



THE TOTAL RED BLOOD CELLS (ERYTHROCYTES) COUNT

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THE NORMAL VALUES FOR RBC'S

The normal values for RBC's vary between **males** and **females** due to sex differences.

The normal men average number of RBC's per μL (or

cubic millimeter) **is 5,400,000** ($\pm 300,000$)

The normal woman **4,800,000** ($\pm 300,000$)

ABNORMAL RBC'S COUNT

An excess of RBC's is called Polycythemia which occurs in three types:

1. **Relative Polycythemia** (pseudopolycythemia) results **from an increase in the concentration of erythrocytes without an increase in the total red blood cell mass,**

such as may occur in:

1-dehydration,

2-severe burn,

3- shock.

2. PRIMARY POLYCYTHEMIA VERA (TRUE POLYCYTHEMIA)

is an increase in the concentration of erythrocyte, accompanied by an increase in total red blood cell mass due to hyperactivity of bone marrow.

In most cases, the cause is unknown, but in others the Polycythemia may be symptomatic of:

1-malignancies in the bone marrow

2- kidney, or brain. (due to release of erythropoietic like factor)

The RBC count may be as high as 11 million/ μ l.

3. SECONDARY POLYCYTHEMIA(ERYTHROCYTOSIS)

❖ **occurs as a physiologic response to chronic arterial hypoxia.**

The hypoxia may be associated with :

1-living in low oxygen-environments (high altitude)

2-emphysema

3-pulmonary fibrosis,

4-carbon monoxide poisoning.

-Characterized by RBC count as high as 6-8 million RBC/ μ l.

A DECREASE IN THE NUMBER OF CIRCULATING ERYTHROCYTES BELOW NORMAL RANGE CONSTITUTES ERYTHROCYTOPENIA

commonly seen:

in many types of anemia due to decrease in RBC count or quantity of hemoglobin or both

1-hemorrhagic anemia

2-hemolytic anemia

3-iron deficiency anemia,

4-pernicious anemia and a

5-Aplastic anemia

QUESTIONS

1- Which is used as an red blood cell dilution factor?

- a) Tyrod, solution
- b) **Physiological saline or Heyem's solution**
- c) Turks solution
- d) Glucose solution
- e) Distilled water

2-RELATIVE POLYCYTHEMIA OCCURS IN WHICH OF THESE CONDITIONS?

- a) **Burns and dehydration**
- b) Brain tumor
- c) Bone marrow tumor
- d) High altitudes
- e) Pulmonary fibrosis

3-PRIMARY POLYCYTHEMIA OCCURS IN WHICH OF THESE CONDITIONS?

- a) Shock
- b) **Bone marrow malignancies**
- c) Emphysema
- d) Pulmonary fibrosis
- e) Carbon monoxide poisoning

4- SECONDARY POLYCYTHEMIA OCCURS IN WHICH OF THESE CONDITONS?

- a) Dehydration
- b) Shock
- c) Kidney tumor
- d) Living in low oxygen environment
- e) Bone marrow malignancies

5-ERYTHROCYTOPENIA OCCURS IN WHICH OF THESE CONDITIONS?

- a) Brain cancer
- b) Lung diseases
- c) High altitudes
- d) Burns
- e) **Many types of anemia**



THANK

you