AL RASHEED UNIVERSITY
DEPARTMENT OF MEDICAL LABORATORY TECHNIQUES

WHITE BLOOD CELL COUNT (WBC)

BLOOD TRANSFUSION LAB

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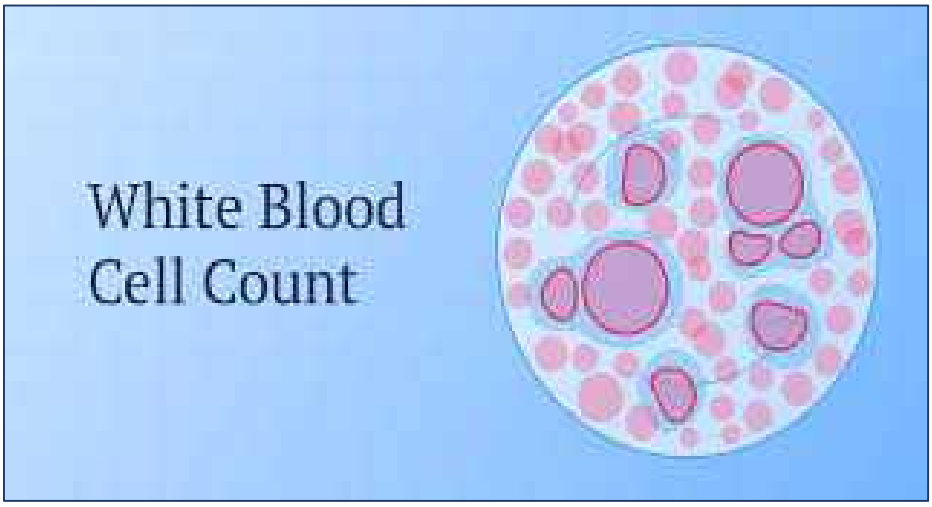


WBC Count

This is a blood test to measure the total number of white blood cells (WBCs). It is almost part of the CBC (complete blood count).

White blood cells are divided into 5 main types:

- Neutrophils
- Basophils
- Lymphocytes
- Monocytes
- Eosinophils

There are several methods that can be used to determine the number of leukocytes per microliter of blood:

1- Automatic blood cell counter:

Advantages:

- The most accurate method
- the error in results is approximately (1- 2%)

2-Manual WBC count

Advantages:

- less expensive
- automated analyzers are not reliable in counting abnormal cells

normal value:

Age range	WBC count (per mcL of blood)
newborns	9,000 to 30,000
children under 2	6,200 to 17,000
children over 2 and adults	5,000 to 10,000

Tube method:

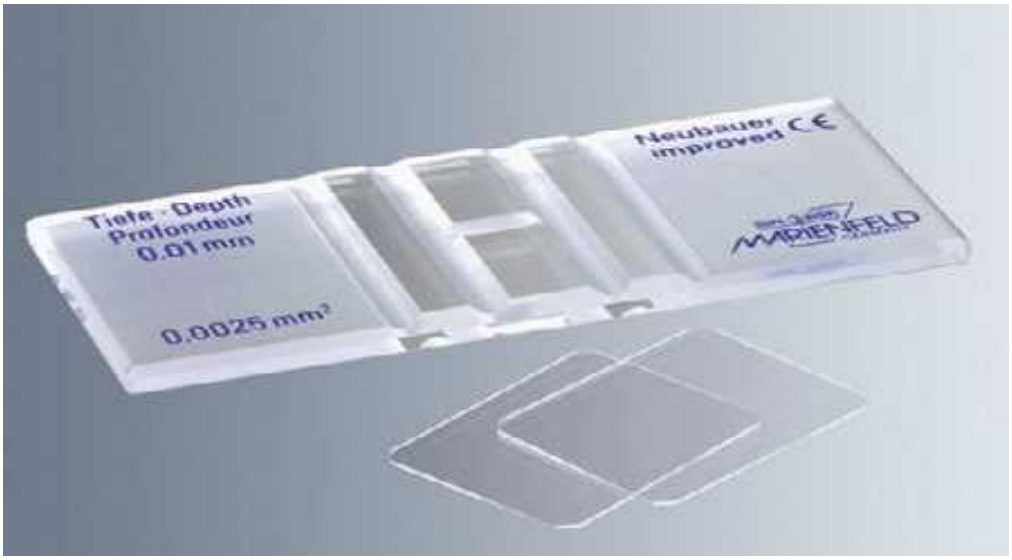
Procedure

- Collect blood sample (**2ml**).
- Put **380** microliter of WBC diluting fluid in a test tube.
- Add **20** microliter of blood to the solution by micropipette let **2** minutes to allow RBCs to hemolysis.
- Mount the cover slide on the chamber.
- Aspirate the dilution blood with non-heparin capillary tube.
- Carefully charge hemacytometer with diluted blood by gently touching sides of coverslip to expel contents until chamber is properly filled.
- Read under microscope **10x** or **40x**.

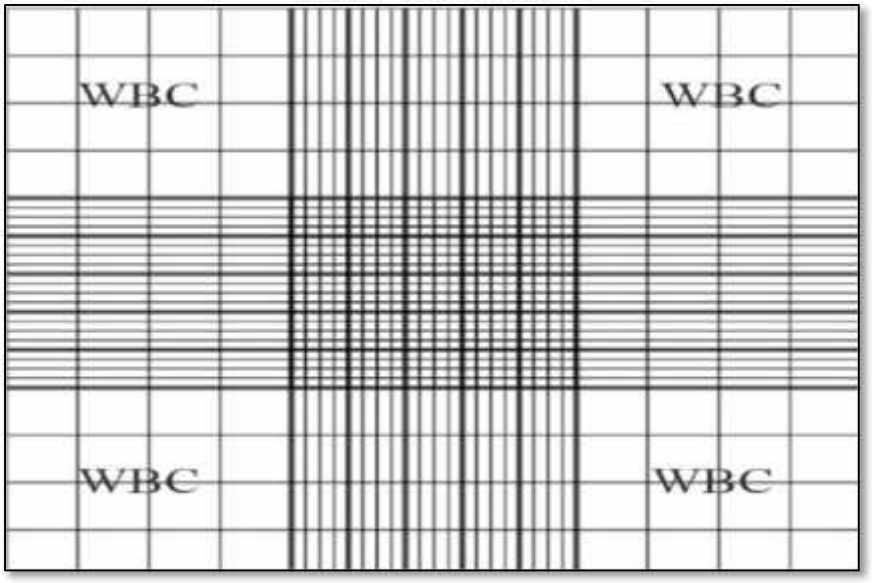
Note:

Turk's solution is a hematological stain (crystal violet or aqueous methylene blue) in 1-2% acetic acid and distilled water. The solution destroys the RBCs and platelets within a blood sample, and stains the nucleic of the white blood cells, making them easier to see and count.

NEUBAUER'S CHAMBER

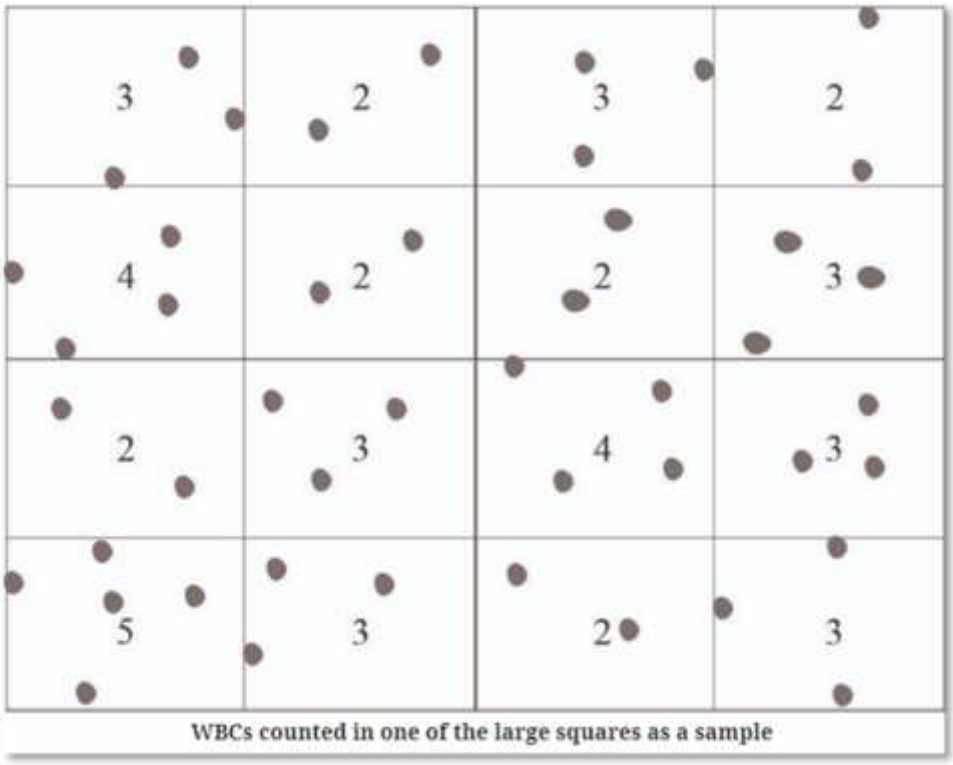


$$Y \times 5 \quad = W$$



Each chamber contains:

- **4** WBC counting squares
- Each contains **16** squares



WBCs counted in one of the large squares as a sample

Decrease White Blood Cells

- Decreased bone marrow production
- Increased tissue demand
- Toxicity

Increased White Blood Cells

- Inflammatory response (local or systemic)
- Infections: bacterial, rickettsia, viral, fungal, protozoal, parasitic o Immune-mediated disease
- Tissue necrosis
- Neoplasia