

Haematology & Biochemistry test.

Summary.

This information sheet offers increased information about the individual blood tests conducted within a health assessment. It is important to remember that blood results must not be interpreted in isolation or without medical supervision.

The blood tests conducted within a health assessment are interpreted in conjunction with a clinical examination, previous medical history and current medications. Any clinically significant results will have been explained either during the Health Assessment or in the Executive Summary along with any appropriate advice.

Haematology is the measurement of elements of the blood. It can be important in the early identification of physical illness or disease. Variations in the size, shape and number of blood cells can give early insight into the general functioning of blood and the bone marrow where blood is made and clinical factors that may affect it.

Biochemistry tests measure the chemical substances carried by the blood. Key tests indicate the level of functioning of the liver and kidneys. They also measure the levels of fats and sugar circulating the body.

In certain age and gender determined populations, PSA (Prostate Specific Antigen) and TSH (Thyroid Stimulating Hormone) tests are done to evaluate the functioning of the Prostate and Thyroid glands respectively. If included in a Health Assessment, these tests have explanatory notes with the result.



Haematology & Biochemistry test.

Summary.

Haematology

Haemoglobin (HGB): gives the red cells their colour and carries oxygen from the lungs to the cells. This test is primarily used to determine the presence of anaemia or, its reverse, polycythaemia.

Red blood cell count (RBC): 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 and in a condition called polycythaemia.

Haematocrit (HCT): 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 also used to determine 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 (PLT): measures the number of platelets in blood. Platelets help the blood clot at the site of a wound. High platelet counts can be seen following strenuous activity, in some infections and inflammatory conditions. Extremely low platelet counts can be associated with spontaneous bleeding.

White blood cell count (WBC): measures the number of white blood cells in blood. White cells protect against infection and allergies. High counts are seen during infection, after exercise and with stress. Low counts may be seen if there is suppression of the immune system.

Neutrophils (NEUT), Lymphocytes (LYMP), Monocytes (MONO), Eosinophils (EOSI), Basophils (BASO): are the different types of white blood cell in the blood. Usually called a 'differential', in conjunction with the total white cell count, the levels give information about the immune system. The neutrophils and lymphocytes are the most important levels to measure. The other three types are less significant and are often measured together (**MXD**).

Biochemistry

Urea (UREA) and Creatinine (CREA): used to assess kidney function. High levels of urea can be present in dehydration.

Total Protein (PROT): measures several different proteins, with albumin being the most abundant type in blood. Changes in total protein concentration are common and can be due to nutritional causes or general debility.

Albumin (ALB): low albumin levels can be seen in conditions resulting in protein loss, reduction in synthesis, abnormal distribution of albumin. High levels are often the result of dehydration, or even prolonged application of a tourniquet at the time of sample taking.

Haematology & Biochemistry test.

Summary.

Liver Function Tests: used to assess the function of the liver. There are 5 measurements made:

Bilirubin (BILI): is a pigment in bile broken down by the liver and in excess will make a person look yellow. This is called jaundice. Mild increases are very common and are of no significance. Grossly elevated bilirubin may indicate poor liver function.

Alkaline Phosphatase (ALK): is an enzyme which mainly comes from the liver and bone, but is also present in the small intestine, placenta and kidney.

Aspartate Transferase (AST) and Alanine transferase (ALT): these enzymes are present in very high amounts in the liver. AST is also present in all body muscle, heart muscle and red cells. Whilst high levels can assist with a diagnosis, no clinical significance can be attributed to low levels.

Gamma Glutamyl Transferase (GGT): is an enzyme found abundantly in the liver, kidneys and pancreas. It is widely used to assess liver function. Some drugs, and also alcohol, induce the liver to produce more of this enzyme.

Calcium (CA), Corrected Calcium (CACO): levels may be increased or decreased in a variety of bone diseases and some glandular diseases. They are also useful in assessing kidney function. Calcium concentration is affected by the albumin level so a corrected calcium level is calculated to allow for this. The corrected calcium level is the more relevant level.

Glucose (GLU): useful in the diagnosis of diabetes mellitus but levels vary widely depending on whether the sample was taken from a fasting or a non-fasting individual. Increased and decreased levels can be seen in a number of other clinical conditions.

Uric Acid (UA): increased levels are seen in many disorders but most commonly in those with a predisposition to gout. Decreased levels are probably of little clinical significance.

Cholesterol (CHOL), HDL Cholesterol (HDL), LDL Cholesterol (LDL), Total cholesterol/HDL ratio (TCHR), Triglycerides (TRIG): these are usually known as the lipid or cholesterol profile and they help assess the risk of atherosclerosis (the thickening of artery walls) and subsequent risk of heart disease. Fasting levels are required in order to make the best assessment.

High Density Lipoprotein (HDL): Is considered to be "good" or cardio protective. A high level is desirable as it removes excess cholesterol from tissues and carries it to the liver for disposal.

Low Density Lipoprotein (LDL): LDL is considered to be undesirable or "bad" because it deposits excess cholesterol in the walls of blood vessels and contributes to hardening of the arteries and heart disease.

Total Cholesterol/HDL Ratio: The number is obtained by dividing the total cholesterol value by the value of the HDL cholesterol. This ratio is useful in estimating cardiovascular risk - The higher the number, the higher the risk.

Triglycerides (TRIG): are the body's storage forms of fat and is used together with Cholesterol in the lipid profile to estimate an individual's cardiovascular risk. Most triglycerides are found in fat tissue, but some triglycerides circulate in the blood to provide fuel for muscles. Diets high in carbohydrates, especially sugar, lead to increases in triglycerides as do diets rich in fats.

Haematology & Biochemistry test.

Summary.

Additional tests

Thyroid Stimulating Hormone (TSH):

The Thyroid stimulating hormone level is measured to assess thyroid function in women above the age of 50, a population group in which thyroid problems occur more frequently. TSH is produced in the brain and stimulates the thyroid gland to release the circulating thyroid hormones. The brain will produce more TSH in response to a reduced amount of circulating hormones (underactive thyroid) and less TSH if the amount of circulating thyroid hormones is excessive (overactive thyroid).

Prostate Specific Antigen (PSA):

is measured in men above the age of 50. PSA is a type of protein which is released by the prostate in small amounts into the blood stream. A very high result may indicate prostate cancer, but elevations in PSA levels may also be caused by other harmless conditions e.g. benign prostate enlargement, prostatitis, urinary tract infections, vigorous exercise and sexual intercourse. It is therefore important to interpret the result with caution.