Red blood cell counting

Physiology Lab-12

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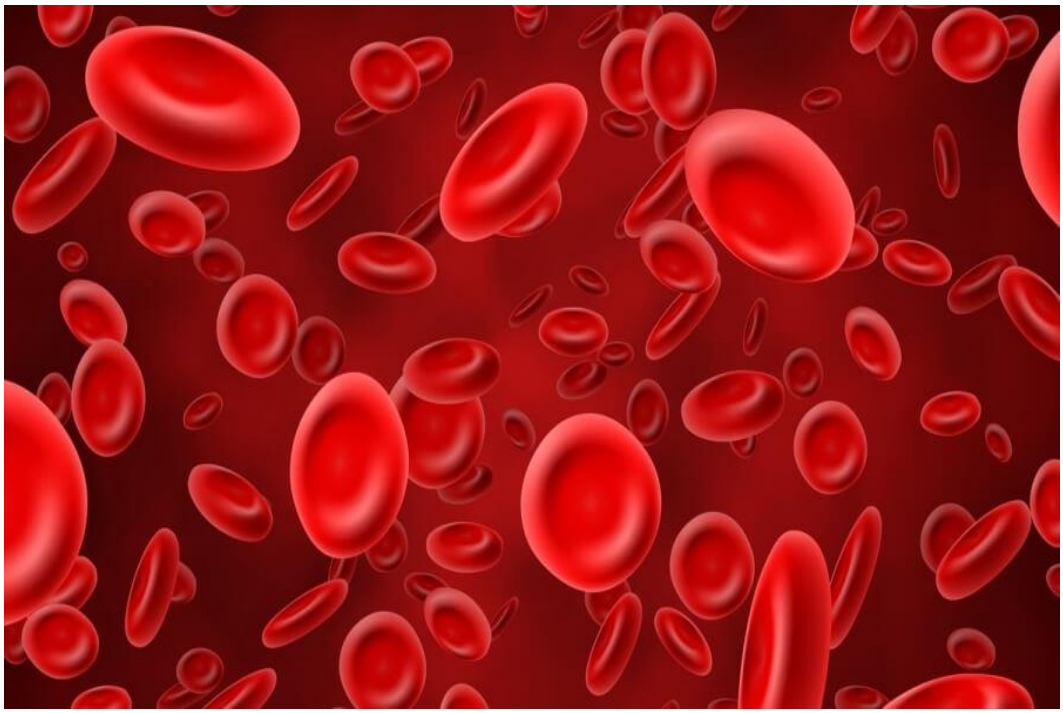
What is a red blood cell (RBC) count?

A red blood cell (RBC) count measures the number of red blood cells, also known as erythrocytes, in your blood. Red blood cells carry oxygen from your lungs to every cell in your body. Your cells need oxygen to grow, reproduce, and stay healthy. An RBC count that is higher or lower than normal is often the first sign of an illness.

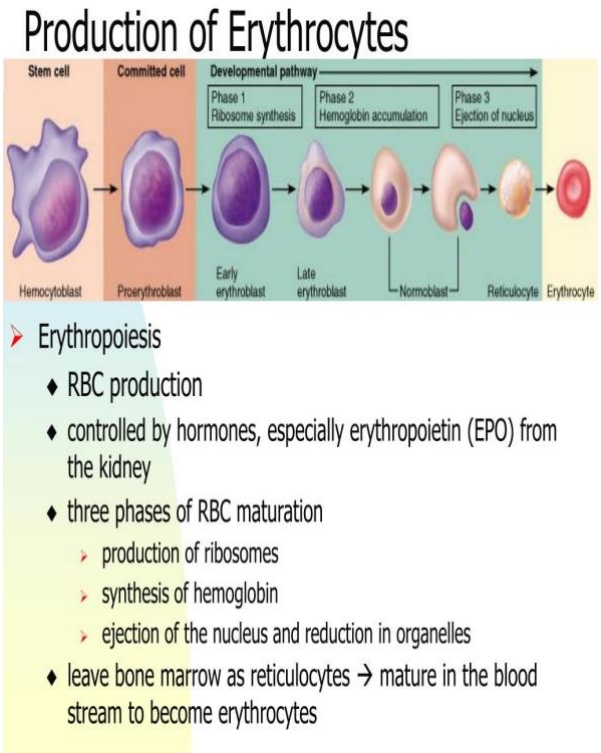


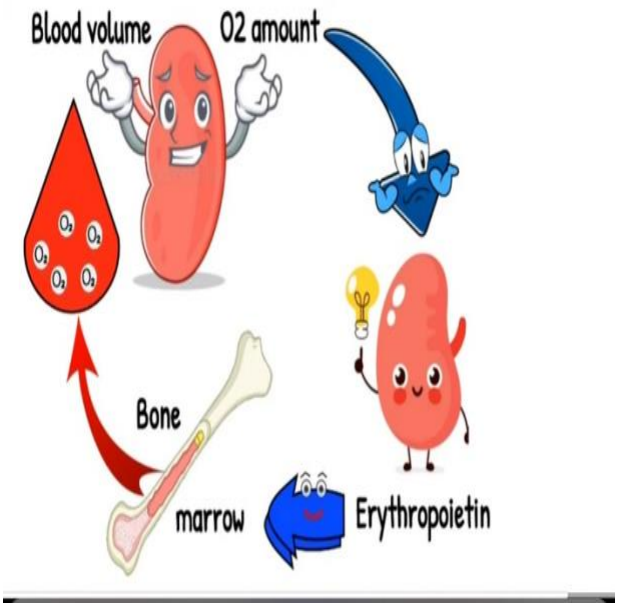
Symptoms of a low red blood cell count include:

- Weakness
- Fatigue
- Pale skin
- Rapid heartbeat

Symptoms of a high red blood cell count include:

- Headache
- Dizziness
- Vision problems





There are two methods of counting red blood cells, modern (CBC)and Traditional

Materials & Apparatu

1-pipette

2- Haemocytometer slide or Neubauer's chamber

3. Isotonic diluting fluid. Any of the following solutions can be used:

a. Ranbaxy solution, also known as Sodium citrate solution

b. Hayem's fluid solution

c.Normal slime

The method of work

Add 1990 microliters of Normal Slide into a tube

WeWe add 10 microns from the blood sample add 10 microns from the blood sample

We mix it with a pipette We wait 5 minutes

We place the slide on the jumper and put 10 microns of the sample inside the jumper Place it in a damp place for 5 minutes. We place the slide on the microscope and count the red blood cells

The accounts

The calculation was made in five squares from the middle square designated for counting red blood cells, meaning that the sum of the squares = 5 x 16 = 80 squares, and since the volume of each square is 1/4000 mm3, then the volume in 80 squares = 1/4000 x 80 = 1/50 mm3.

The number of red blood cells in 1 cubic millimeter of blood was calculated, and let us assume that their number in 80 squares = N

Any Since the blood was diluted 200 times

So the number of red blood cells in 1 mm3 squaresd

Normal red blood cell count (million/mm3 of blood)

Female: 4-5 million/mm3 of blood

Male: 4.7-6.1 million/mm3 of blood

Children 2-5 years: 4.2-5 million/mm3 of blood

Children 6-12 years: 4.3-5.1 million/mm3 of blood

Infants: 4-6 million/mm3 of blood

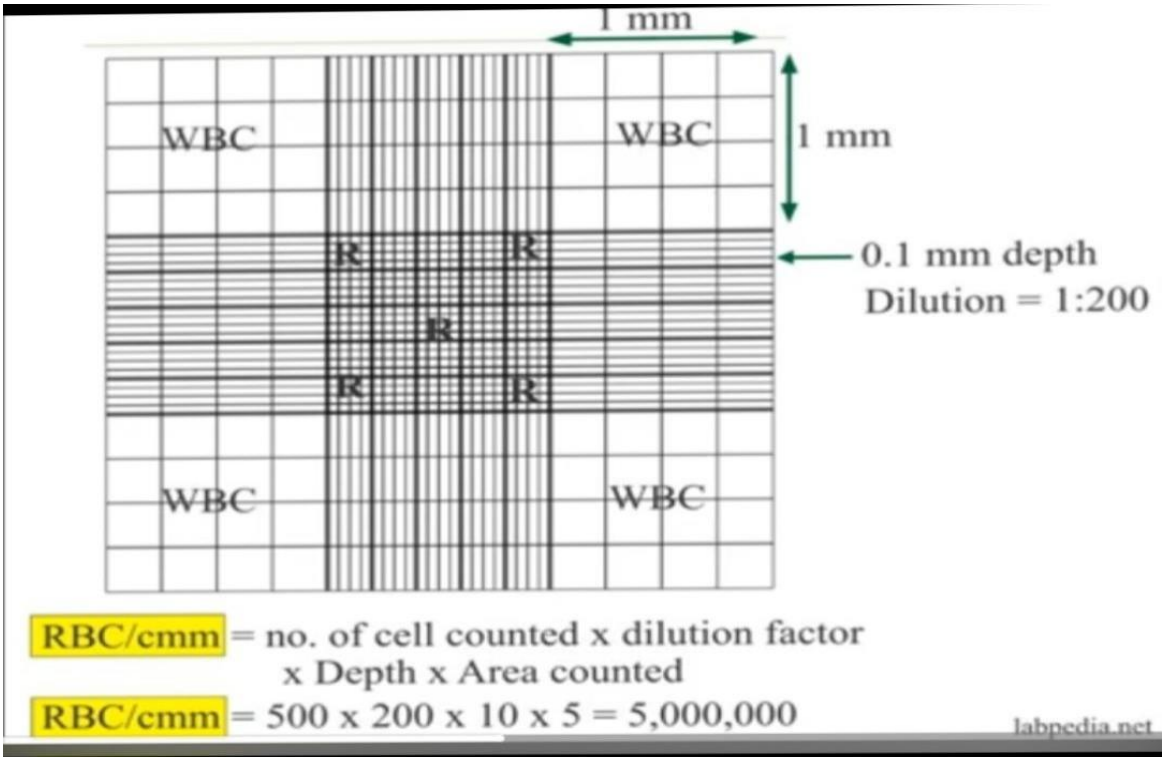


Figure 1: Complete Blood Count (CBC) and Differential

	Patient Value		UPMC PUH/SHY Normal Range Male
WBC	12.5 x10E+9/L	[H]	(3.8 - 10.6)
RBC	2.28 x10E+12/L	[L]	(4.13 - 5.57)
Hgb	7.8 g/dl	[L]	(12.9 - 16.9)
Hct	23.7 %	[L]	(38.0 - 48.8)
MCV	104.0 fL	[H]	(82.6 - 97.4)
MCH	34.3 pg	[H]	(27.8 - 33.4)
MCHC	33.0 gm/dL		(32.7 - 35.5)
RDW	18.4 %	[H]	(11.8 - 15.2)
PLT	284 x10E+9/L		(156 - 369)

Peripheral Blood Differential		ABS. No.		UPMC PUH/SHY Normal Range (ABS)
POLYS	19.0 %	(2.38)		(2.24 - 7.68)
BANDS	16.5 %	(2.06)	[H]	(0.10 - 0.80)
LYMPHS	9.0 %	(1.12)		(0.80 - 3.65)
MONOS	26.0 %	(3.25)	[H]	(0.30 - 0.90)
EOS	1.0 %	(0.12)		(0.00 - 0.40)
BLASTS	28.0 %	(3.50)		
META	0.5 %	(0.06)		
NRBC/100 WBC	1			

Physiological factors

1. Age, gender, activity, nutrition, pregnancy and breastfeeding.
2. In very high areas, the number of R.B.C. increases due to lack of oxygen
3. Psychological emotions

Pathological factors

1. Cases of anemia
2. Cases of hemorrhage
3. Leukemia
4. Degradation of R.B.C resulting from blood transfusion
5. Erythropoietin hormone disorder
6. Polycythem
7. Cardiac failure
8. Dehydration
9. Smoking