

## Explanation of Laboratory Results

**Thank you** for trusting us with your laboratory testing. Your results are enclosed.

**The Role of your Physician:** The Health One lab tests cannot substitute for medical advice, diagnosis or treatment. Diagnosis of human illness should be based on your medical history and a physical examination along with your doctor's professional judgment and review of test results. Always seek the advice of your doctor if you have questions and before you stop, start, or change any treatment plan, including use of medication. If any of your results are abnormal, or if you are continuing to have symptoms that prompted you to request these tests, it is recommended that you see a physician. In the context of a physical exam and medical history, your physician may determine that it is necessary to repeat these tests.

**“Abnormal” Results:** These are test results that fall outside of the statistical normal reference range that is provided by the laboratory and are highlighted or positioned for your easy identification. Abnormal results do not necessarily indicate poor health, nor do normal results indicate good health always. Some test results, such as a high HDL (good) Cholesterol level, may be statistically abnormal and desirable. Seek the advice of your physician if you have any questions about your lab results.

**About What Follows:** In the following paragraphs we provide you with some information about our most popular tests.

### Comprehensive Health Profile

*A broad-based screening test for Everyone.*

This has been our most popular test for 27 years. The profile screens for cardiovascular risk, major organ function, anemia, diabetes, infection, blood disease, and other indications of illness. This is the blood test routinely ordered as part of an annual physical exam. The component tests of this Profile change from time to time for various reasons, therefore, you may see some tests in your results that are not included below, and, the opposite case may occur as well.

The Comprehensive Health Profile consists of the following groups of tests:

- Lipid Panel
- Liver Profile
- Kidney Panel
- Minerals & Bone
- Fluids & Electrolytes
- Complete Blood Count (or Hematology)
- Diabetes Screen



#### Lipid Panel

- **Cholesterol** – There are two main groups of fat in the blood, cholesterol and triglycerides. Increased cholesterol may lead to arteriosclerosis (hardening of the arteries), diabetes, thyroid, liver and pancreatic disease.
- **Triglycerides** – This blood fat is also involved in arteriosclerosis, diabetes, thyroid, liver and pancreatic disease. They may be elevated in the 200-400 range if you have eaten within 10 hours of the blood draw. If your results are in this range and you did not fast, a repeat evaluation should be obtained.
- **HDL (High Density Lipoprotein) Cholesterol** – This is the “good” fat-protein combination. The higher the value, the lower the risk of developing heart disease. HDL can be increased with regular aerobic exercise, monounsaturated fats such as olive and canola oils, and cessation of smoking. Mild use of alcohol (one or two glasses of wine per day) has been reported to increase HDL.
- **LDL (Low Density Lipoprotein) Cholesterol** – This is the “bad” fat-protein combination, and the lower the LDL the better. The higher the LDL, the higher the risk of developing heart disease. This level can be decreased with reduction in fat intake, weight control, and regular exercise. Because this value is calculated using the triglyceride result, fasting is important for an accurate LDL, as well as triglyceride, result.
- **VLDL (Very Low Density Lipoprotein) Cholesterol** – This is the “bad” triglyceride. Elevation represents a risk of heart disease and/or pancreatitis.

## Liver Profile

- **Albumin, Globulin and Total Protein** – Measures the amount and type of protein in your blood. They are a useful index of overall health and nutrition. Abnormal results are an indicator of under nutrition, liver or kidney disease, cirrhosis, multiple myeloma, sarcoid, amyloid, lupus, and/or major infections. Globulin is the “antibody” protein important for fighting disease. If one of these values is high, but the other values are within expected ranges, the result is probably not significant, but only your physician can confirm this.
- **LDH (Lactate Dehydrogenase)** – An enzyme found in blood and tissues. Elevated levels are found in various diseases including myocardial infarction, cancer, and anemia. A hemolyzed blood specimen can falsely elevate levels. Slightly decreased levels are usually insignificant but only your physician can confirm this.
- **Gamma GT (GGT)** – A liver enzyme whose elevation may indicate liver disease. Moderate intake of alcohol and some common medications may cause elevated levels to occur.
- **Bilirubin** – Primary pigment in bile. It is derived from hemoglobin and processed by the liver, and builds up when the liver is functioning poorly or when some other disorder reduces the normal flow of bile. It is increased also when there has been destruction of red blood cells.
- **AST & ALT** – Injury to cells releases these enzymes into the blood. Liver disease and heart attacks, as well as serious physical injury can cause elevation of these values. Low values are probably not significant, but can only be confirmed by your physician.

## Kidney Panel

- **Urea Nitrogen (BUN)** – A waste product of the liver excreted by the kidneys. High values may indicate kidney malfunction and/or dehydration
- **Creatinine** – This is a waste product of muscle metabolism that is discarded by the kidney. It is elevated in kidney disease, muscle wasting disease, and sometimes the day after strenuous physical exercise.
- **BUN/Creatinine Ratio** – Both BUN and creatinine are elevated in kidney failure, but they are elevated differently depending on the cause of the failure. This ratio helps determine the type of kidney failure.
- **Uric Acid** – High values are associated with gout, arthritis, kidney stones and kidney disease. High values can also be caused by the use of diuretics.



## Minerals & Bone

- **Iron** – Values are a measure of the supply in the blood. It is not the same as the anemia-screening test, although low values in this test may help explain anemia. Iron levels decrease during the day.
- **Calcium** – screens for range of conditions relating to the bones, heart, nerves, kidneys, and teeth. Blood calcium levels do not directly tell how much calcium is in the bones, but rather, how much total calcium or ionized calcium is circulating in the blood.
- **Phosphorus:** A mineral found in bone. Abnormal levels are seen with kidney, bone and parathyroid disease. Low levels seen with excessive antacid use, gout, insulin therapy, and vitamin D deficiency.

## Fluids & Electrolytes

- **Carbon Dioxide** – Part of the electrolyte panel used to detect, evaluate and monitor electrolyte imbalances.
- **Sodium, Potassium, and Chloride** – “Electrolytes” help make up the “salt balance” and acid/base balance in the body. They can be affected by diuretics or “water pills”, high blood pressure, heart failure, kidney and lung disease. The balance among these elements is important for proper functioning of the heart and brain.
- **Alkaline Phosphatase** – A bone and liver enzyme. High values are associated with liver and gall-bladder disease. Expect to see higher values in adolescents and pregnant or breast feeding women. Low values are probably not significant, but can only be confirmed by your physician.

## Complete Blood Count (sometimes referred to as Hematology)

- **White Blood Cell Count (WBC)** - The infection fighting cells of the immune system found in the blood. Lowered or elevated levels may be associated with a disease process.
- **Red Blood Cell Count (RBC)** – Measures the number of oxygen-carrying cells in the blood. Lowered levels associated with anemia, elevated levels associated with smoking and several diseases.
- **Hemoglobin (HGB)** – Measures the amount of oxygen-carrying protein in the RBC. Significant increases or decreases can be seen in anemia or RBC disease.
- **Hematocrit (HCT)** – Measures the oxygen-carrying capability of the blood by measuring the percentage of blood made-up of red blood cells. Significant decreases are one indicator of anemia.

- **MCV, MCH, MCHC, RDW** – Collectively called “indices”, these tests measure size and other characteristics of the red blood cells. They can be used to further define the causes of an anemia state. An isolated abnormal value probably has little clinical significance, but can only be confirmed by your physician.
- **Platelet Count** – These are small packages of clotting materials in the blood. Too many cause problems with unnecessary clotting; too few may cause excessive bleeding. Certain conditions alter this count.
- **Lymphocytes, Monocytes, Neutrophils, Eosinophils** – Different types of WBCs. They may be used to evaluate allergic reactions or differentiate between bacteria, viral or parasitic infections.

#### **Diabetes**

- **Glucose (sugar)** – Fasting values are usually high in diabetes. Certain drugs, such as thyroid, diuretic, and birth control pills as well as recent intake of food, can elevate glucose levels.

### **PSA (Prostatic Specific Antigen)**

#### *Prostate cancer screening test for men over 40*

A prostate-specific antigen (PSA) test measures the amount of prostate-specific antigen in the blood. PSA is released into a man's blood by his prostate gland. Healthy men usually have low amounts of PSA in the blood. The amount of PSA in the blood normally increases as a man's prostate enlarges with age. PSA may increase as a result of an injury, a digital rectal exam, sexual activity (ejaculation), inflammation of the prostate gland (prostatitis), or prostate cancer. When combined with a digital rectal exam at your doctor's office, the test increases the chance of detecting prostate cancer. A PSA level within the normal ranges does not mean that prostate cancer is not present. Also, some men with prostate cancer have normal PSA levels.

### **Cardio C – Reactive Protein**

#### *Cardiovascular Risk Assessment Tool*

A protein present in the blood when certain inflammatory processes are occurring. It is now known that arteriosclerotic plaques in the coronary arteries are an inflammatory process that correlates with C-reactive protein, and it is believed to be a good prognosticator of heart disease. The test can estimate your chance of developing cardiovascular disease, and your risk of having a sudden heart attack. This blood test was redesigned from the traditional test to be sensitive enough to detect chronic low-level inflammation. Test results are independent of cholesterol, family history, and other traditional risk factors for cardiovascular disease. The test can be used in conjunction with traditional tests, such as cholesterol, to determine your risk. Recent illness or tissue injury, and chronic inflammation from arthritis can increase C-RP levels and falsely influence the risk rating for heart disease from this test.



### **Hemoglobin A1c**

#### *Diabetes Management*

Molecules of glucose (sugar) in the blood bind to this fraction of hemoglobin, and stay bound to it for months. The higher the amount of blood glucose, the higher the amount of hemoglobin A1c, and according to its value one can obtain the *average* blood sugar during the previous 8 – 12 weeks. The test indicates how well your diabetes has been controlled in the 2 to 3 months before the test. Information gained from this test can help determine whether your diabetes medication needs to be adjusted. It can also help your health professional estimate your risk of developing complications from diabetes, such as kidney failure, vision problems, and leg or foot numbness. The A1c level is directly related to complications from diabetes: the lower your A1c level, the lower your risk for complications.

### **TSH (Thyroid Stimulating Hormone) with T4 Reflex**

#### *Thyroid Function Evaluation*

This is the test of choice for evaluating thyroid function and/or symptoms of hyper or hypothyroidism. It is frequently ordered along with or preceding a T4 (the Health One TSH will include a reflex T4, meaning if your TSH is abnormal, and then the T4 test will be done automatically). For a thorough discussion on these tests, we recommend **labtestsonline.org**. On the homepage, select TSH in the search box.

### **Blood Group & Type**

#### *Reference Test; not a Health Indicator.*

Sometimes referred to as ABO Group and RH Type, it is simply your never changing group & type blood, such as A negative, or O positive.

## Lipid Profile

### Cardiovascular Risk Assessment Tool

Please refer to the Lipid Profile section under Comprehensive Health Profile

## Urinalysis (complete)

### Broad-based Health Screening Test for Everyone

A health screening profile consisting of 10 or more component tests that is routinely ordered as part of an annual physical exam. This test can be used to screen for and monitor diseases and conditions, such as kidney stones, diabetes, urinary tract infections, and liver disease. This is not a drug test. Urinalysis component tests usually include:

Color: reddish brown urine may be caused by certain medications, diet, or blood.

Clarity (turbidity): clear is normal; bacteria, blood, mucus, crystals can produce cloudy urine.

Odor: E. coli can cause foul odor, diabetes can cause sweet, fruity odor.

Specific Gravity: indicates how well the kidneys are able to adjust the level of water in urine.

pH: urine pH may be adjust by certain types of treatment, e.g. in prevention of kidney stones.

Protein: none is normal, urine protein can be caused by exercise, fever, pregnancy or kidney disease.

Glucose: none or little is normal, higher levels can be due to diabetes or kidney problems.

Nitrites: presence may indicate urinary track infection (UTI)

Leukocyte esterase: detect WBC & may indicate UTI

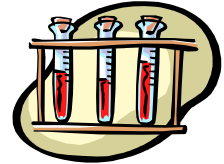
Ketones: large amounts could indicate diabetic ketoacidosis; also low carb diet can cause this.

Red or White Blood Cells: normally not in urine, requires follow-up to determine cause.

Casts: presence may indicate kidney disease

Crystals: large amounts may indicate kidney stones, metabolism problem.

Bacteria, Yeast Cells, Parasites: normally none, presence may indicate infection.



## VAP (Vertical Auto Profile) Cholesterol Test

### State of the Art Cholesterol Test

The VAP cholesterol test improves you cholesterol risk assessment by combining a more accurate LDL (bad) cholesterol measurement with cholesterol subclasses that play important roles in the development of heart disease. The VAP test is the only cholesterol profile that tests for all the present and emerging risk factors identified in the National Cholesterol Education Program (NCEP) guidelines. This additional information allows your doctor to improve the detection of heart disease risk from about 40 percent to 90 percent.

The VAP test includes all the components of the standard Lipid Panel: total cholesterol, LDL cholesterol, triglycerides, HDL cholesterol and VLDL cholesterol. The VAP Test measures the LDL (bad) cholesterol directly, which is more accurate than the standard lipid profile test which relies on estimations (high triglycerides levels decrease the accuracy of LDL estimates in the standard lipid profile).

The VAP test includes tests that are not included in the standard lipid panel:

- LDL particle size
- HDL subfractions (HDL2-C, and HDL3-C)
- Lipoprotein (a)
- VLDL subfractions (VLDL 1+2, VLDL3)
- Intermediate Density Lipoprotein



### For more Information on lab test results

- Consult your physician
- Review the information on the independent, non-profit web site: [labtestsonline.org](http://labtestsonline.org).

*These are not intended as diagnostic comments, but only to give you sufficient information for further discussion with your physician. It is important that you promptly consult your physician regarding any abnormal findings.*

**Discount Laboratory Testing:** These tests and others are available to you anytime and anywhere using a patient service center in your neighborhood. Test results usually available the next day. Contact Mark Quave for more information: 703.370.6766 ext. 106. [Mark\\_Quave@healthoneinc.com](mailto:Mark_Quave@healthoneinc.com).