



FAST TRACK

It is surprising that a seemingly simple problem like iron deficiency can lead to a disease as serious as lead poisoning

Vitamin D, yes, but don't forget iron

In their article "Newborn Care: 12 beliefs that shape practice (But should they?)," Drs. Burke and Hall report that the only supplement exclusively breastfed infants require per evidence-based medicine is vitamin D (*J Fam Pract.* 2007;56:802-807). However, clinicians should not forget the importance of another nutrient: iron.

The American Academy of Pediatrics (AAP) recommends that complementary foods rich in iron be gradually introduced into the diets of exclusively breastfed infants starting at 6 months of age. This subject can be confusing because in medical school we were taught about the high bioavailability of iron in breast milk (50%). And although breastfed infants have much less iron deficiency anemia (IDA) than infants fed cow's milk, 15% to 30% of exclusively breastfed infants do develop IDA. (Verbal communication Betsy Lozoff, MD, Department of Pediatrics and Communicable Diseases, University of Michigan Medical School).

The reason iron sufficiency is important for infants is that IDA has been associated with behavioral, cognitive, and developmental deficits.^{1,2} These psychomotor changes occur after iron deficiency progresses to IDA, and reversal of the IDA does not appear to reverse them. (The deficits are not evident on routine clinical exam but found using an assessment tool called the Bayley Scales of Infant Development.)

In the longest study to date, children 11 to 14 years of age showed functional impairment in school despite correction of their IDA as infants compared to children who did not have anemia as infants.³

This highlights the need for the primary prevention of iron deficiency anemia since secondary prevention (ie, screening) is typically done with a hemoglobin or hematocrit, thus missing infants with iron deficiency without anemia who may subsequently progress to IDA.⁴ Primary prevention means supplementing breastfed infants starting at 6 months with iron-fortified cereal and/or iron-fortified formula per the AAP.

Louis A. Kazal, Jr., MD

Department of Community and Family Medicine,
Dartmouth Medical School;
Dartmouth-Hitchcock Medical Center
Lebanon, NH
Louis.A.Kazal.Jr@Dartmouth.edu

References

1. Lozoff B, Brittenham GM, Wolf AW, et al. Iron deficiency anemia and iron therapy effects on infant developmental test performance. *Pediatrics.* 1987;79:981-995.
2. Walter T, De Andraca I, Chadud P, Perales CG. Iron deficiency anemia: adverse effects on infant psychomotor development. *Pediatrics.* 1989;84:7-17.
3. Lozoff B, Jimenez E, Hagen J, Mollen E, Wolf AW. Poorer behavioral and developmental outcome more than 10 years after treatment for iron deficiency in infancy. *Pediatrics.* 2000;105:E51.
4. Kazal LA Jr. Failure of hematocrit to detect iron deficiency in infants. *J Fam Pract.* 1996;42:237-240.

Drs. Burke and Hall respond

We thank Dr. Kazal for his careful reading of our article. However, we do not feel there is any conflict between his observations and the information in our article.

In the article we contend that, for the healthy term newborn, Vitamin D supplementation is needed for breast milk to be a complete source of nutrition. Dr. Kazal confined his observations to babies 4 to 6 months of age and older. Though there is some disagreement about when a baby stops being a "newborn," we did not place the 4- to 6-month-old baby in

the “newborn” category.

With that said, we not only agree with what Dr. Kazal says about older babies, we think we can provide more evidence to support his argument. Iron deficiency uses a “triple whammy” to harm developing brains. The first blow is due to the iron deficiency itself. The second blow is that iron deficiency causes children to engage in pica, the eating of non-food substances like paint chips, dust, and soil.¹ Paint chips, dust, and soil are common sources of lead—a known neurotoxin.² The third blow is that iron-deficient children absorb lead more efficiently than children who are iron sufficient.³

It is continually surprising that a seemingly simple problem like iron deficiency can lead to a disease as serious as lead poisoning.

Bryan L. Burke, Jr., MD, FAAP
R. Whit Hall, MD, FAAP

University of Arkansas for Medical Sciences and
Arkansas Children's Hospital,
Little Rock
burkebryanl@uams.edu

FAST TRACK

References

1. Buchanan GR. The tragedy of iron deficiency during infancy and early childhood. *J Pediatr.* 1999; 135:413-415.
2. Kleigman RM, Behrman RE, Jensen HB, Stanton, BF. *Nelson Textbook of Pediatrics*. 18th ed. Philadelphia, PA: WB Saunders Company; 2007:2913.
3. Bradman A, Eskenazi B, Sutton P, Athanasoulis M, Goldman LR. Iron deficiency associated with higher blood lead in children living in contaminated environments. *Environ Health Perspect.* 2001; 109:1079-1089.