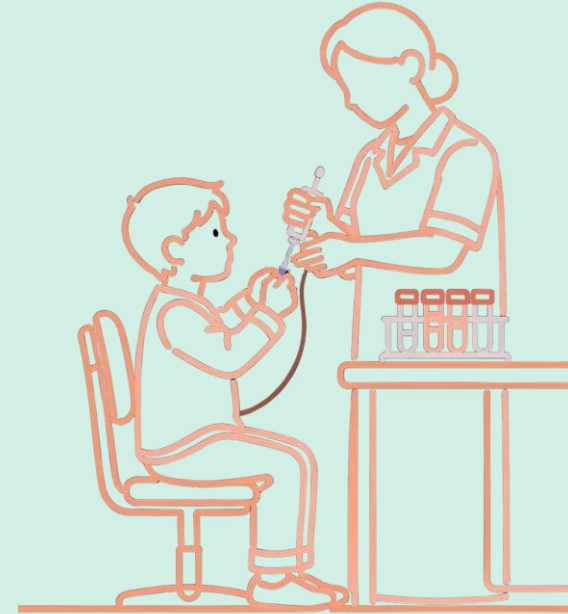


Iron Deficiency Anemia (IDA) in Children

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References: Nelson Textbook of Pediatrics, UpToDate



High-Yield Facts

Best initial test

Serum Ferritin

Treatment

Oral elemental iron 3–6 mg/kg/day

Expected response

Hb $\uparrow$ $\geq$ 1 g/dL after 4 weeks

Continue treatment

2–3 months after Hb normalization

Most common dietary cause

Excessive cow's milk intake

Definition

Iron Deficiency Anemia (IDA) is the most common cause of anemia in children and results from inadequate iron availability for hemoglobin synthesis.

Risk Factors

Common causes include:

- Excessive cow's milk intake (>500 mL/day)
- Inadequate dietary iron intake
- Prematurity and low birth weight
- Rapid growth (6–24 months and adolescence)
- Heavy menstrual bleeding
- Chronic gastrointestinal blood loss
- Malabsorption (e.g., celiac disease)



Clinical Features

Symptoms

Pallor (most common sign)

Fatigue

Poor feeding

Irritability

Exercise intolerance

Poor school performance

Pica (eating non-food substances)

Pagophagia (ice craving)

Physical Findings



Conjunctival pallor



Systolic flow murmur



Glossitis



Tachycardia



Koilonychia (spoon nails)



Angular stomatitis

Diagnosis

First-Line Investigations

✓ CBC

Typical findings:

- Low Hemoglobin (Hb)
- Low MCV (Microcytic anemia)
- Low MCH
- Increased RDW

Iron Studies

✓ Serum Ferritin (Best initial test)

Low ferritin confirms iron deficiency.

Additional tests:

- Serum Iron ↓
- TIBC ↑
- Transferrin saturation ↓

Peripheral Blood Smear

Typical findings:

- Microcytic RBCs
- Hypochromia
- Pencil cells
- Anisocytosis

Diagnostic Clue

Microcytic + Hypochromic Anemia



Check Serum Ferritin



Low Ferritin = Iron Deficiency Anemia

Treatment

Mild to Moderate IDA

Oral Iron is First-Line Therapy

Dose:



★ Elemental Iron: 3–6 mg/kg/day orally

Usually:

- Ferrous sulfate
- Ferrous gluconate
- Ferrous fumarate

How to Improve Absorption

✓ Recommended

- Give between meals if tolerated
- Give with Vitamin C

✗ Avoid giving with:

- Milk
- Tea
- Calcium supplements

Monitoring Response

Expected Response

Time	Expected Finding
1 week	Reticulocyte increase
4 weeks	Hb rises by ≥ 1 g/dL
2–3 months	Hemoglobin normalizes
3–6 months	Iron stores replenished

Important Rule

Do NOT stop iron when Hb becomes normal.

Continue treatment for:



★ Additional 2–3 months to replenish iron stores.

Severe Iron Deficiency Anemia

Hb <7 g/dL

Assess:

- Tachycardia
- Heart failure
- Respiratory distress
- Hemodynamic instability

If Symptomatic

Consider:

✓ Packed Red Blood Cell (PRBC) transfusion

Dose: 10 mL/kg slowly

Follow with:

✓ Oral iron

or

✓ Intravenous iron if needed

When is IV Iron Indicated?

Consider IV iron if:

- Oral iron is not tolerated
- Poor compliance
- Malabsorption
- Ongoing blood loss
- No response after 4 weeks of adequate therapy

No Response to Oral Iron?

Always ask:

Is the child taking the medication correctly?

↓

If yes:

Investigate:

- Celiac disease
- Chronic blood loss
- H. pylori infection
- Inflammatory bowel disease
- Thalassemia trait

Dietary Advice

Encourage:

- Red meat
- Poultry
- Fish
- Beans and lentils
- Iron-fortified cereals
- Green leafy vegetables
- Citrus fruits (Vitamin C)

Avoid:

✗ Excessive cow's milk

Limit to:

<500 mL/day after one year of age

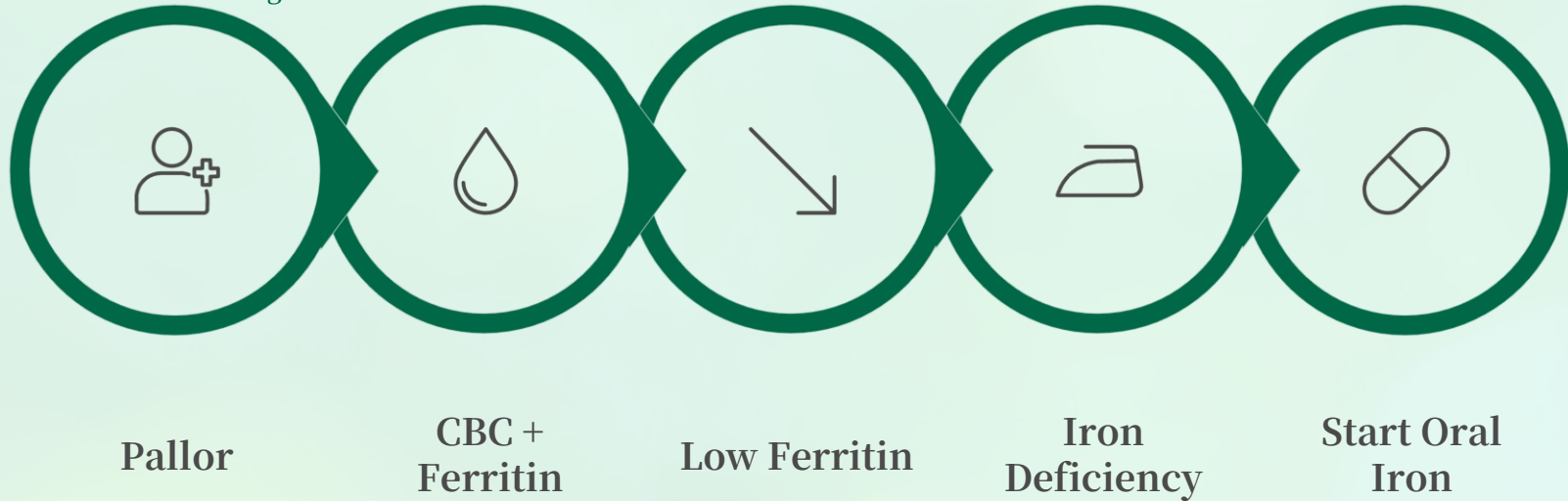


Indications for Referral

Refer to a pediatric hematologist if:

- Hb <7 g/dL with symptoms
- No response after 4 weeks of oral iron
- Suspected malabsorption
- Suspected chronic GI blood loss
- Diagnostic uncertainty
- Possible thalassemia

Diagnostic and Treatment Algorithm



Hb $\uparrow$ $\geq$ 1 g/dL ?

YES — Continue therapy for 2–3 months after Hb normalization.

NO — Check: Compliance, Absorption, Ongoing blood loss, Alternative diagnoses

Key Home Messages

- IDA is the most common cause of anemia in children.
- CBC + Serum Ferritin are the most important investigations.
- Oral elemental iron 3–6 mg/kg/day is first-line treatment.
- Hb should increase by ≥ 1 g/dL after 4 weeks.
- Continue iron therapy for 2–3 months after Hb normalization.
- Excessive cow's milk intake is an important and preventable cause of IDA.
- Lack of response to oral iron requires evaluation for compliance, malabsorption, blood loss, or alternative diagnoses.