

RECOGNIZING AND WORKING WITH ANEMIA NATURALLY

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Definition of anemia: not enough red blood cells to carry oxygen to supply the body's tissues. Red blood cells are made in the bone marrow of long bones and have a lifespan of approximately 3 months. After this time, they start looking ragged around the edges and the spleen filters them out of the blood and breaks them down, recycling the parts.

Prevalence: The most common kind of anemia, iron deficiency anemia, affects 30% of the world's population. Common in young children and newborns, but also extremely common in adults.

United States: 5-12% of non-pregnant women; 1-5% of men have iron deficiency anemia. Some groups are at greater risk (19% of Black women and 22% of Mexican-American women living in the US have iron deficiency anemia per the CDC).

[<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5140a1.htm>]

7% of toddlers age 1-2 years (increased vulnerability to lead poisoning → developmental delays and sometimes permanent effects, and interrelationship with lead poisoning).

Even iron deficiency without anemia is linked to cognitive developmental deficits in children and adolescents. Vegetarian children often have similar Hb to omnivore children but low ferritin. Effects on learning and behavior that may not be corrected when the iron deficiency is – windows of development – children age 5 with **corrected** iron deficiency had significantly poorer performance on neurodevelopmental testing.

Other functions of iron: cofactor in many enzymatic reactions, including enzymes that white blood cells use to digest invaders; aids in assimilation of B vitamins. Cytochromes: heme proteins that generate ATP (all cells).

Signs and Symptoms of Anemia: weakness, fatigue, drowsiness, chest pain, fainting, shortness of breath (especially on exertion), vertigo or dizziness, headache, tinnitus, amenorrhea, loss of libido, seeing spots (not floaters), miscellaneous GI complaints (gas, heartburn, nausea, diarrhea or constipation!), dark or tarry stools, red blood in stools, heavy menstrual bleeding; weight loss, numbness/tingling in hands and feet (B-12/folate deficiency), pallor (in severe anemia); pica (craving to eat non-foods such as ice or earth). Jaundice, dark ("Coca-cola") urine can be markers for hemolytic anemia. Most common cause of hair loss is anemia.

Risk factors for anemia: vegetarian/vegan diet, alcoholism, cancer, autoimmune disease, chronic inflammatory disease. Older age, low ferritin and male sex are markers of increased risk for GI malignancy (cancer) in iron-deficiency anemia.

TYPES AND CAUSES OF ANEMIA:

"Anemia is not a diagnosis; it is a manifestation of an underlying disorder. Thus, even mild, asymptomatic anemia should be investigated so that the primary problem can be diagnosed and treated." (Merck Manual 18th ed., p. 1032)

Types of anemia:

1. Iron deficiency:

How do you become iron deficient? You don't take in enough iron, you don't absorb what you take in, or you lose what you had due to bleeding.

Also, you can be unable to utilize the iron you have - this occurs in anemia induced by lead poisoning, because lead blocks the incorporation of iron into hemoglobin

Premenopausal women: menstrual blood loss and pregnancy-related iron loss are the most common causes of iron deficiency.

Bleeding in the GI tract is found in 50% of cases of iron deficiency anemia. Never assume this is not the cause. It may be tempting to assume that the client/patient is not absorbing minerals optimally due to GI deficiency, which we see in many people and which we can work with well in the herbal world. However, treating this and missing the true cause could result in great harm to your client.

****In men and in post-menopausal women, hidden bleeding in the GI tract is the most common cause.**

2. Macrocytic anemia: due to B-12 and/or folate deficiency - this is commonly associated with malabsorption, often caused as a side effect of prescription drugs, as well as gastritis or destruction of gastric mucosa, celiac disease, parasites, alcoholism. Of course, these may be deficient in vegetarian and vegan diets as well.

3. Anemia of Chronic Disease - poorly understood. Occurs in autoimmune disease, chronic kidney disease (kidneys make erythropoietin that stimulates bone marrow to make RBCs)

ASSESSING CAUSE AND SEVERITY:

Brief review of factors on lab testing and CBC reports (Complete Blood Count)

Hemoglobin/hematocrit: Two measures of the severity of the anemia. Note: if hemoglobin and hematocrit are normal, the client is NOT anemic, even if other numbers on the CBC/iron status are off. Also note: different normal levels for men and women.

MCV: cell size

MCH and MCHC: cell color; amount of hemoglobin per cell

Ferritin: most important measurement of iron status; NOT serum iron. Ferritin is the storage form of iron in the blood. NOTE: "functional"/optimal range of ferritin is 50+. Also note: ferritin is an acute-phase marker as well and will elevate during acute infection, wait 1 month after infection to assess accurately.

GI bleeds are diagnosed by a test called a **hemoccult or FOBT (fecal occult blood test)** which is a very simple, in-office test. If positive, bleeding is occurring somewhere along the GI tract. If the cause is not already known, and sometimes if it already is, the client may need to be referred to a gastroenterologist to find the bleed.

Reticulocyte count: shows whether client is making new red blood cells to replace those lost in the anemia

Questions to ask patients/clients with current or previous diagnosis of anemia:

1. What kind of anemia (iron deficiency or another kind?) (If can't answer, ask if ever given iron for the condition)
2. Why do you have anemia?

If the patient/client can't answer and you can't figure it out from talking to them:

1. If you're not trained in diagnosis, send them back to their doctor (or the ever popular alternative, refer them to a better doctor)
2. If you are trained in diagnosis, don't make assumptions!

Further assessment:

Diet: How often are they eating red meat? (2x/week should be enough to prevent frank anemia under normal circumstances.) How often eating beans/greens? (Some people do not absorb non-heme iron very well, especially if they have upper GI insufficiency.)

Digestive: Black or bloody stools? GI distress that could be a symptom of an illness causing malabsorption?

Menstrual: Heavy menses? number of days bleeding? number of pads/day or per hour? (1 pad or more per hour is very heavy, hemorrhage-level bleeding). Intermenstrual bleeding ("spotting")? How often are periods? Disordered, frequent, heavy bleeding with anemia is particularly common at perimenopause, but can happen at any time. Also, anemia/menorrhagia is a vicious cycle – anemia may cause heavy menstrual bleeding, resulting in more iron loss. This kind of anemia is commonly treated with birth control pills or sometimes with progestins to force shedding of the uterine lining (in the allopathic world). It could be treated with hemostatics and hormonally-directed strategies in the natural medicine world.

TREATMENTS:

Nutritional: IRON varies in absorption depending on which kind of supplement, what food it is taken with; iron sulfate is particularly constipating. Absorption also varies widely depending on iron status; the more anemic you are, the more you absorb (unless you are anemic due to being unable to absorb iron). I have had success with a combo of **iron fumarate/succinate/aspartate, Vit. C, B-12, folate, dandelion root, nettles, and yellow dock.**

325mg of iron sulfate provides **120mg** of elemental iron of which absorption varies but could only be 10% (12mg). Usual therapeutic dosage of iron in anemia is 150-300mg elemental iron/day in 3 divided doses (50-100mg/dose). Smaller dose may be given if GI intolerance occurs, but correction will occur more slowly. One popular cult-favorite liquid herbal iron supplement = 10mg elemental iron/10ml dose.

When this same supplement was studied study: taking 10ml TID of liquid herbal-iron supplement, median ferritin went from 13 to 20 in 16 weeks. (Optimal = 50, making this an underwhelming result.) Baseline RBC counts were normal and did not change during study. However, only 10% had adverse (mild GI) effects.

Elemental iron is the total amount available for absorption.

Carbonyl has 100% elemental iron (but is only absorbed at the rate that gastric acid is produced). Ferrous fumarate has approximately 33% elemental iron.

Ferrous sulfate has 20% elemental iron. Ferrous gluconate has 12% elemental iron.

Chelated iron may be easiest to absorb, then fumarate and gluconate, with sulfate being most constipating and side-effect prone.

RDA for iron: 10mg for men and non-menstruating women; 18mg/day for menstruating women

46-60mg/day for pregnant women. Women with many pregnancies in rapid succession may be especially at risk; even more so if birth involves much blood loss.

Total body content = 3-4g normally (1g storage iron). Ferritin is measured in ng. Symptoms of iron excess disease at 10g; can go up to 50g! Normal loss = 1mg/day.

Food sources of iron: beef liver, beef, oysters, tofu, blackstrap molasses, amaranth, lentils, chard, dulse, beans, dandelion greens, pumpkin seeds, spinach. **Note:** Heme iron (in meat) is better absorbed (15-30% of dietary intake) than vegetable/non-heme iron (2-20%).

Breast milk (50% absorbed) vs cow milk 10%. Formula is fortified with iron so it contains 10-20x the iron of cow milk... still, common for EBF children to become anemic around 9-12mo.

http://huhs.harvard.edu/assets/File/OurServices/Service_Nutrition_Iron.pdf

DIETARY STRATEGIES:

For iron deficiency anemia:

High red meat diet; absorption enhanced with Vitamin C, stomach acid. Vitamin D increases iron absorption. Most absorption happens in duodenum and upper jejunum, so conditions that affect these will affect absorption.

Vitamin C converts ferric iron to ferrous which improves absorption.

Orange juice with the meal can double the absorption of non-heme iron. And even better... in one study, adding 4.5oz of cauliflower (60mg of Vit C) increased iron absorption 3x in a vegetarian meal. 500 mg of C after lunch and dinner x2mo increased Hb by 8%, ferritin by 12% in vegans. For some, this might be a better method than just supplementing iron (esp junk-food vegans).

Some foods inhibit iron absorption: phytates in grains, vegetables and soy (mainly an issue with non-heme iron accompanied by insufficient vitamin C... again, junk food vegetarians); casein in milk; oxalates, tannins (tea and, to lesser extent, coffee; tea can reduce non-heme iron absorption by 75%), phosphates (sodas), fiber can all interfere with absorption... balance any recommendation to avoid creating orthorexia. Hypochlorhydria (including that induced by acid blockers) can also diminish absorption. Calcium supplements can compete with iron for absorption (like lead).

Iron injection: In severe cases or when oral iron is not tolerated/effective, this may be prescribed.

It is very important to note that iron is quite toxic if too much builds up in the body. Men, and non-menstruating women, do not have a good way to excrete iron in the body, and the body is very efficient at holding onto and recycling what iron it manages to absorb. Iron levels (ferritin) should be tested and determined to be low before supplementing, and should be tested periodically during supplementation to monitor. Atherosclerosis, liver damage, diabetes, cancer are just a few of the unpleasant possible side effects of iron overload.

For macrocytic anemia: B-12, folate.

A healthy liver stores enough B-12 to last 3-6 years, so it may take time for deficiency signs to manifest in vegans. They often feel great at first.

Common medications such as metformin are implicated.

B-12 neuropathy can be irreversible and miserable/diagnose and treat aggressively (consider injection if needed).

Many people with B-12 deficiency may no longer be able to absorb sufficient B-12 from their GI tract and may need injections.

Consider testing homocysteine and methylmalonic acid to assess these instead of just serum folate and B-12.

HERBAL STRATEGIES:

Treatment strategies in adjunct to nutrition will vary according to the cause.

1. Stop or slow the bleeding

a. Bleeding from the GI tract: Canadian Fleabane (*Erigeron canadensis*), Geranium, Yarrow, Shepherd's Purse

Then heal the bleeding area: gut healing tea with calendula, plantain, marshmallow, slippery elm, chamomile. To reach the bleeding area, enemas or enteric-coated capsules may be necessary if it is in the colon.

b. Bleeding from the uterus: Shepherd's Purse, Yarrow, Cinnamon/*Erigeron* compound, Rose

Then work with hormonal/cyclic/metabolic influences if applicable to prevent future heavy uterine bleeding: Vitex, False Unicorn Root (only if organically grown, not wildcrafted as it is endangered.) Caution with Dong Quai (*Angelica sinensis*): this herb

has frequently increased bleeding and this is NOT a good thing in an already anemic patient. I frequently hear herbal students say "It must be building the blood because there is more bleeding" but I do not favor this treatment strategy! If you must use this treatment and observe more bleeding, make sure your client is getting frequent monitoring of their hemoglobin and be willing to discontinue if the numbers are falling or not improving.

2. Optimize GI tract function to increase absorption of dietary iron

Bitters and carminatives; reduce adrenal stress with nervines

3. Give nutrient-dense herbs that are high in iron and may increase iron absorption

Isla Burgess' trial:

5 groups: (1) nettle infusions, (2) chickweed succus with citrus drink, (3) Yellow dock tincture 2ml BID before meals; (4) blackstrap molasses 15ml (1 T.) qd on empty stomach with citrus drink; (5) combination of 3 & 4 (yellow dock plus molasses). Trial groups were based on the book Nutritional Herbology.

Results: Molasses and yellow dock tincture together increased hemoglobin levels where yellow dock tincture alone decreased serum ferritin, iron, B-12 and folate in Isla Burgess' trial in non-anemic subjects. WHY? Perhaps tinctures are not a good vehicle for nutrient dosing strategies, the way teas are. She also found that local yellowdock had no measurable iron content; iron content may vary widely by soil. It probably increases absorption when given with an iron source. **Note:** blackstrap molasses contain 3.5mg iron/tablespoon - a large amount is needed just to get the RDA. The RDA isn't enough in an anemia. AND another study found that molasses and ferrous sulfate had about the same absorption of iron (~23%).

Chickweed increased serum B-12 in Isla Burgess' trial. Nettles increased folate and B-12.

Other herbal trials: Carao: *Cassia grandis*, Fabaceae. This is a tree in the legume family that grows in Mexico, Central and South America. Parts used include fruit (seed pods), flowers, leaves and bark. The pulp from the seedpod can be mashed and cooked in water into a syrup, and eaten as a nutritive tonic. A study at Cecalli Foundation of Nicaragua gave a syrup of Carao to a group of 250 iron-deficiency anemic patients resulting in improved hematocrit and hemoglobin. This was also my experience in practice in Nicaragua. An additional bonus is that it's delicious, improving client adherence to the treatment plan, without reported constipation.

General rules: Have a clear plan, monitor bloodwork for improvement, be ready to change what you are doing if it is not working. Monitoring requires your client to have access to some

medical care. Helping your client access care is very important. Symptoms are not enough to judge whether treatment is working well enough.

Selected References:

Flora Medicinal Nicaraguense, A. Floripe Fajardo, Fundacion Cecalli, 2006.

Iron Absorption from ferrous bisglycinate and ferric trisglycinate in whole maize is regulated by iron status, Bovell-Benjamin et al., American Journal of Clinical Nutrition. *Am J Clin Nutr June 2000 vol. 71 no. 6 1563-1569*

Iron Tonics: What Really Works? By Isla Burgess and Nicky Baillie.