

Suggestions to prevent iron deficiency in teenagers include:

- Talk to your child about the importance of iron. Help them become informed enough to make their own responsible food choices.
- Encourage iron-rich foods and meals, such as iron-fortified breakfast cereals and breads, and serve meat, poultry or fish with the evening meal.
- Offer good sources of non-haem iron like peas, broccoli, spinach, beans, fortified cereals and breads if your child wants to avoid red meat or become vegetarian. Rich vitamin C sources should also be encouraged, such as fruit or vegetables with meals.
- Encourage moderate amounts of tea and coffee, as these can interfere with iron absorption.

Practical ways to increase iron in the diet for young children

- Include red meat three to four times per week.
- Offer meat alternatives including dried beans, lentils, chickpeas, canned beans, fish, eggs and small amounts of nuts and nut pastes.
- Include foods rich in vitamin C like oranges, mandarins, berries and tomatoes.
- Encourage young children, toddlers or fussy eaters to try minced meats, fortified breakfast cereals, eggs and smooth nut pastes.

Diagnosis

It is important that you see your doctor if you suspect that your child may be iron deficient. Diagnosis aims to exclude other illnesses that can have similar symptoms, such as leukaemia or coeliac disease. Diagnosis methods include:

- Physical examination
- Medical history
- Blood tests.

Treatment

Treatment may include:

- Dietary changes, such as increasing the amount of iron-rich foods
- Iron supplements (tablets or syrup form for infants/young children) – under medical supervision only
- Treatment for infection, as infection is sometimes the cause of mild anaemia in children.

Where to get help

- Your doctor
- An accredited practising dietitian, contact the Dietitians Association of Australia
- Poisons Information Centre

Things to remember

- Babies, toddlers, preschoolers and teenagers are at risk of developing iron deficiency, mainly because their increased needs for iron may not be met if their diets are inadequate.
- If you are following a vegetarian or vegan diet, extra care needs to be taken to ensure you are getting enough iron in your diet.
- Keep iron supplements away from children