

THE MEDICAL PRACTICE AT 48 WIMPOLE STREET

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HAEMATOLOGY & BIOCHEMISTRY PROFILES

This information sheet briefly explains the blood tests within a typical screening profile. This is not intended to interpret pathology results, but to explain more about the individual tests incorporated in the NS2 screen. If results fall outside normal values/reference ranges, your doctor will identify whether they are significant or not, in like with history, medication and symptoms.

Haematology:

- Haemoglobin: gives the red cells their colour and carries oxygen from the lungs to the body, This test is primarily used to determine the presence of anaemia, or its reverse, polycythaemia
- Red cell count: measures the number of red cells in the blood. A low count often accompanies anaemia, excess body fluid and blood loss. A high count is commonly seen in dehydration
- Haematocrit: measures the percentage of red blood cells in a standard volume of blood. It is used, in conjunction with the haemoglobin and red cell count, to determine the presence and type of anaemia
- Red cell indices (MCV, MCH, MCHC, RDW): provides detailed information on the volume and haemoglobin content of red blood cells and are used to determine the types of anaemia:
 - MCV – Mean Cell Volume measures the average volume of red cells
 - MCH – Mean Cell Haemoglobin measures the weight of haemoglobin in the average red cell
 - MCHC – Mean Cell Haemoglobin Concentration measures the weight of haemoglobin in a standard volume of blood
 - RDW – Red cell Distribution Width measures the degree of size variation in red cells
- Platelet count: measures the number of platelets in blood. They are responsible for the blood clotting. High platelet counts may be seen following strenuous activity, in infections and inflammation. Extremely low platelet counts can be associated with spontaneous bleeding
- White blood count: measures the number of white blood cells in circulation. High counts are seen in infection, after exercise, stress and disease. Low counts may be seen in viral infections
- Neutrophils, lymphocytes, monocytes, eosinophils, basophils: are the differential types of white blood cell in the sample. Usually called a ‘differential’, in conjunction with the total white cell count, these numbers can help point to the severity and causes of infection (viral vs. bacterial)
- ESR: Erythrocyte Sedimentation Rate is a non-specific blood test which, when raised, can demonstrate the presence of inflammatory or infective disorders. The test is a non-specific marker of organic disease and can point out to the need for further investigation.

Biochemistry:

- Sodium, potassium, chloride, bicarbonate: these are known as ‘electrolytes’ and reflect the salt and water balance in the body, They may be affected by dehydration, kidney disease and some drugs e.g. diuretics
- Urea & creatinine: assess kidney function

- Bilirubin: is a pigment in bile and an excess will make a person look yellow - jaundiced. Mild increases are very common and are of no significance, however a grossly elevated bilirubin indicates liver disease
- Alkaline phosphatase: is an enzyme which mainly comes from the liver and bone, but is also present in the small intestine, placenta and kidney
- AST (ASpartate Transferase), ALT (ALanine Transferase), LDH (Lactic DeHydrogrenase): these enzymes are present in very high amounts in the liver, AST and LDH are also present in all body muscle, heart muscle and red cells. High levels often indicate liver disease although not always. No clinical significance can be attributed to low levels
- CK (Creatinine phosphoKinase): is an enzyme found in high concentrations in the heart and body muscle. High values are often seen following strenuous activity and can be a side effect of statins (used to lower cholesterol)
- Gamma GT (Gamma Glutamyl Transferase): is an enzyme found abundantly in the liver, kidneys and pancreas. It is widely used to assess liver function. Alcohol and some drugs induce the liver to produce more of this enzyme
- Total protein: is the arithmetic sum of albumin and globulin levels
- Albumin: low albumin levels can be seen in conditions resulting in protein loss (through bowel or kidney) and reduction in synthesis (liver disease). High levels are often the results of dehydration, or even prolonged application of a tourniquet at the time of sample taking
- Globulin: another constituent of serum proteins. Increased levels are seen in inflammation and infection and some malignancies
- Calcium and phosphate: levels may be increased or decreased in a variety of bone disease (but are normal in osteoporosis) and are also useful in assessing kidney function. The calcium concentration is affected by the albumin level
- Uric acid: increased levels are seen in many disorders and predispose to gout, while decreased levels are of no clinical significance
- Glucose: high levels occur in diabetes mellitus but levels vary widely depending on whether the sample was taken after fasting or after a meal
- Triglycerides, cholesterol, HDL cholesterol, LDL cholesterol: this is usually known as the 'lipid profile' and helps assess risk for atherosclerosis (thickening of artery walls) and subsequent risk of heart disease. Fasting up to 12 hours is recommended
- Iron: an essential element and levels fluctuate widely. Deficiency causes anaemia, although low and high values are seen in many conditions

CA12-5: used to screen for cancers especially ovarian. It is not 100% sensitive or specific

PSA (Prostate Specific Antigen): is raised in prostate cancer but can also go up in infections of the prostate gland