What is anemia?

Anemia is a medical condition in which the red blood cell count or hemoglobin is less than normal. The normal level of hemoglobin is generally different in males and females. For men, anemia is typically defined as hemoglobin level of less than 13.5 gram/100ml and in women as hemoglobin of less than 12.0 gram/100ml. These definitions may vary slightly depending on the source and the laboratory reference used.

What causes anemia?

Any process that can disrupt the normal life span of a red blood cell may cause anemia. Normal life span of a red blood cell is typically around 120 days. Red blood cells are made in the bone marrow.

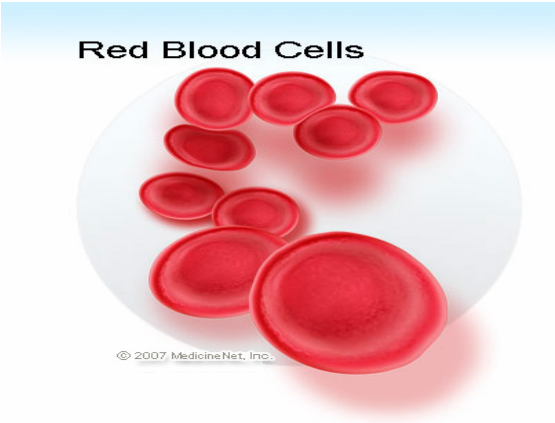
Anemia is caused essentially through two basic pathways. Anemia is either caused:

1. by a decrease in production of red blood cell or hemoglobin, or
2. by a loss or destruction of blood.

As more common classifications of anemia (low hemoglobin) is based on the MCV, or the volume of individual red blood cells.

1. If the MCV is low (less than 80), the anemia is categorized as **microcytic anemia (low cell volume)**.
2. If the MCV is in the normal range (80-100), it is called a **normocytic anemia (normal cell volume)**.
3. If the MCV is high, then it is called a **macrocytic anemia (large cell volume)**.

Looking at each of the components of a complete blood count (CBC), especially the MCV, a physician can gather clues as what may be the most common reason for anemia.



Can not enough iron cause anemia?

Absolutely! This is because iron is major component of hemoglobin and essential for its proper function. Chronic blood loss due to any reason is the main cause of low iron level in the body as it depletes the body's iron stores to compensate for the ongoing loss of iron. Anemia that is due to low iron levels is called **iron deficiency anemia**. Iron deficiency it is a very common cause of anemia.

Women are more likely than men to have iron deficiency anemia because of the loss of blood each month through normal menstruation. This is generally without any major symptoms as the blood loss is relatively small and temporary.

Iron deficiency anemia can also be due to small repeated l bleeding, for instance from colon cancer or from stomach ulcers. Stomach ulcer bleeding that may or may no be induced by medications even very common over-the-counter drugs as aspirin and ibuprofen (Advil, Motrin). In infants and young children, iron deficiency anemia is most often due to a diet lacking iron.

Interpretation of CBC may lead to clues to suggest this type of anemia. For instance, iron deficiency anemia usually presents with low mean corpuscular volume (microcytic anemia) in addition to low hemoglobin.

What about acute (sudden) blood loss as a cause of anemia?

Acute blood loss from internal bleeding (as from a bleeding ulcer) or external bleeding (as from trauma) can produce anemia in an amazingly short span of time. This type of anemia could result in severe symptoms and consequences if not addressed promptly.

What are other causes of anemia?

Some of the most common causes include:

- Vitamin B12 deficiency may cause pernicious anemia. This type of anemia could happen in people who are unable to absorb vitamin B12 from their intestines due to a number of reasons:
    - strict vegetarians who may not be taking adequate vitamin supplements, or
    - long-term alcoholics.

This typically causes macrocytic (large cell volume) anemia. Vitamin B12, along with folate, is a involved in making the heme molecule that is an integral part of hemoglobin. Folate deficiency can be the culprit of anemia. This may also be caused by inadequate absorption, under-consumption of green, leafy vegetables, and also long-term heavy alcohol use.

- There can be rupture of red blood cells (hemolytic anemia) due to antibodies clinging to the surface of the red cells (for example, hemolytic disease of the newborn and in many other conditions).
- A wide assortment of bone marrow diseases can cause anemia.
    - For example, cancers that spread (metastasize) to the bone marrow, or cancers of the bone marrow (such as leukemia or multiple myeloma) can cause the bone marrow to inadequately produce red blood cells, resulting in anemia.
    - Certain chemotherapy for cancers can also cause damage to the bone marrow and decrease red blood cell production, resulting in anemia.
    - Certain infections may involve the bone marrow and result in bone marrow impairment and anemia.
    - Finally, patients with kidney failure may lack the hormone necessary to stimulate normal red blood cell production by the bone marrow.
- Another common cause of anemia is called anemia of chronic disease. This could typically occur in individuals with long-standing chronic diseases.
- Some medications can cause anemia in a variety of ways.
- Human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) can cause anemia.