

## **Lec 4: Anemia definition, symptoms , classification and workup of anemia**

### **Anemia definition:**

Anemia is a global public health problem affecting both developing and developed countries at all ages. According to the World Health Organization (WHO), anemia is defined as hemoglobin (Hb) levels <12.0 g/dL in women and <13.0 g/dL in men

### **Anemia Symptoms :**

Common and non-specific symptoms of anaemia include:

- tiredness
- dizziness or feeling light-headed
- cold hands and feet
- headache
- shortness of breath, especially upon exertion

**Severe anaemia can cause more serious symptoms including:**

- pale mucous membranes (in the mouth, nose etc).
- pale skin and under the fingernails
- rapid breathing and heart rate
- dizziness when standing up
- bruising more easily

### **Classification of Anemia:**

There are more than 400 types of anemia, we will explain the important types around world and causes of it, they're divided into three main groups:

#### **Anemia classification**

- ❖ **According to cause :( A. Blood loss, B. Anemia caused by decreased red blood cell production, C. Anemia caused by destruction of red blood cells)**
- ❖ **According to size of RBCs**
- ❖ **According to Hb concentration**

### **A-anemia caused by blood loss, include:**

1. Gastrointestinal conditions such as ulcers, hemorrhoids, gastritis (inflammation of your stomach), and cancer
2. Non-steroidal anti-inflammatory drugs (NSAIDs) such as aspirin or ibuprofen, which can cause ulcers and gastritis
3. Woman have a heavy menstruation
4. Post-trauma or post-surgery as well.

### **B- Anemia caused by decreased red blood cell production**

When body don't create enough blood cells, or don't have enough minerals and vitamins for your red blood cells to form normally, include:

1. Bone marrow and stem cell problems, that include (Aplastic anemia, Thalassemia and lead poisoning)
2. Iron-deficiency anemia
3. Sickle cell anemia
4. Vitamin-deficiency anemia, specifically b12 or folate

### **C-Anemia caused by destruction of red blood cells:**

1. Hemolytic anemia.
2. Other types of anemia associated with chronic conditions usually occurs in long-standing inflammation.
3. Conditions caused these types of anemia include :kidney disease , Hypothyroidism , Old age , Long-term diseases, such as cancer, infection, lupus, diabetes, rheumatoid arthritis, pregnancy and parasite infection such as: Schistosomiasis, malaria, Hook worms and other (which causes blood loss and malnutrition).

#### **❖ Classification of anemia depend on RBC size:**

**After CBC and depend on mean corpuscular volume (MCV) and mean corpuscular of hemoglobin (MCH).**

- **Normocytic** = normal size of RBC and normal MCV.
- **Macrocytic** = larger RBC size than normal and increase MCV compare normal
- **Microcytic** = smaller RBC size and decrease MCV.

❖ **Anemia classified depend on Hemoglobin concentration:**

- **Mild Anemia** : Hemoglobin 10.0 g/dL to lower limit of normal.
- **Moderate Anemia:** Hemoglobin 8.0 to 10.0 g/dL. Severe: Hemoglobin 6.5 to 7.9 g/dL
- **Life-threatening or severe Anemia:** Hemoglobin less than 6.5 g/dL.

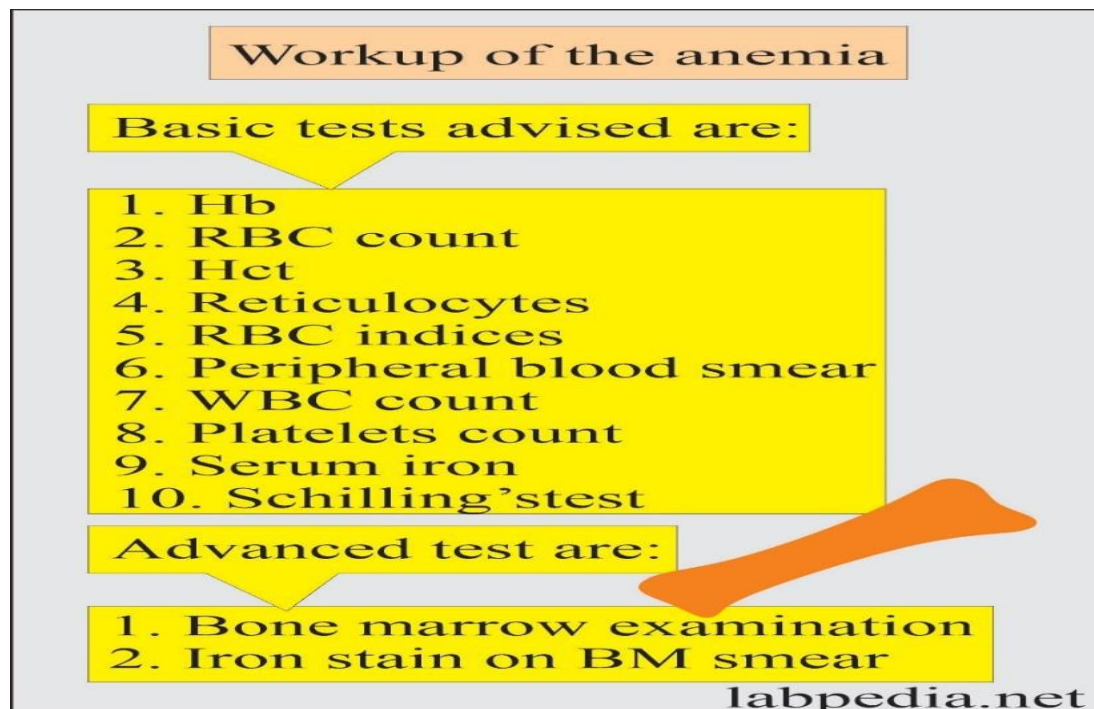
**Anemia Diagnosis:**

It Characterized by a decrease in the concentration of hemoglobin in the blood. A complete blood count (CBC) test will measure revealed: low PCV and low RBCc, low Hb and low Hct that main features of anemia.

**Normal values of Hb concentration**

Male: 13.5 g/dl

Female: 11.5 g/dl



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