

## DESCRIPTION OF CHEMISTRIES

Outpatient Laboratory Services is supplying this information to help your understanding of the Low Cost Blood Draw Profile.

Values which are outside of expected normal ranges:

- may indicate problems requiring further medical evaluation
- may be due to your non-fasting state
- may be due to the possibility of processing error
- may be due to normal variation

If you should compare your values with other persons, be aware the normal values are age and sex dependent. Consult your physician with further questions, and make an appointment for further evaluation if he/she deems it necessary. It is seldom possible to diagnose or treat a disease based on one blood test. However, it may help you to learn more about your body, detect a potential problem, and encourage you to change your personal habits to benefit your health.

**SODIUM (Na<sup>+</sup>) and CHLORIDE (Cl<sup>-</sup>):** These are electrolytes that are regulated by the kidneys and the adrenal glands. They are important for the functioning of nerves, muscles and most cells. If one is outside the normal range, but not the other and the other results are normal, it is probably not significant. If both are outside, further evaluation should be done.

**POTASSIUM (K<sup>+</sup>):** This is one of the electrolytes that is very carefully controlled by the kidneys. It is important for the proper functioning of nerves and muscles, especially the heart. Any values outside of normal range, high or low, require medical evaluation. This is especially important if you are taking a diuretic (water pill) or heart medication (Digoxin, Lanoxin, etc.).

**BLOOD UREA NITROGEN (BUN):** This is a waste product produced in the liver and excreted by the kidneys. High values indicate poor kidney function. Also, high protein diet and/or strenuous exercise may cause an elevation. Low values may be seen during pregnancy.

**CREATININE (CREA):** This is also a waste product excreted by the kidneys. High protein diet does not affect creatinine. A physician should evaluate high values, especially if the BUN is elevated as well. Low values are not significant. Non-prescription drugs (aspirin, cold medications, vitamins, etc.), prescription drugs, and alcohol often affect your test results. Your health care provider must have a complete and honest picture to evaluate your results effectively. This information will save you both time and money.

**GLUCOSE (GLUC):** This is a measure of sugar levels in your blood. High values are associated with diabetes. Low values are present with hypoglycemia. Consult your physician if your value is over 200, even if you are a diabetic. If you did not fast, the value could be falsely elevated.

**CALCIUM (CALC):** This mineral is controlled by the kidneys and the parathyroid gland. It is found primarily in bone but is also important for proper blood clotting and nerve cell activity. Your physician should evaluate any elevated calcium.

**BILIRUBIN (TBILI):** Indicator of liver function. Abnormally high or low values may be significant in conjunction with other abnormalities.

**ALKALINE PHOSPHATASE (ALKP):** This is an enzyme found primarily in bones and the liver. Higher values are normal during growth as demonstrated in children and pregnant women. Abnormal elevation occurs due to liver or bone damage. Low values are not significant.

**AST/SGOT:** This is an enzyme that aids various chemical activities within the cells. Injury to these cells releases the enzyme into the blood. This enzyme is found in muscles, the liver and the heart. Damage due to a number of diseases, as well as alcohol and drugs, is reflected in high values which should be evaluated by a physician. Low values are not significant.

**ALT/SGPT:** Indicator of liver function.

**TOTAL PROTEIN:** Evaluate nutritional status; investigate edema.

**ALBUMIN (ALB) and GLOBULIN (GLOB):** These quantitate two types of protein in your blood. They are a general index of overall health. Globulin is the “antibody” protein important in fighting disease. If one of these is high but all other values are within normal range, the result is probably not significant.

**CHOLESTEROL (CHOL):** This is a substance found in the blood that is associated with heart disease. It is produced in the liver in sufficient quantities to meet the body’s needs. Increased levels may be due to improper eating habits. Foods of animal origin (meat and dairy products) contain cholesterol and the body manufactures more cholesterol when the diet is high in fat, especially saturated fat.

**TRIGLYCERIDES:** This is a type of fat in the blood. Elevation tends to be glucose induced which makes fasting very necessary before testing. Elevated values may be seen in diabetes or heart disease. Decreased values are insignificant.

**HIGH DENSITY LIPOPROTEIN (HDL):** This is the lipoprotein that carries a lesser amount of cholesterol in its “package” and is sometimes called the “good” cholesterol. Elevation decreases the chance of heart disease and may be increased by regular exercise, losing weight, and refraining from smoking. Low levels increase the risk of heart attack.

**LOW DENSITY LIPOPROTEIN (LDL):** This is one of the blood lipoproteins that carry a portion of the cholesterol. These “packages of fat” contain the greatest amount of cholesterol and are sometimes called the “bad” cholesterol when elevated.

**CHOLESTEROL – HDL RATIO (C/H):** This is a calculation of the cholesterol level divided by the HDL level. This is sometimes called the Risk Ratio. The higher the ratio the greater the risk. The values vary for men and women. The following chart demonstrates these ratios.

CARDIAC RISK	RATIO/MEN	RATIO/WOMEN
Lowest	Less than 3.8	Less than 2.9
Low	3.9 – 4.7	3.0 – 3.6
Moderate	4.8 – 5.9	3.7 – 4.6
High	6.0 – 6.9	4.7 – 5.6
Highest	Greater than 7.0	Greater than 5.7

**WHITE BLOOD COUNT (WBC):** A count of the infection-fighting cells in your body. High counts often indicate an infection, while low counts may indicate a weakened immune system.

**RED BLOOD COUNT (RBC) – HEMOGLOBIN (HGB) – HEMATOCRIT (HCT):** All relate to the blood’s ability to carry oxygen throughout the body. Low values indicate some level of anemia.

**HEMOGLOBIN:** Evaluate anemia, blood loss, hemolysis, polycythemia, and response to treatment.

**HEMATOCRIT:** Evaluate anemia, blood loss, hemolytic anemia, polycythemia, and state of hydration.

**PLATELET COUNT:** Evaluate, diagnose and/or follow up bleeding disorders.

**MEAN CELL VOLUME (MCV):** A measurement of Red Blood Cell size. High or low values may indicate a nutritional deficit.

**MEAN CELL HEMOGLOBIN (MCH) – MEAN CELL HGB CONCENTRATION (MCHC):** Measurements of the average hemoglobin contents of the RBCs. Significance of abnormal values depends on correlation with other measurements.

**PROSTATE SPECIFIC ANTIGEN (PSA):** This is a protein produced by the prostate gland. The measurement of PSA in the blood, when used in conjunction with digital rectal exam, is a useful screen for prostate cancer. Not all-prostate cancers produce elevated levels of PSA, and increased levels may occur with advancing age, infection, and benign prostatic hypertrophy.

**THYROID STIMULATING HORMONE (TSH):** The TSH is the test of choice for evaluating thyroid function. Screening adults for thyroid disorders is recommended by some organizations, such as the American Thyroid Association.