

Tues 30th Nov

PY2/46

BLOOD - NORMAL VALUES

RBC - number per cu. mm. blood	♀ $4.8 \pm 0.6 \times 10^6$ , ♂ $5.4 \pm 0.8 \times 10^6$
WBC - number per cu. mm. blood	Range 5,000-10,000, average 7,000
Platelets - number per cu. mm. blood	150,000-400,000, average 250,000
Haemoglobin g/100 ml.	♀ $14.0 \pm 2.0$ , ♂ $16.0 \pm 2.0$
Haematocrit, P.C.V. - packed cell volume. ml. packed RBC per 100 ml blood	♀ $42.0 \pm 5.0$ , ♂ $47.0 \pm 7.0$ ml
Mean corpuscular volume, MCV	$= \frac{\text{vol. of RBC per 100 ml blood}}{\text{no. of RBC} \times 10^6 \text{ per cu. mm.}} \times 10$ $= 87 \pm 5 \mu^3 \text{ (femtolitres - } 10^{12} \text{ l)}$
M.C.H.C. concn. of Hb in an average corpuscle as %	$= \frac{\text{g. Hb per 100 ml blood}}{\text{vol. RBC per 100 ml blood}} \times 100$ $= 34 \pm 2\%$
M.C.H. - amount of Hb in a corpuscle in pg ( $\text{g} \times 10^{-12}$ )	$= \frac{\text{g. Hb per 100 ml blood}}{\text{RBC} \times 10^6 \text{ per cu. mm}} \times 10$ $= 29 \pm 2$

These values and their deviations from average may be used to distinguish different types of anaemia.

Changes associated with different types of anaemia

	<u>MCV</u>	<u>RBC</u>	<u>MCHC</u>	<u>Example and Cause</u>
Macrocytic	inc > 94	dec	normal or slight dec > 30	Pernicious anaemia, sprue, due to lack of vitamin B <sub>12</sub> or folic acid
Normocytic	normal or slight inc 80-94	dec	normal > 30	After haemorrhage
Simple microcytic	normal or slight dec < 80	dec	normal or slight dec > 30	Inflammatory conditions, e.g. after 'flu
Hypochromic microcytic	dec < 30	normal or dec	dec < 30	Nutritional anaemias, e.g. iron deficiency due to dietary lack, poor absorption or continued loss, e.g. heavy menstruation or excessive demand, e.g. close pregnancies or combinations of these.