The following is a brief explanation of the blood tests that are offered in the Wellness Screenings performed by FAMC. Results that are outside of the reference or “normal” range are flagged with either “H” for high values or “L” for low values. Values that fall outside of the normal reference ranges may be due to the presence of disease, or many other factors to include:

- Statistically, when a normal overall healthy population is screened, some results should fall outside of the normal range

HEMATOLOGY

**WHITE BLOOD CELL COUNT (WBC)** measures the number of white blood cells in the blood. They may be elevated in infection and leukemia, and low in bone marrow damage due to chemicals, drugs, etc. and, at times, with infection. You should contact your physician for significant abnormalities.

**RED BLOOD CELLS (RBC)** are responsible for transporting oxygen to the tissues of the body. A decrease in the number of RBC’s is called anemia; an increased concentration is called polycythemia.

**HEMOGLOBIN (HGB) and HEMATOCRIT** measures the amount of red blood cells in the blood. Low levels may indicate anemia. Higher-than-normal values can be found in other diseases, such as polycythemia vera.

**MEAN CORPUSCULAR VOLUME (MCV)** is a measure of the size of the red blood cells. Small cells are seen in iron deficiency and some hereditary defects, both usually associated with anemia. Large cells are seen in rapid replacement of red blood cells by the bone marrow, and in the anemia due to some vitamin deficiencies. Your physician should evaluate both.

**MEAN CORPUSCULAR HEMOGLOBIN (MCH)** is a measure of the amount of hemoglobin, the oxygen-carrying protein in one’s red cells and abnormalities will almost always reflect abnormal results in hemoglobin, hematocrit, red blood cell count, or mean corpuscular volume.

**MEAN CORPUSCULAR HEMOGLOBIN CONCENTRATION (MCHC)** measures the concentration of hemoglobin in the red blood cells. It is low in iron deficiency and some other anemias. It can only be high if the red blood cells are abnormally shaped, as spheres. Abnormalities will almost always be associated with other abnormal results.

**RED CELL DISTRIBUTION WIDTH (RDW)** is a numerical expression of red blood cell size.

**PLATELET (PLT)** Mature platelets are the third cellular element in the circulating system and have a continual function to maintain vascular integrity. If platelets are absent from the circulation, red cells migrate through the vessel walls in large numbers. In addition, platelets play a major role in the clotting process.

**MEAN PLATELET VOLUME (MPV)** is a measure of the average volume of the platelets in a sample.

You should contact your physician if you have any results that fall outside of the normal range, or if you have any questions about any of your test results.

(continued)
CHEMISTRY

SODIUM (NA), POTASSIUM (K), and CHLORIDE (CL) are mineral elements in the blood primarily controlled by the adrenals and kidneys. Abnormalities may suggest dehydration, kidney disease, adrenal disease, vomiting, diarrhea, or some other metabolic disorder. Abnormal potassium levels may significantly affect skeletal and heart muscle and nerve function. With marked abnormalities you should consult your physician. Patients taking diuretics (water pills) often get low potassium levels and should definitely contact their physician if the potassium is 3.0 mg/dl or less.

TOTAL CARBON DIOXIDE CONTENT (TCO2) is formed in the tissue and eliminated by the lungs. TCO2 and the carbonates assist in maintaining the neutrality of the tissue and fluids in the body.

GLUCOSE (GLU) is a measure of your blood sugar level. It is often used to screen for diabetes which is a condition characterized by a higher than normal blood sugar level. Your glucose level may be higher than normal if you have had anything to drink (except water) or ate shortly before having your blood drawn.

CREATININE (CREAT) AND BLOOD UREA NITROGEN (BUN) are waste products primarily excreted by the kidneys. BUN may be slightly elevated in people on a high protein diet or who have exercised heavily. Both tend to be elevated in kidney disease and if either is elevated significantly, or if both are elevated, you should consult your physician. Low values are not of significance.

BILIRUBIN, TOTAL AND DIRECT (T. BILI AND D. BILI) is a pigment from the breakdown of red blood cells, which is broken down and excreted by the liver. It may be elevated with increased red blood cell breakdown or liver damage. The direct bilirubin is the form excreted by the liver and is elevated when bile excretion is obstructed. You should consult your physician for elevated values, especially if ALT, AST, or Alkaline Phosphatase is also elevated. Low values are not of significance.

CHOLESTEROL (CHOL) is a blood lipid (fat) that helps to synthesize or create the body’s hormones. Cholesterol levels can vary a great deal in healthy individuals—changes of up to 50 mg/dl within a few hours have been found in some individuals.

TRIGLYCERIDES (TRIG) are another type of blood lipid (fat). Triglycerides represent the storage form of lipid in the body. Triglyceride levels are often elevated if you have eaten within 12 hours of getting your blood drawn.

HIGH DENSITY LIPOPROTEIN CHOLESTEROL (HDL) is a fraction of blood cholesterol. It is considered to be the “good” cholesterol and higher levels are desirable. Increased levels of HDL are thought to reduce the risk of arteriosclerosis (clogging of the arteries) and heart disease.

LOW DENSITY LIPOPROTEIN (LDL) is another fraction of blood lipids (fats). Low levels of LDL are desirable. Increased LDL levels can lead to the development of arteriosclerosis because it deposits on the walls of the blood vessels.

CHOLESTEROL/HDL RATIO (RISK FACTOR) is a calculation that indicates potential risk for heart disease. This calculation is performed by dividing the total cholesterol by the HDL value.

ALKALINE PHOSPHATASE (ALP) is an enzyme found in bone, liver, intestines, and placenta. It is elevated in children, following severe exercise, or when there is bone injury. It is characteristically high when there is obstruction of the flow of bile out of the liver. Mildly elevated values can probably be ignored, and low values are not of significance. You should consult your physician if significantly elevated, or if AST or ALT are also elevated.

ALANINE AMINO TRANSFERASE (ALT, SGPT), AND ASPARTATE AMINO TRANSFERASE (AST, SGOT) are enzymes which function in the use of food by the body and especially the liver. ALT is essentially found only in the liver while AST is found in the liver and skeletal and cardiac muscle. When those cells are injured, these enzymes escape into the blood. Mild AST elevations are often seen in alcoholism, but mild elevations of either may probably be ignored. Low values are not of significance. You should consult your physician for significant elevations, or if more than one enzyme (AST, ALT, Alkaline Phosphatase, or LDH) is elevated.

CALCIUM (CA) is a mineral in the blood controlled by the parathyroid glands and kidneys and is mainly involved in bone formation. Calcium is important is skeletal and cardiac muscle function, nerve function, and blood clotting. Cal-

(continued)
Calcium varies in the same way as marked changes in albumin. You should definitely consult your physician for any elevated calcium.

**PHOSPHORUS (PHOS)** is a mineral in the blood whose concentration is closely linked with that of calcium because they are both deposited together in the bone. Phosphorus concentrations are increased in kidney disease, certain thyroid conditions, and in infants and children because of increased levels of growth hormone. Decreased levels occur with chronic ingestion of antacids, rickets, and in other types of thyroid disease.

**TOTAL PROTEIN (TP) and ALBUMIN (ALB)** measures the major proteins in your blood. Low values suggest poor nutrition or kidney disease. High total protein values may suggest some disease with an abnormal immune response or some tumors (myeloma).

**URIC ACID (UA)**, is a waste product excreted in urine. High values are characteristic of gout, but may be seen in arthritis, kidney disease, and massive breakdown of cells in the body. Significantly high values should be evaluated by your physician, but low values are probably not of significance.

B/C, A/G these are mathematical relationships of (BUN and Creatinine), (Albumin and Globulin) and are significant only in abnormal conditions. These are not important in the screening situation.

---

**PSA AND TSH**

**PSA, or Prostate Specific Antigen**, is a protein that is produced by the normal prostate gland and produced by most prostate cancers. An elevated level of PSA (greater than 4 ng per millimeter), however, is a definite indication that you should see your physician for a thorough history and physical examination, including a thorough examination of the prostate gland.

**TSH, or Thyroid Stimulating Hormone**, will identify and/or monitor an underactive or overactive thyroid condition. You should consult your physician with any abnormal results.

---

**GLYCATED HEMOGLOBIN**

**Glycated Hemoglobin (HgbA1C or A1C)**, a test that measures the percentage of total hemoglobin in your blood that has glucose attached to it. This test is an average blood glucose over a two or three month period of time. A test used for diabetes management.