



Department of Anesthesia Techniques

Title of the lecture

RED BLOOD CELL COUNT

by

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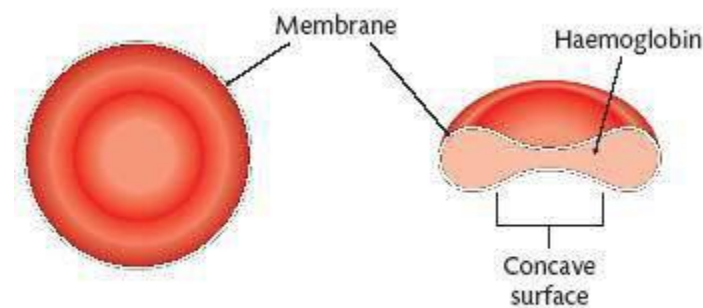
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ERYTHROCYTES (RBCs)

- An RBC count is a blood test that measures how many red blood cells (RBCs) you have.
- RBCs contain Hemoglobine which carries oxygen. How much oxygen your body tissues get depends on how many RBCs you have and how well they work.

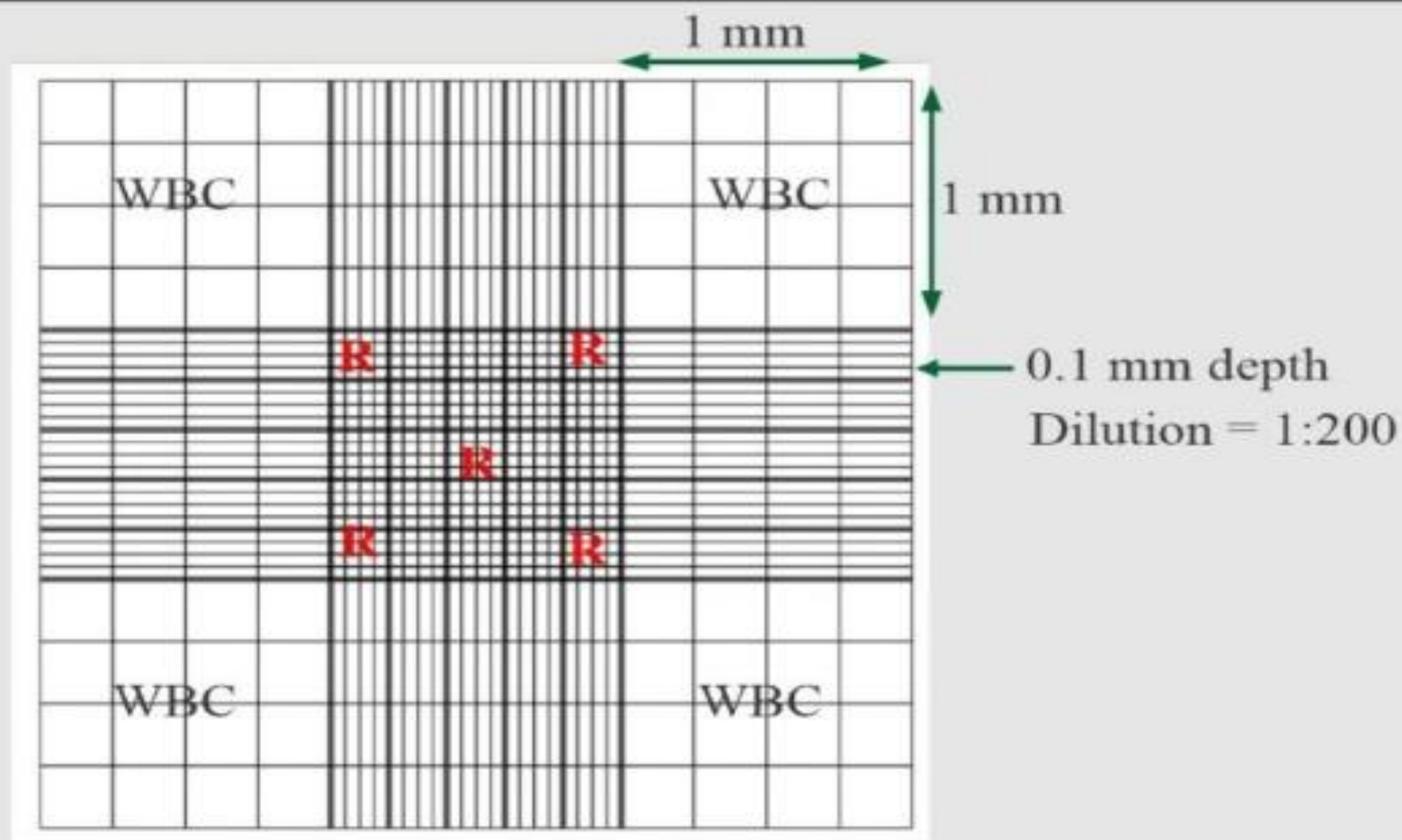
Erythrocytes structure

- Biconcave disk shape; ideal for gas exchange.
- Mature cells do not have nucleus (a nucleate) and contains a hemoglobin.
- Red blood corpuscles count reported : cells per cubic millimeter (cells/mm³).



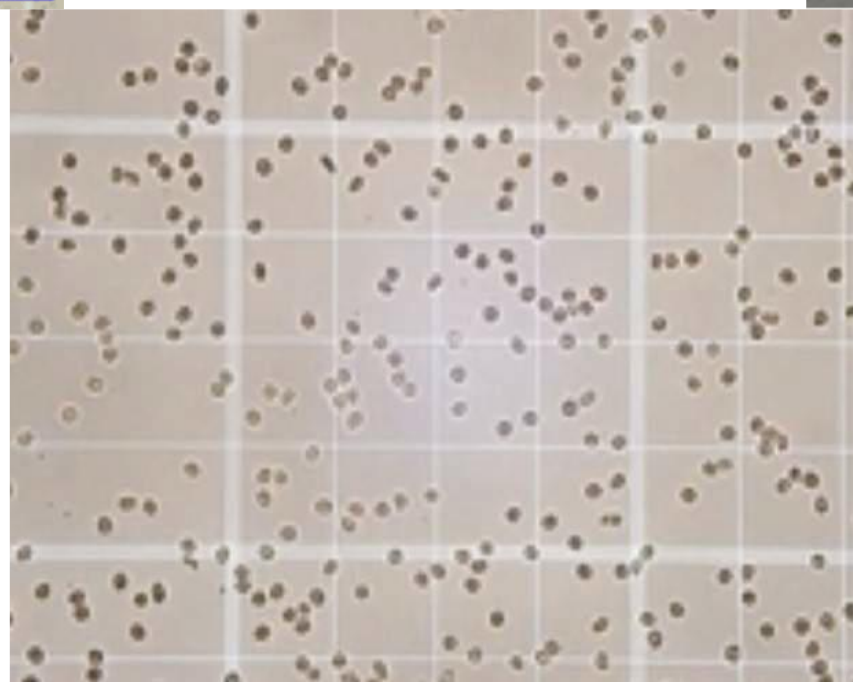
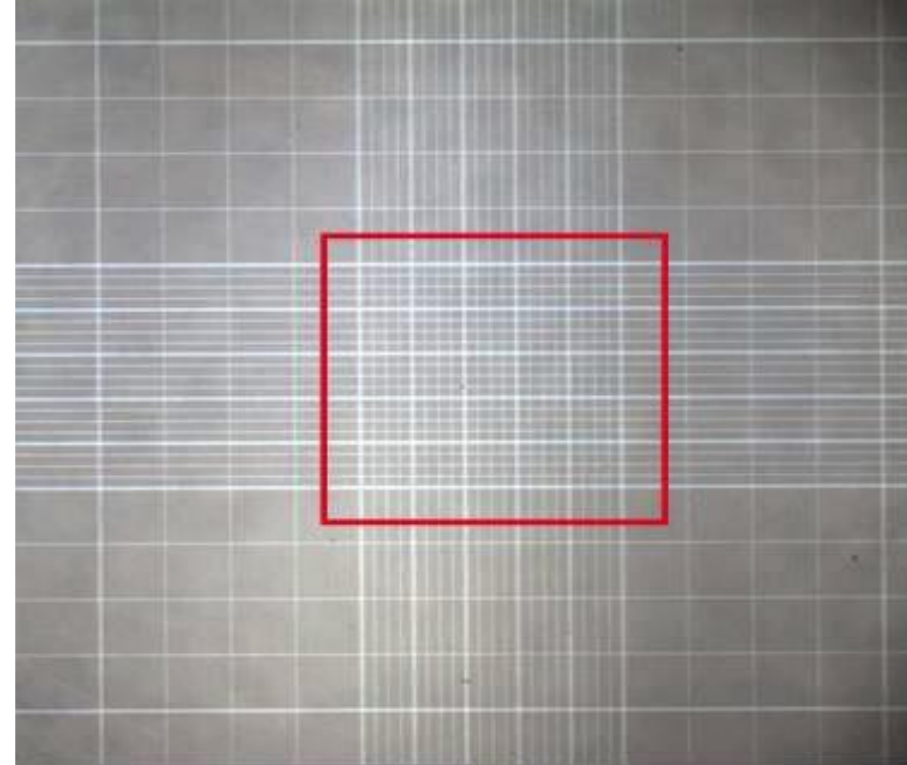
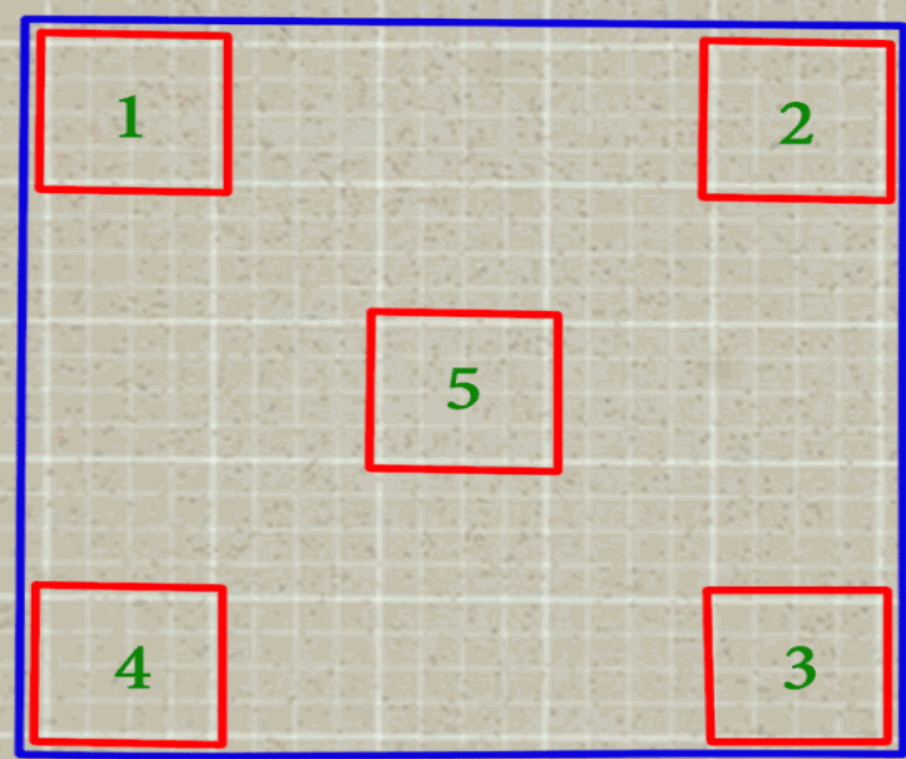
Diluting fluids

Hayem's diluting fluid constituents	Composition	Formalin citrate diluting fluid constituents	Composition
Mercuric chloride	0.25 g	Tri-sodium citrate	3 g
Sodium sulphate	2.5 g	Formalin	1 ml
Sodium chloride	0.5 g	Distilled water	100 ml
Distilled water	100 ml		



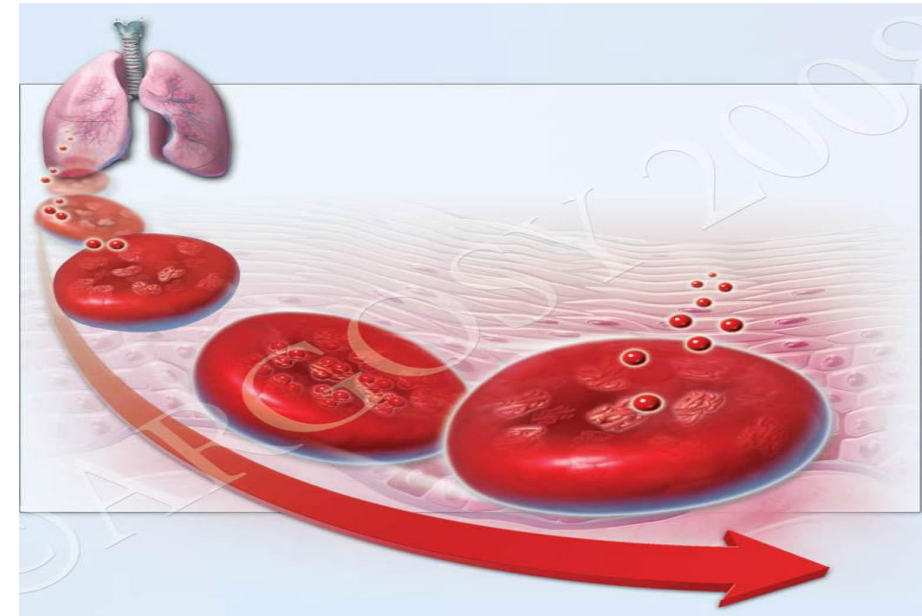
RBC/cmm = no. of cell counted x dilution factor
x Depth x Area counted

RBC/cmm = 500 x 200 x 10 x 5 = 5,000,000



ERYTHROCYTE DISORDERS

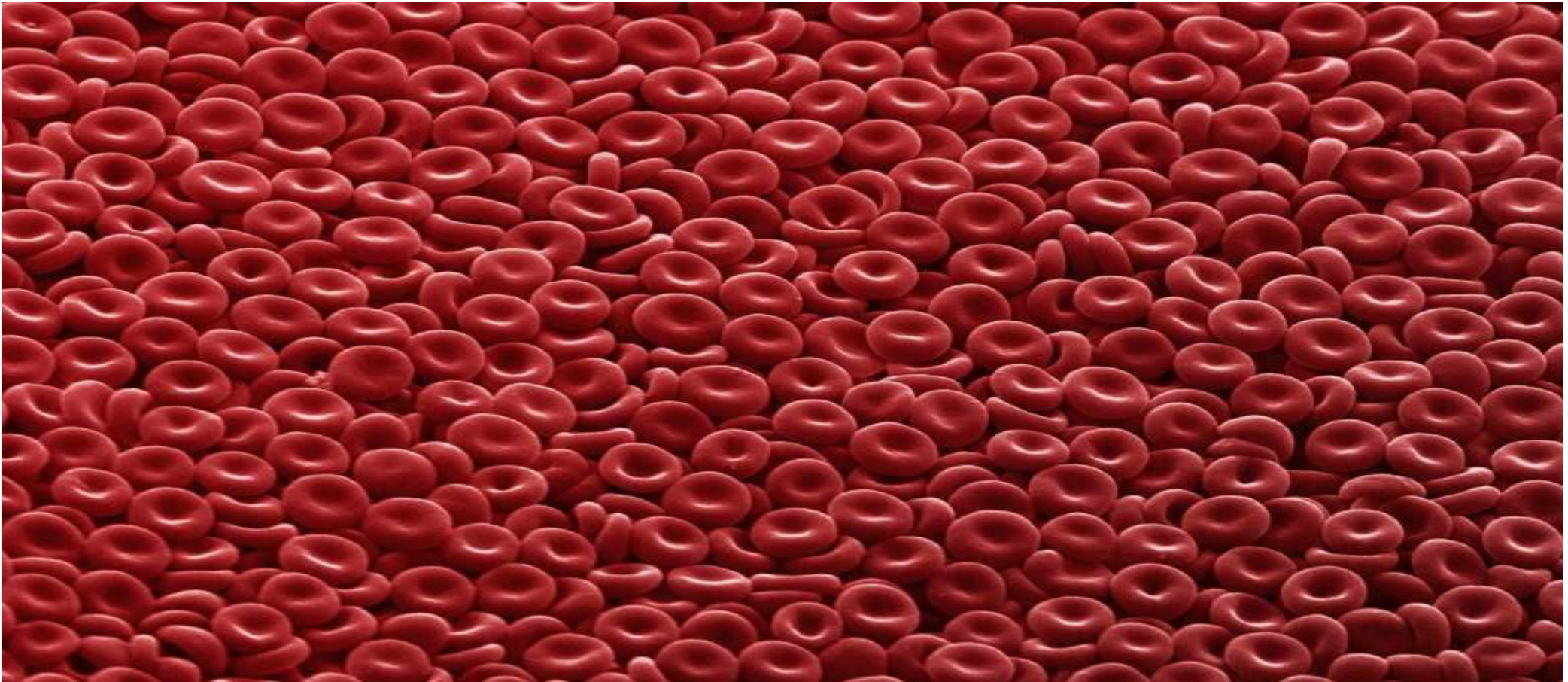
Anemia is usually defined as a decrease in the amount of red blood cells (RBCs) or hemoglobin in the blood. It can also be defined as a lowered ability of the blood to carry oxygen.



➤ Anemia

- **Bleeding**
- **Bone marrow failure (for example, from radiation, toxins, or tumor)**
- **RBC destruction (hemolysis) due to transfusion, blood vessel injury, or other cause**
- **Malnutrition**
- **Bone marrow cancer called multiple myeloma**
- **Nutrition deficiencies of iron, copper, folic acid, vitamin B6, or**
- **vitamin B12**
- **Pregnancy**

➤ **Polycythemia** is usually defined as a increase in the amount of red blood cells (RBCs) or hemoglobin in the blood.



➤ Polycythemia

- Cigarette smoking
- Problem with heart's structure and function that is present at birth (congenital heart disease)
- Dehydration (such as from severe diarrhea)
- Kidney tumor (renal cell carcinoma)
- Low blood oxygen level (hypoxia)
- Scarring or thickening of the lungs (pulmonary fibrosis)
- Bone marrow disease that causes abnormal increase in RBCs (polycythemia vera)

NORMAL VALUE

- **MEN:** 5.1 - 5.8 million.
- **WOMEN:** 4.3 - 5.2 million

$$RBCcount(\text{cell} / \text{mm}^3) = N * 10.000$$