

FEBRUARY / 2024

Laboratory Services

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**NATIONWIDE
CHILDREN'S**

When your child needs a hospital, everything matters.

What Is Iron Deficiency Anemia?

The most common cause of anemia worldwide is iron deficiency. Iron is needed to form hemoglobin. Iron is mostly stored in the body in the hemoglobin. About 30 percent of iron is also stored as ferritin and hemosiderin in the bone marrow, spleen, and liver.

What Causes Iron Deficiency Anemia?

Iron deficiency anemia can be caused by:

Diets low in iron. Iron is obtained from foods in our diet, however, only 1 mg of iron is absorbed for every 10 to 20 mg of iron ingested. A child unable to have a balanced iron-rich diet may suffer some degree of iron deficiency anemia. It can happen in infants around one year of age.

- Body changes. An increased iron requirement and increased red blood cell production is required when the body is going through changes, such as growth spurts in children and adolescents.
- Gastrointestinal tract abnormalities. Malabsorption of iron is common after some forms of gastrointestinal surgeries. Most of the iron taken in by dietary route is absorbed in the upper small intestine. Any abnormalities in the gastrointestinal (GI) tract could alter iron absorption and result in iron deficiency anemia.
- Blood loss. Loss of blood can cause a decrease of iron and result in iron deficiency anemia. Sources of blood loss may include GI bleeding, menstrual bleeding, or injury.

What Are the Symptoms of Iron Deficiency Anemia?

The following are the most common symptoms of iron deficiency anemia. However, each child may experience symptoms differently. Symptoms may include:

- Abnormal paleness or lack of color of the skin
- Irritability
- Lack of energy or tiring easily (fatigue)
- Increased heart rate (tachycardia)
- Sore or swollen tongue
- Enlarged spleen
- A desire to eat peculiar substances, such as dirt or ice (also called pica)

How Is Iron Deficiency Anemia Diagnosed?

Iron deficiency anemia may be suspected from general findings on a complete medical history and physical examination of the child, such as complaints of tiring easily, pale skin and lips, or a fast heartbeat (tachycardia). Iron deficiency anemia is usually discovered during a medical examination through a blood test that measures the amount of Hemoglobin, Ferritin and the amount of iron in the blood. In addition to a complete medical history and physical examination of the child, diagnostic procedures for iron deficiency anemia may include:

- Additional blood tests for iron

- Bone marrow aspiration and/or biopsy. A procedure that involves taking a small amount of bone marrow fluid (aspiration) and/or solid bone marrow tissue (called a core biopsy), usually from the hip bones, to be examined for the number, size, and maturity of blood cells and/or abnormal cells.

Treatment for Iron Deficiency Anemia

Specific treatment for iron deficiency anemia will be determined by your child's doctor based on:

- The child's age, overall health, and medical history
- Extent of the anemia
- Cause of the anemia
- The child's tolerance for specific medications, procedures, or therapies
- Expectations for the course of the anemia

Treatment may include:

- **Iron-rich diet.** Eating a diet with iron-rich foods can help treat iron deficiency anemia. Good sources of iron include the following:
 - Meats, such as beef, pork, lamb, liver, and other organ meats
 - Poultry, such as chicken, duck, turkey, (especially dark meat), and liver
 - Fish, such as shellfish, including clams, mussels, and oysters, sardines, and anchovies
 - Leafy greens of the cabbage family, such as broccoli, kale, turnip greens, and collards
 - Legumes, such as lima beans and green peas; dry beans and peas, such as pinto beans, black-eyed peas, and canned baked beans
 - Yeast-leavened whole-wheat bread and rolls
 - Iron-enriched white bread, pasta, rice, and cereals
- **Iron supplements.** Iron supplements can be taken over several months to increase iron levels in the blood. Iron supplements can cause irritation of the stomach and discoloration of bowel movements. They should be taken on an empty stomach or with orange juice to increase absorption. They are much more effective than dietary interventions alone. In cases of malabsorption or intolerance, IV iron may be needed.

New Provider CE/CME Courses Offered!

Pediatric patients require a unique medical approach, as significant differences exist in this patient population in disease frequencies, specimen collection, test performance, and test interpretation. The provider education courses are offered by experts from their technical areas to provide your staff with information and educational topics to provide best outcomes for your patients. To learn more please email: Laboutreachsales@nationwidechildrens.org
Pediatric Educational CE/CME Opportunities

Gastrointestinal Film Array Panel: Decoding Multiplex Testing

- Review the epidemiology of acute gastroenteritis
- Identify testing available for acute gastroenteritis including multiplex PCR
- Evaluating the meaning of positive targets provided by multiplex testing in the pediatric patients

Update on Testing For STIs in Adolescents and Children

- Review the epidemiology of select STIs in adolescent patients
- Identify testing methodologies for STIs
- Apply current consensus recommendations concerning STI testing

Diagnosis of Respiratory Virus Infections

- Review the epidemiology of viral respiratory agents
- Identify the diagnostic tools and factors affecting test performance
- Evaluating current molecular assays for diagnosis of upper respiratory tract infection

Vitamin D: Why All the Hype?

- Physiological function of Vitamin D
- Differentiate the forms and functions of Vitamin D
- Critically evaluate claims of Vitamin D efficacy for extra-skeletal benefits

Lead and Lipid Testing

- Compare the historical changes in what is considered elevated blood lead levels
- Describe ways to identify, treat and prevent lead poisoning
- Understand the process for reporting blood lead results to government entities
- Review guidelines for screening children for lipid disorders

Drug Testing in the Pediatric Patient

- Know how & which tests to order to detect drugs in patients
- Understand the basics of how drugs are measured in the blood & urine
- Be able to accurately interpret drug screen results

Hospital CE/CME Educational Opportunities

Chromosome Analysis & Microarray Analysis

- Explain the methodology difference between chromosome analysis vs. microarray analysis
- Discuss the different types of chromosomal abnormalities detected/missed by each of these two tests
- Review appropriate patient indications for each of these two tests

Carrier Screening and Newborn Screening

- Describe genetics of Cystic Fibrosis (CF), Spinal Muscular Atrophy (SMA) and Fragile X
- Discuss ACOG and ACMG recommendations for carrier screening of CF, SMA and Fragile X
- Discuss importance of family history and carrier screening
- Discuss newborn screening in Ohio

Cytogenetic Testing on Products of Conception (POC)

- Review the rate and types of cytogenetic abnormalities seen in POC specimens
- Discuss the implications of POC cytogenetic abnormalities for patient's future pregnancies
- Describe various cytogenetic tests available for POC specimens
- Discuss POC sample type and volume required for cytogenetic testing

The ABC's of POC's, Placentas and the Perinatal Autopsy

- Describe the role of POC/Placental examination and specimen triage
- Describe the role of perinatal autopsy(fetopsy/autopsy) including impact on family and future pregnancies
- Describe procedural information and reporting of perinatal autopsy(fetopsy/autopsy)

Did You Know?

Cold Weather Specimen Storage

Now that winter has arrived, it is important that samples placed in a lockbox outdoors prior to transport to the laboratory be maintained at the appropriate temperature. If refrigerated samples are stored in the lockbox, a non-frozen cold pack stored at room temperature should be placed in the lockbox to maintain the samples at the refrigerated temperature. The cold pack should not be frozen, since you do not want refrigerated whole blood samples to freeze. Many laboratory tests performed at Nationwide Children's Laboratory Services require adequate refrigeration of specimens. By following this lockbox practice, you will help insure the integrity of the samples and ultimately obtain reliable laboratory results.



Outdates on Viral Media

A current circulating lot of viral media that is being provided to clients outdated on January 31, 2024. Please review your viral media closely and place additional orders in February as needed.



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Lab Account Representatives are available via email to assist with any questions or concerns.

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