

## Prevent Iron Deficiency Anemia

### Introduction

Welcome to the Minnesota Department of Health, WIC Program module Prevent Iron Deficiency Anemia. In this module, we will address nutrition, feeding and supplementation recommendations to prevent iron deficiency anemia.

## Module

### Prevent Iron Deficiency Anemia

Why does anemia matter? Anemia, measured by a low hemoglobin, can cause developmental and growth delays in young children. Iron deficiency anemia during and after pregnancy can cause health problems for both mother and infant that can persist into the future. Iron deficiency anemia during pregnancy is associated with higher rates of prematurity, low birth weight, and stillbirth. Iron deficiency anemia during the third trimester can affect iron stores in the newborn that may persist through the first year of life, potentially affecting the child's development.

By the time iron deficiency anemia shows up in the blood, iron deficiency has been long withstanding and damage to brain development may already be occurring. WIC seeks to prevent iron deficiency anemia when possible.

Assessing dietary sources of iron and encouraging adequate intake is an important role for WIC. This module will focus on Nutrition, Feeding and Supplementation recommendations to **prevent** iron deficiency anemia.

You will find Nutrition, Feeding and Supplement recommendations for participants with low hemoglobin in the High Risk Modules, found on the New Staff Training webpage, and in the Justification for Risk Code 201.

### Infants

Let's start with infants. The first feeding recommendation for infants is to provide breastmilk and/or iron-fortified formula for the first year. Avoid cow's milk until 1 year of age.

Additionally, homemade formulas and plant based beverages like soy, coconut and rice milks do not provide adequate nutrition for infants.

### Infant Supplementation Recommendations

To ensure that breastfeeding infants will not be affected by iron deficiency, the American Academy of Pediatrics (AAP) has recommendations for supplementation. Iron in human milk is highly bioavailable,

but it contains little iron, so infants who are exclusively breastfed may be at increased risk of iron deficiency after 4 months of age. Parents and caregivers should be encouraged to talk with their health care providers about iron supplementation of 1 mg/kg per day of oral iron beginning at 4 months of age until appropriate iron-containing complementary foods are introduced into the diet. For the partially breastfed infant... If more than half of the infant's daily feedings are from human milk and he or she is not receiving iron-containing complementary foods, the recommendation remains the same as for fully breastfed infants. The American Academy of Pediatrics recommends that the preterm infant (<37 weeks' gestation) who is fed human milk should receive a supplement of elemental iron at 2 mg/kg per day starting by 1 month of age and extending through 12 months of age. This can be provided as medicinal iron or in iron-fortified complementary foods.

<http://pediatrics.aappublications.org/content/126/5/1040>

We also know that infants born to a mother with low hemoglobin are vulnerable to iron deficiency anemia. Refer to the Health Care Provider for evaluation.

### Infants, 3-4 months

Help parents of infants establish appropriate feeding practices to prevent iron deficiency. Here are some guidelines for the educational contact around 3 to 4 months of age:

Remind parents that infants need breastmilk and/or Iron-fortified formula for the first year.

Review any supplementation recommendations that are applicable to the child

Provide anticipatory guidance for starting solids.

Review the developmental signs for readiness to start solids.

When developmentally ready, gradually start introducing solid food by offering 1 to 2 teaspoons of a pureed or mashed food, and slowly increase.

Exclusively breastfed babies need to start on solid foods that are rich in iron and zinc sometime between 4 and 6 months. In general, about 2 servings per day of infant cereal (2 tablespoons/serving) or 1 to 2 ounces of meat per day is recommended to meet the need for these nutrients. Start with pureed meats. Avoid Baby food dinners which have less nutrition than plain meats.

### Feeding Infants and Toddlers Study, 2016

Here is a chart from the 2016 Feeding Infants and Toddlers Study. The FITS findings show that more infants than ever in the 21<sup>st</sup> century are falling short on iron. We know that iron is a critical nutrient to support learning ability and brain development. The percentage of infants between 6 and 12 months old who do not consume the recommended amount of iron has increased from 7.5 percent in 2002 to 18 percent in 2016. Infants need to consume dietary sources of iron around 4 to 6 months of age to achieve adequate intakes and avoid the risk for iron deficiency. However, the research indicates that consumption of iron-rich foods is less than ideal and in part explains the widening iron gap. About 95% of babies over 6 months do not eat beef, an excellent source of iron, and infant cereal consumption, the

long-standing leading food source of iron for infants, is at an all-time low with only slightly more than half now eating it. Plus, only three percent of 6- to 12-month-olds received an iron supplement.

### Infant Cereal

On the last slide, we saw that consumption of infant cereal is decreasing. Parents are more frequently expressing concerns about infant cereal:

Carbohydrates are now frequently considered “empty calorie foods” on popular blogs and websites, so parents may be avoiding infant cereal

And Rice is associated with risk of arsenic.

What can WIC do?

Remind parents that infant cereal is an excellent source of iron, usually well tolerated and easy to mix to the appropriate consistency for infants.

Show parents the variety of infant cereals available from WIC. If they would like to avoid rice, there are oatmeal, multigrain, wheat and barley options.

### Infants, 6-7 months

Here are some guidelines for the educational contact around 6 to 7 months of age:

Remind parents that infants need breastmilk and/or Iron-fortified formula for the first year.

Review any supplementation recommendations that are applicable to the child

Discuss appropriate complementary foods. Assure that the infant is receiving iron-rich foods. The iron intake between 6 and 12 months of age should be 11 mg/day. Encourage red meat and vegetables with higher iron content. Explain how food textures can be advanced to match the child’s developmental stages. At this age, meat is usually pureed. Suggest ways to increase child’s acceptance of meat, such as adding pureed fruits and vegetables to the meat. Mashed cooked beans, eggs and tofu are options as child develops.

Suggest how iron-rich foods such as meats can be pureed, mashed, chopped or shredded based on the child’s developmental skill.

Encourage healthy food choices and avoid foods high in calories, sugar, salt and fat. Babies don’t need French fries, sugary cereals and cookies!

Introduce the cup to begin the transition from using a bottle. Offer a total of 4-8 ounces per day of plain water in a cup. Offer NO sugar-sweetened beverages such as soda pop, Kool-Aid, fruit drinks, sports drinks, or sweetened teas. Sugar-sweetened beverages add extra calories and might displace formula and breastmilk.

### **Baby Led Weaning**

Baby Led Weaning is a popular trend in infant feeding. Baby Led weaning is a method of starting complementary foods in which the baby self-feeds from the start. Instead of offering pureed foods from a spoon, soft pieces of food – either cut into long stick-like shapes, or diced into small pea sized pieces - are offered. There are positive aspects to this method, such as baby has control over how much he eats. One concern with Baby Led Weaning – Important nutrients may be missed. The most important reason to start complementary foods is to provide additional sources of iron and zinc in the diet. Typical first foods that are offered with Baby Led Weaning are soft fruits and vegetables such as avocado, banana and cooked sweet potato. All healthy foods, however they are not significant sources of iron and zinc.

Here are some suggestions on ways to include iron rich foods when Baby Led Weaning is used:

Encourage parents to consider offering infant cereal and pureed meats by a spoon along with allowing the baby to self-feed other soft foods.

Discuss options for iron-rich, soft finger foods that can be offered when the child is developmentally ready. Suggest cooked, dry beans like pinto beans, diced eggs, ground hamburger, or very tender and moist roast beef shreds.

### **Infants, 9-10 months**

Here are some guidelines for the educational contact around 9 to 10 months of age:

Remind parents that infants need breastmilk and/or Iron-fortified formula for the first year. Cow's milk should not be offered before the child turns 1 year old because it may cause intestinal bleeding. The Information System will allow issuance of cow's milk before 12 completed months of age. The CPA should carefully consider the individual child's hemoglobin history and whether the child is currently consuming iron containing foods before providing cow's milk before 12 completed months of age.

Review any supplementation recommendations that are applicable to the child

Discuss developmentally appropriate foods for this age. Review iron rich table foods. Infants are usually developmentally ready for ground or finely chopped meats by this age.

The child will soon rely on solid foods for iron as they transition to cow's milk at a year of age. Establish a Meal and snack routine to build healthy habits.

Encourage practice with the cup so child is ready to wean from the bottle by 12-14 months.

### **Children, 1-2 years old**

Here are some guidelines for the educational contact for 1 to 2 years of age:

Wean from the bottle. A toddler can easily consume too many beverages from a bottle, displacing foods from their diet.

Milk is a poor source of iron. Plus, too much milk may decrease toddler's appetite for other foods. Child's total milk consumption should be limited to 2 cups (16 fluid ounces) per day to assure child has appetite for other foods. A child who is allowed to drink milk from a sippy cup throughout the day is at risk of filling up on milk and not eating solids well. Encourage only water in the cup between meals and snacks.

One- to 2 year olds have small tummies and only eat small portions at a time. They need to eat 5 to 6 times/day. Regularly planned meals and snacks help assure they can get the nutrition they need. Usually starting at a year of age, children get all their iron from foods.

Suggest ways to offer iron-rich foods to toddlers. Soft, moist meats, beans, WIC cereal and iron rich vegetables are good sources at this age.

Encourage whole fruit over juice. Limit juice to ½ cup/day

Continue to avoid sugar sweetened beverages so the child doesn't develop a preference for them.

### Children, 3-5 years old

Here are some guidelines for the educational contact around 3 to 5 years of age:

Continue to evaluate quantity of milk consumed and recommend limiting to 2 cups/day.

Stress importance of meal and snack routine

What iron rich foods is the preschooler eating?

Get in the habit of healthy snacking

Encourage water over juice and sugar sweetened beverages

### Pregnant Women

It is hard to get enough of key nutrients from food during pregnancy alone. A prenatal vitamin/mineral supplement is recommended for all pregnant women.

If the woman is already taking a prenatal supplement, assure that it contains Iron - 27 mg is the recommended amount. Gummy prenatal vitamins usually do not have iron.

If the woman is not taking a prenatal supplement, suggest that she obtain a prescription for a supplement from her health care provider right away. MA will cover a prenatal vitamin and many private health insurance plans will also cover the prescribed prenatal supplement.

Nausea and vomiting can greatly impact a woman's intake and iron status. Review suggestions for managing nausea and vomiting.

Encourage a regular meal and snack routine. Is she skipping meals or eating out of the vending machine at work? Use your PCS skills to help her identify ways to eat more regularly!

Is she eating iron rich foods every day? How might she incorporate more iron rich foods into her diet?

Ask what beverages the woman is drinking. Sports drinks and coffee drinks are very popular and can sneak in lots of extra calories, displacing healthy food and beverage options. Encourage water.

### **Breastfeeding/postpartum women**

After delivery, ask what the health care provider recommended for supplements. Many physicians encourage women to continue taking the prenatal supplement.

As during pregnancy, evaluate the woman's meal and snack routine and what iron rich foods she is eating. Continue to recommend water over sugar sweetened beverages.

## **End**

### **End Slide**

Thank you for reviewing this module presented by the Minnesota Department of Health, WIC Program. Special thanks to the St. Paul/Ramsey County WIC Program for contributing to this module.