

A previously healthy 1-year-old girl is brought in for a routine evaluation. She drinks 6 glasses of whole milk a day but is a very picky eater. The girl is otherwise developmentally appropriate. She lives with her parents and pet dog in a house built in 2008. The patient's height and weight are at the 50th percentile for her age and sex. Temperature is 37 C (98.6 F), pulse is 118/min, and respirations are 21/min. Her physical examination is unremarkable. Complete blood count results are as follows:

Hemoglobin	10.5 g/dL
Mean corpuscular volume	70 fl
Red blood cells	2 million cells/mm ³
Reticulocytes	1.0%
Platelets	250,000/mm ³
Leukocytes	6,500/mm ³

Which of the following is the most appropriate next step in management of this child?

- ☐ A. Blood transfusion
- ☐ B. Colonoscopy
- ☐ C. Hemoglobin electrophoresis
- ☐ D. Oral iron therapy
- ☐ E. Serum creatinine

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Which of the following is the most appropriate next step in management of this child?

- ☐ A. Blood transfusion [0%]
- ☐ B. Colonoscopy [0%]
- ☐ C. Hemoglobin electrophoresis [8%]
- ☒ D. Oral iron therapy [90%]
- ☐ E. Serum creatinine [1%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

Iron deficiency anemia in children age <2

- Prematurity
- Lead exposure

Explanation:

User Id: 

Iron deficiency anemia in children age <2	
Risk factors	<ul style="list-style-type: none">• Prematurity• Lead exposure• Infants who consume:<ul style="list-style-type: none">○ Low-iron formula○ Cow's milk, soy milk, or goat's milk before age 1 year○ Exclusive breastfeeding after age 6 months• Toddlers who consume:<ul style="list-style-type: none">○ >24 ounces/day of milk○ <3 servings/day of iron-rich foods (eg, meat, fortified cereal)
Universal screening	<ul style="list-style-type: none">• Complete blood count in all children at age 9-12 months
Treatment	<ul style="list-style-type: none">• Empiric trial of iron supplementation

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Iron deficiency is the **most common** nutritional deficiency in children. An infant's iron stores are affected by the maternal iron stores, prenatal or perinatal hemorrhage, and the gestational age of the infant at delivery; also, prematurity is a risk factor for iron deficiency. Term infants usually have adequate iron stores for the first 6 months of life. After 6 months, inadequate dietary intake becomes the most important cause of iron deficiency. Early introduction or **excessive intake of cow's milk** is problematic as cow's milk is low in iron and can cause occult intestinal blood loss in infants. Children should not be started on cow's milk until age 1 year, and children age ≥ 1 year should consume <24 ounces/day.

Children with iron deficiency are often asymptomatic and may not have telltale symptoms such as pica, fatigue, or pallor. Therefore, universal screening is recommended by age 1 year, and the diagnosis is typically based on a complete blood count. A peripheral smear would be expected to show **microcytic hypochromic** erythrocytes, although it is usually not needed in the initial workup. Further testing is not necessary in children with the classic presentation. The most cost-effective approach to treatment is **empiric oral iron therapy**. Hemoglobin should be rechecked in 4 weeks; if the hemoglobin level has risen 1 g/dL, the oral iron therapy should be continued for 2-3 months after the hemoglobin normalizes to replete iron stores.

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(Choice A) Blood transfusions are rarely necessary in the treatment of dietary iron deficiency anemia, even when the hemoglobin is as low as 4 g/dL. Iron therapy should be sufficient.

(Choices B, C, and E) If the anemia does not resolve with empiric iron therapy and appropriate dietary changes, other causes must be considered. Hemoglobin electrophoresis (for hereditary anemias), colonoscopy (for lower gastrointestinal tract bleeding), or serum creatinine measurement (for renal disease) may be indicated.

Educational objective:

Iron deficiency anemia is common in infants and toddlers who drink excessive amounts of cow's milk. In addition to a decreased hemoglobin level, a low mean corpuscular volume and red blood cell count are also seen. Treatment consists of empiric oral iron therapy.

References:

1. **Diagnosis and prevention of iron deficiency and iron-deficiency anemia in infants and young children (0-3 years of age).**
2. **Evaluation of anemia in children.**

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