

## **New Insights For Nutrition Support Teams Regarding Iron Intake For Infants Can Target Fortification Or Complementary Food Strategies**

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**Introduction:** Iron deficiency anemia remains problematic in the United States—1 in 5 exclusively breast-fed infants may be iron deficient at four months. This is crucial for high risk infants being fed donated human milk which is typically 4-6 months lactational stage or older. During development, infants have an increased need for iron to produce new red blood cells, muscle cells, and for brain development.

**Hypothesis:** Infants fed donor human milk will have low intakes of iron and thus may require more fortification or complementary feedings to meet expert recommendations.

**Methods:** After IRB approval, a secondary analysis of a prospective longitudinal cohort on the Global Exploration of Human Milk study (GEHM) was performed. 30 mother-infant pairs from three geographically diverse regions (Shanghai, China; Mexico City, Mexico; and Cincinnati, Ohio United States) were selected. Iron content of breast milk was compared between the three groups at 2, 4, 13, 26, and 52 weeks of lactation. The breast milk was collected from the mothers via electric pump and the mineral iron concentration was determined by simultaneous elemental analysis.

**Results:** Cumulative mean intakes of iron at 2,4,13,26, and 52 weeks lactation were 0.34, 0.23, 0.18, 0.11, and 0.13 mg/day respectively. By 4 weeks of lactation, all three cohorts fell below the 0.27 mg 0-6-month RDI. There is a substantial decrease in the amount of iron in the breast milk at later lactational stages among all three regions,  $p < 0.0001$ . The cumulative 52-week mean was 0.13 mg iron per day, only approximately 1.2% of the 11 mg/day 6-12-month RDI for term infants. If preterm infants were to receive this as donor milk, they would receive less than 10% of the 2-6mg/day of iron recommended in current expert guidelines.

**Conclusion:** Mean infant iron intake fell significantly short of RDI and was much lower than previous research suggested. To improve infant iron intake, fortification strategies should be adjusted for the high-risk neonate receiving donor milk. Iron containing foods should be introduced to term infants by six months, such as blenderized chicken. Further study is needed to provide updated nutritional guidelines to combat iron deficiency anemia.

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