

How do I know if I am anemic?

To determine if a person is anemic, a physician can measure hemoglobin.

hemoglobin	Adult Males	Adult Females
Normal Range	14.0-18.0g/dL	12.0-16.0g/dL
Adolescents, Juveniles, Infants & Newborns of normal height and weight for their age and gender		
Age 6-18 years	10-15.5g/dL	Age 2-6 mos 10.0-17.0g/dL
Age 1-6 years	9.5-14.0g/dL	Age 0-2 weeks 12.0-20.0g/dL
Age 6 mos-1 year	9.5-14.0g/dL	Newborn 14.0-24.0g/dL

Persons with a below normal hemoglobin are anemic.

IMPORTANT: if you are found to be anemic; ask why?

Anemia is a symptom.

Before treatment begins, it is important to know what is causing the anemia. In some cases taking iron pills to correct the anemia could be dangerous. There are more than a dozen conditions that can result in anemia; here are some of the most common:

- Inadequate heme iron (the type of iron in meat) in the diet
- Increased demand for iron: growth spurts, acute blood loss
- Chronic blood loss (heavy period or disease)
- Nutritional deficiencies such as vitamin C, B12, B6 or folate
- Problems of absorption such as: not enough stomach acid, lack of intrinsic factor (hormone needed to absorb vitamin B12)
- Red blood cell production problems (heme synthesis)
- Red blood cell destruction problems (hemolysis)
- Chronic disease, such as: hypothyroidism, renal disease, arthritis, diabetes, Crohn's, liver disease, or cancer
- Alcohol abuse
- Medications (especially those containing aspirin)
- Excess iron accumulation in the bone marrow

Comparing blood test results for different types of iron imbalances.

iron panel	IRON PANEL TESTS									
	Serum Iron	Serum Ferritin	Transferrin Iron Saturation Percentage	Total Iron Binding Capacity (TIBC)	Transferrin	Serum Transferrin Receptor	Hemoglobin	Red Blood Cell Color	Red Blood Cell Size	MCV
Hemochromatosis	↑	↑	↑	↓	↓	NORMAL TO LOW	NORMAL	NORMO-CHROMIC	NORMOCYTIC	NORMAL
Iron Deficiency Anemia	↓	↓	↓	↑	↑	HIGH	↓	HYPO-CHROMIC	MICROCYTIC	↓
Sideroblastic Anemia	↑	↑	↑	↓	↓	NORMAL TO HIGH	↓	HYPO-CHROMIC	Congenital/ Microcytic basophilic*	Congenital ↓
Thalassemia	↑	↑	↑	↓	↓	HIGH	↓	HYPO-CHROMIC	ACQUIRED Dimorphic**	ACQUIRED ↓
Thalassemia	↑	↑	↑	↓	↓	HIGH	↓	HYPO-CHROMIC	MICROCYTIC	↓
Porphyria Cutanea Tarda	↑	↑	↑	↓	↓	NORMAL	NORMAL	NORMO-CHROMIC	NORMOCYTIC	NORMAL
Anemia of Chronic Disease (ACD)	↓	↑	↓	↓	↓	NORMAL	↓	NORMO to HYPO-CHROMIC	NORMO to MICROCYTIC	Normal or Slightly Decreased
African siderosis	↑	↑	↑	↓	↓	NORMAL TO LOW	NORMAL	NORMO-CHROMIC	NORMOCYTIC	NORMAL
Vitamin B12 Deficiency (pernicious anemia)	↑	↑	↑	↓	↓	NORMAL TO HIGH	↓	NORMO-CHROMIC	MACROCYTIC	↑

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*basophilic: spots of iron in outer ring of the cell seen with stain

**dimorphic: more than one shape

Some tests that your doctor might do to determine the cause of anemia:

Complete Blood Count with differential: which includes Hemoglobin, red blood cell count, platelets, white cell count and red blood cell indices, which

provides the shape, size and color of blood cells and how anemia is classified. Macrocytic cells are large, microcytic are small; hypochromic are pale, hyperchromic are dark; sickle, spherical, oval, elliptical, stippled, spur, and teardrop etc., describe some abnormal shapes or appearance of a red blood cell.

Retic Count: helps to determine the bone marrow response to the anemia

Coomb's direct: helps to determine autoimmune hemolytic anemia

Haptoglobin: helps to determine if hemolysis (early destruction of red blood cells) is taking place

Serum ferritin: to determine "iron stores" or hemosiderosis

Serum Transferrin Receptor: to differentiate between anemia of chronic disease and iron deficiency or iron overload

What type of physician treats anemia?

All physicians can treat anemia once the underlying cause is determined. If the cause is complicated, then a hematologist or gastroenterologist might be consulted. A hematologist specializes in blood cell disorders that result in anemia; whereas a gastroenterologist specializes in digestive and nutritional disorders that lead to anemia.

Serum Transferrin Receptor (STR) is a good way to determine iron deficiency anemia because STR is not affected by inflammation.

TIP!

*Normal range is 5.6 +/- 0.3mg/L
**Serum transferrin receptor Rando Assay