

ON TRACK WITH BARIX

Support to Keep You On Track With a Healthy Lifestyle

Building an Iron-Rich Diet



Facts, foods, & forms to keep you focused & strong

Are you feeling run down or cold? Are you losing hair or craving ice? A low iron level may be to blame. Empower yourself with information about preventing and treating this common deficiency. Then work with your doctor and nutritionist to insure that you are choosing the right foods and supplements to promote peak health.

After bariatric surgery, it is important to monitor iron status for several reasons. Less food, and therefore less iron, is consumed; meats (especially iron-rich red meats) can be difficult to eat after surgery; gastric acid which enhances iron absorption is decreased (gastric bypass and sleeve gastrectomy); and gastric bypass surgery limits the intestinal area for iron absorption. It's easy to see why this is a nutrient that you have to keep an eye on.

Let's start with some basic iron facts. Iron is a mineral essential for life. It is an integral part of many proteins and enzymes needed for oxygen transportation throughout the body and regulation of cell growth and differentiation. About two-thirds of the body's iron is found in hemoglobin, the protein in red blood

cells that carries oxygen to tissues. Iron is also found in myoglobin, a protein that helps supply oxygen to muscle, and in enzymes used in biochemical reactions. Because of its importance, your body has a reserve of iron stored in the liver, spleen, and bone marrow.

The body is a sacred garment.

Martha Graham

Iron is found readily in many of the foods that we eat. There are two forms of dietary iron; heme and nonheme. Heme iron is found in animal food sources, such as red meats, fish, and poultry. Nonheme iron is found in plant foods such as lentils, dark green leafy vegetables and iron-fortified foods. Both forms of dietary iron are important. Heme iron is more efficiently absorbed than nonheme iron, but nonheme iron is found in larger amounts.

If iron intake and absorption do not meet the body's daily need for iron, the negative balance begins to impact the body. Iron deficiency occurs in stages. In the first stage,

the body begins to deplete iron stores. Hemoglobin and hematocrit levels are normal in this first stage, but ferritin (a protein that binds to the body's iron stores) levels indicate diminished body stores. In the second stage, iron levels in the blood begin to deplete and the production of hemoglobin declines. A serum iron test will be low at this stage. Finally, when iron stores have been substantially depleted and hemoglobin production isn't able to be maintained, iron deficiency anemia occurs and symptoms become apparent. Hemoglobin and hematocrit levels will be low at this stage. It is important to recognize that by the time low hemoglobin or hematocrit levels are discovered, iron stores have been significantly depleted and will need replenishment.

Physical symptoms of iron deficiency anemia may include:

- Fatigue
- Pale skin appearance
- Poor work performance, impaired learning ability
- Decreased immunity; more susceptibility to infection
- Hair loss

- Spoon-shaped nails
- Difficulty maintaining body temperature
- Glossitis (an inflamed tongue)
- A desire to chew on ice or eat nonfood substances such as dirt or clay

Although iron is abundant in foods that most of us eat, adults only absorb 10–15% of overall dietary iron. Iron absorption increases when body stores are low and decreases when they are high to prevent toxicity. Heme iron, from animal sources, is better absorbed (15–35%) than nonheme iron from plant food sources (2–20%).

If you are diagnosed with iron deficiency, an iron supplement is usually recommended. Iron supplements come in several forms. The most common are ferrous sulfate, ferrous gluconate, and ferrous fumarate. These iron supplements are available in a tablet, chewable or liquid form. Ferrous fumarate is the best-absorbed form of iron, although it may be more expensive than the

other two common forms. Enteric-coated or extended-release forms are not well absorbed after surgery and should not be used. Chewable or liquid forms may be better absorbed after bariatric surgery.

Iron supplements can be hard on the digestive system. Many people experience constipation (a few go the opposite route with diarrhea), stomach upset, nausea and vomiting. Taking iron supplements before bed may lessen these discomforts. The amount of iron found in a multi-vitamin/mineral supplement is minimal and doesn't cause these symptoms in most people. It is important to take a separate iron supplement only under the direction of your doctor or nutritionist when lab tests indicate a deficiency. Follow-up lab testing to check progress and direct treatment is required; just like

most things in life, too much of a good thing can be bad—unmonitored iron supplementation can lead to toxicity. Your doctor will also want to test other nutrients related to iron deficiency such as folic acid, vitamin B-12 and vitamin A.

Take iron supplements on an empty stomach, if tolerated, with a small glass of orange or other citrus juice. Do not take other medications, multi-vitamin/mineral supplements or calcium supplements at the same time (30 minutes before or after). Coffee, tea, dairy products, fiber, antacids, egg yolk and other dietary factors decrease the absorption of iron.

Hope you are convinced that including iron-rich foods in your daily diet, having regular follow-up visits and lab testing, and taking vitamin and mineral supplements as recommended are worthwhile. It's your health—take good care of it.



SELECTED FOOD SOURCES OF HEME IRON

Food	Milligrams per serving
Chicken liver, 3½ ounces	12.8
Oysters, breaded and fried, 6 pieces	4.5
Beef, chuck, lean only, 3 ounces	3.2
Clams, breaded, fried, ¾ cup	3.0
Beef, tenderloin, 3 ounces	3.0
Turkey, dark meat, 3½ ounces	2.3
Beef, eye of round, 3 ounces	2.2
Turkey, light meat, 3½ ounces	1.6
Chicken, leg, meat only, 3½ ounces	1.3
Tuna, 3 ounces	1.1
Chicken, breast, 3 ounces	1.1
Halibut, cooked, 3 ounces	0.9
Crab, blue crab, 3 ounces	0.8
Pork, loin, broiled, 3 ounces	0.8
Shrimp, 4 large	0.7

SELECTED FOOD SOURCES OF NONHEME IRON

Food	Milligrams per serving
Ready-to-eat cereal, 100% iron fortified, ¾ cup	18.0
Oatmeal, instant, fortified, 1 cup	10.0
Soybeans, boiled, 1 cup	8.8
Lentils, boiled, 1 cup	6.6
Beans, kidney, boiled, 1 cup	5.2
Beans, lima, boiled, 1 cup	4.5
Beans, navy, boiled, 1 cup	4.5
Ready-to-eat cereal, 25% iron fortified, ¾ cup	4.5
Beans, black, boiled, 1 cup	3.6
Beans, pinto, boiled, 1 cup	3.6
Molasses, blackstrap, 1 tablespoon	3.5
Tofu, raw, firm, ½ cup	3.4
Spinach, fresh, boiled, drained, ½ cup	3.2
Black-eyed peas, boiled, 1 cup	1.8
Grits, white, enriched, quick, 1 cup	1.5
Raisins, seedless, packed, ½ cup	1.5
Whole wheat bread, 1 slice	0.9
White bread, enriched, 1 slice	0.9

Recipes

Black Bean Chili

- 1 Tbsp. olive oil
- 1 onion, chopped
- 2 red bell peppers, seeded and chopped
- 1 jalapeno pepper, seeded and minced
- 10 fresh mushrooms, sliced
- 6 roma tomatoes, diced
- 1 cup fresh corn kernels
- 1 teaspoon black pepper
- 1 teaspoon ground cumin
- 1 Tbsp. chili powder
- 2 (15 oz) cans organic black beans, drained and rinsed
- 1 ½ cup chicken broth

Heat oil in large saucepan over medium-high heat. Sauté onions, red bell peppers, jalapeno pepper, mushrooms, tomatoes and corn for 10 minutes or until the onion is translucent. Stir in the remaining ingredients, bring to a boil.

Remove 1 ½ cups of the soup and puree. Stir back into saucepan of soup. Enjoy. Makes 8 servings. Using canned organic black beans eliminates 387 mg of sodium per serving.

NUTRITION INFORMATION PER SERVING: 173 calories, 9 grams protein, 3 grams fat, 29 grams carbohydrate, 124 mg sodium, 2.2 grams iron.



Spinach & Steak Salad

- 2 cups fresh spinach, rinsed and dried
- 2 Tbsp. dried cherries, no-added-sugar
- 2 Tbsp. chopped walnuts
- ¼ tomato, cut into wedges
- few thin slices of red onion
- 5 oz beef tenderloin steak, thinly sliced

Arrange spinach on plate. Sprinkle with cranberries and walnuts. Arrange tomatoes, onions and steak on top. Serve with your favorite light dressing. Makes 2 servings.

NUTRITION INFORMATION PER SERVING: 224 calories, 15 grams protein, 15 grams fat, 5 grams carbohydrate, 59 mg sodium, 1.8 mg iron.

In the News

Many people report a lack of interest in food following gastric bypass surgery. If busy, they easily forget to eat and hours pass before they realize that they haven't even thought of food.

As researchers continue to unravel the complex mechanisms related to obesity and weight loss, studying this phenomenon may help. In fact, a recent study published in the *Annals of Surgery* found a biological basis for it. They evaluated both brain activity and the desire to eat when presented with high and low calorie food cues before and after gastric bypass surgery.

After surgery, the key areas of the brain involved with reward from high-calorie palatable food cues (think pepperoni pizza and hot fudge sundaes) had decreased activity. These changes in brain activity were consistent with the participants' reporting of decreased desire to eat the foods as presented.

This study provides more evidence that the mechanisms by which people lose weight after gastric bypass surgery go beyond restriction and malabsorption. The way the body responds to food cues is actually changed.

This mechanism is in direct contrast to those who decrease caloric intake in an attempt to lose weight without surgery—the desire to eat upon seeing palatable food cues increases. Learning how the brain's reward system is changed after surgery will provide more information to help develop prevention and treatments for obesity in the future.

REWARD YOURSELF



This month, you could earn a SPECIAL GIFT for your "It Worked For Me" tips or recipes! Just submit as many recipes and "It Worked For Me" tips as you like. The most original and creative will be awarded a special gift from our online store. Include your name and contact info with your entry—make sure your recipes follow Barix nutritional guidelines.

Tips must be submitted by September 30, 2011. Please send comments, ideas, recipes and "It Worked For Me" tips to Deb Hart, RD, LD at dhart@foresthealth.com.

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RECONSTRUCTIVE SURGERY

To receive a **FREE RECONSTRUCTIVE SURGERY** guide, call 800-282-0066 or send us an email at rc@barixclinics.com with your name and contact information. Our reconstructive surgery program is currently performed at our centers in Michigan, Ohio, and Pennsylvania. **Call us today for more information!**

SHARE YOUR SUCCESS

Tell us about how your life has changed as a result of your weight loss surgery. Your story may be printed in this publication or on one of our websites and can serve as an inspiration to others.

Submit your story online (http://www.barixclinicsstore.com/share_your_story.html).

We'd love to hear from you.

QUESTIONS ABOUT FINANCING YOUR SURGERY?

Call a Barix Patient Service Representative at 800-282-0066

It Worked for Me

THE BARIX FORUMS are about people supporting each other through tough times and WOW moments. No one can quite understand what you are going through like someone who has just walked in your shoes. Here is just one example of a posting and the responses (edited) he received. Take a few minutes to check out the forums today. forums.barixclinics.com.

POSTING: I'm finding that I am really craving ice cream! Anyone know of a good sugar-free ice cream or "ice creamish" treat? I've been eating the sugar-free Popsicles but want something different—any ideas?

RESPONSE 1: I make my own: 1 container of Boost (for diabetics), 1/4 cup of yogurt (any flavor—I like strawberry), a package of Carnation Instant Breakfast (chocolate), a spoonful of peanut butter (SF or low sugar), 1 package of SF hot cocoa. Put in blender and blend, then freeze. Lots of protein and almost as good as ice cream.

RESPONSE 2: If you like chocolate — LOL — try the sugar-free Fudgesicles in the frozen section. They are a great treat.

RESPONSE 3: I'm completely OBSESSED with protein ice cream made from a fellow WLS patient, Eggface. Her blog is amazing; she has GREAT recipes. My fiance loves them also, and we haven't bought ice cream in FOREVER. Here is one recipe from her site:



SHELLY'S STRAWBERRY CHEESECAKE PROTEIN ICE CREAM

www.theworldaccordingtoeggface.blog.com

- 1/2 cup mashed strawberries
- 2 Tbsp. whipped cream cheese
- 1 Tablespoon sugar-free vanilla Torani Syrup
- 1 cup milk
- 2 scoops vanilla protein powder
- 1/4 cup chopped strawberries

Mix mashed strawberries, sugar-free syrup and cream cheese together. Mix together milk and protein and then blend with strawberry cream cheese mixture in food processor or blender. Pour into ice cream maker. Follow your machine's instructions for freezing. Five minutes before done, add chopped strawberries. Place in freezer for one hour or longer. Top with an optional squirt of sugar-free whipped cream.

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for you or a friend. Call us at 800-282-0066, or log on to www.barixinfo.com

