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Hemoglobin

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Hemoglobin is a protein in red blood cells that carries oxygen. A blood test can tell how much hemoglobin you have in your blood.

See also: Hemoglobin electrophoresis

How the Test is Performed

Blood is typically drawn from a vein, usually from the inside of the elbow or the back of the hand. The site is cleaned with germ-killing medicine (antiseptic). The health care provider wraps an elastic band around the upper arm to apply pressure to the area and make the vein swell with blood.

Next, the health care provider gently inserts a needle into the vein. The blood collects into an airtight vial or tube attached to the needle. The elastic band is removed from your arm.

Once the blood has been collected, the needle is removed, and the puncture site is covered to stop any bleeding.

In infants or young children, a sharp tool called a lancet may be used to puncture the skin and make it bleed. The blood collects into a small glass tube called a pipette, or onto a slide or test strip. A bandage may be placed over the area if there is any bleeding.

How to Prepare for the Test

No special preparation is necessary.

How the Test Will Feel

When the needle is inserted to draw blood, some people feel moderate pain, while others feel only a prick or stinging sensation. Afterward, there may be some throbbing.

Why the Test is Performed

The hemoglobin test is almost always done as part of a complete blood count (CBC).

Normal Results

Normal results vary, but in general are:

- Male: 13.8 to 17.2 gm/dL
- Female: 12.1 to 15.1 gm/dL

Note: gm/dL = grams per deciliter

Note: Normal value ranges may vary slightly among different laboratories. Talk to your doctor about the meaning of your specific test results.

What Abnormal Results Mean

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Lower-than-normal hemoglobin may be due to:

- Anemia (various types)
- Bleeding
- Destruction of red blood cells
- Leukemia
- Malnutrition
- Nutritional deficiencies of iron, folate, vitamin B12, vitamin B6
- Overhydration

Higher-than-normal hemoglobin may be due to:

- Congenital heart disease
- Cor pulmonale
- Dehydration
- Erythrocytosis
- Low blood oxygen levels (hypoxia)
- Pulmonary fibrosis
- Polycythemia vera

Additional conditions under which the test may be performed:

- Anemia of chronic disease
- Drug-induced immune hemolytic anemia
- Giant cell (temporal, cranial) arteritis
- Hemoglobinopathies
- Hemolytic anemia due to G6PD deficiency
- Idiopathic aplastic anemia
- Idiopathic autoimmune hemolytic anemia
- Immune hemolytic anemia
- Iron deficiency anemia
- Paroxysmal cold hemoglobinuria (PCH)
- Paroxysmal nocturnal hemoglobinuria (PNH)
- Pernicious anemia
- Placenta abruptio
- Polymyalgia rheumatica
- Secondary aplastic anemia

Risks

Veins and arteries vary in size from one patient to another and from one side of the body to the other. Obtaining a blood sample from some people may be more difficult than from others.

Other risks associated with having blood drawn are slight but may include:

- Excessive bleeding
- Fainting or feeling light-headed
- Hematoma (blood accumulating under the skin)
- Infection (a slight risk any time the skin is broken)

Alternative Names

Hgb; Hb

References

Zuckerman K. Approach to the anemias. In: Goldman L, Ausiello D, eds. *Cecil Medicine*. 23rd ed. Philadelphia, Pa: Saunders Elsevier; 2007:chap 162.

Update Date: 2/9/2010

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