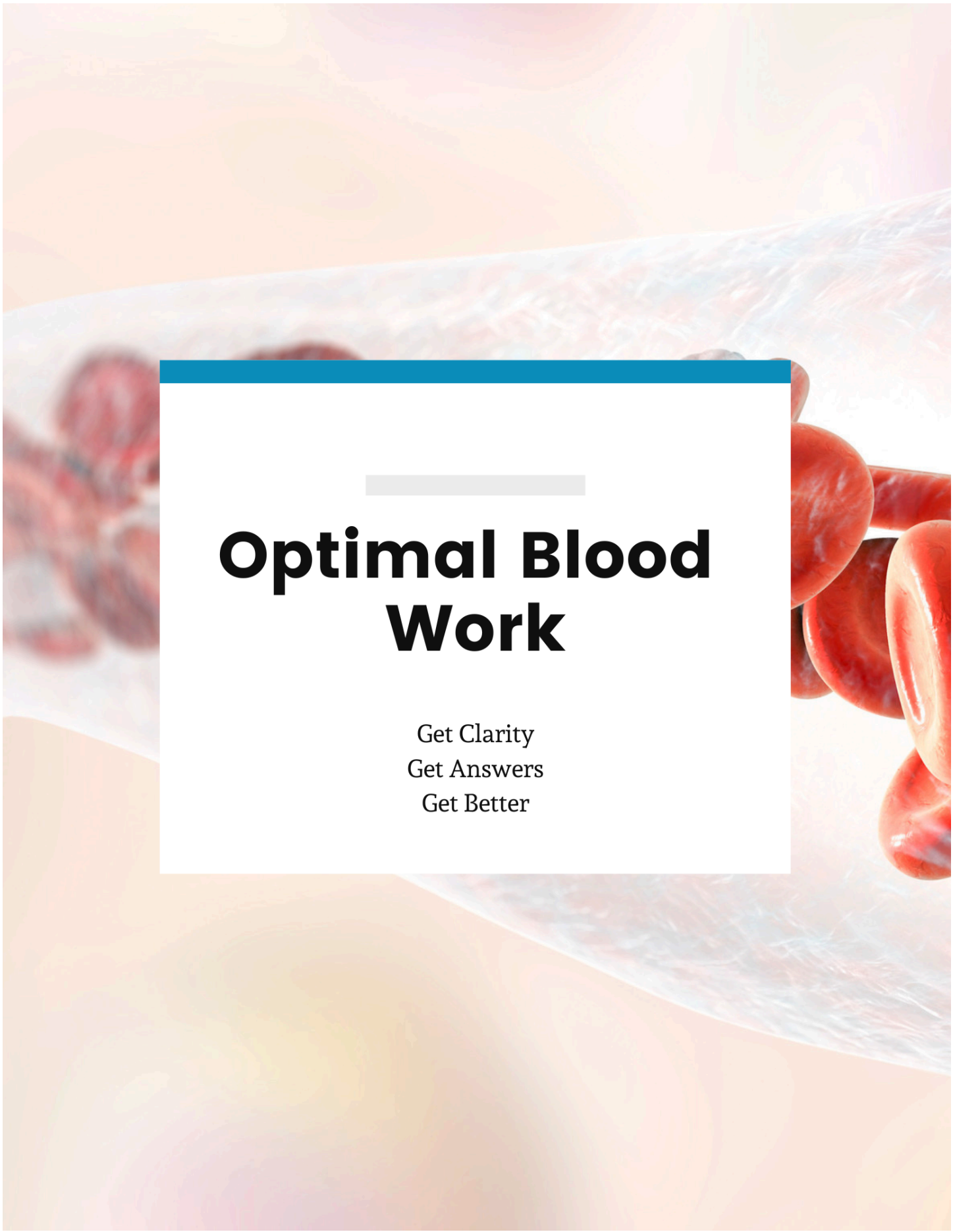


Optimal Blood Work

Get Clarity
Get Answers
Get Better

Functional Blood Chemistry Reference Ranges

Comprehensive Metabolic Panel (CMP)	Your Result	Functional Range	What it is
Glucose		75 - 86 mg/dL	The sugar in the blood which serves as a source of fuel to the cells of the body. Glucose is normally closely regulated by insulin.
Uric Acid [Male]		3.5 - 5.9 mg/dL	A waste product of protein digestion excreted in urine via the kidneys.
Uric Acid [Female]		3.0 - 5.5 mg/dL	A waste product of protein digestion excreted in urine via the kidneys.
BUN		12 - 17 mg/dL	A waste product formed in the liver and excreted in urine via the kidneys. It reflects the amount of urea and nitrogenous waste remaining from dietary protein metabolism. BUN = blood, urea, nitrogen. BUN and Creatinine are the two major indicators of kidney function.
Creatinine		0.8 - 1.1 mg/dL	A waste product produced by muscle metabolism and excreted in urine via the kidneys.
eGFR		> 90.0	
BUN/Creatinine Ratio		10 - 16	
Sodium		135 - 142 mmol/L	An electrolyte which plays an important role in salt and water balance in the body and reflects body fluid control and kidney/adrenal function. The adrenal hormone, aldosterone, helps regulate the blood sodium level.
Potassium		4.0 - 4.5 mmol/L	An electrolyte which maintains water balance inside the cells and helps in the transmission of nerve impulses. It is critical for proper functioning of muscles, particularly the heart.
Chloride		100 - 106 mmol/L	An electrolyte which maintains the proper balance of body fluids and the body's acid-base balance (pH). Changes in the chloride level are usually associated with changes in sodium or potassium.
Carbon Dioxide (CO2)		25 - 28 mmol/L	A gaseous waste product from metabolism which occurs mostly in the form of bicarbonate, a negatively charged ion which is used by the body to help maintain the body's acid-base balance (pH).
Calcium		9.5 - 10.0 mg/dL	A mineral which is controlled in the blood by the glands and kidneys. This value is typically a reflection of the factors influencing calcium metabolism rather than dietary calcium intake.
Phosphorous		3.0 - 4.0 mg/dL	A mineral which is regulated by the kidneys.

Comprehensive Metabolic Panel (CMP)	Your Result	Functional Range	What it is
Protein (Total)		6.9 - 7.4 g/dL	The total amount of protein in the blood. It is the sum of albumin and globulin – the two major groups of proteins in the blood.
Albumin		4.0 - 5.0 g/dL	The group of proteins which makes up approximately two-thirds of the total protein circulating in the blood. Produced mostly in the liver, albumin keeps fluid from leaking out of blood vessels and transports hormones, nutrients, electrolytes, and antioxidants throughout the body.
Globulin		2.4 - 2.8 g/dL	The group of proteins in the blood which help fight infections. Some globulins are produced in the liver, while others are made by the immune system.
A/G Ratio		1.5 - 2.0	
Bilirubin (Total)		0.2 - 1.0 mg/dL	A pigment in the bile which is a waste product produced by the liver as it breaks down and recycles red blood cells.
Alk Phosphatase		70 - 100 IU/L	An enzyme found mainly in the liver and bones.
LDH		140 - 200 IU/L	A group of metabolic enzymes found in all tissues in the body. Its highest concentrations are found in the heart, liver, lungs, brain, kidney, pancreas, and skeletal muscle.
AST (SGOT) [Male]		12 - 25 IU/L	A metabolic enzyme found mainly in the heart, liver, and muscles. In the Krebs cycle, Vitamin B6 is a major co-factor for AST's reactions.
AST (SGOT) [Female]		10 - 20 IU/L	A metabolic enzyme found mainly in the heart, liver, and muscles. In the Krebs cycle, Vitamin B6 is a major co-factor for AST's reactions.
ALT (SGPT) [Male]		12 - 28 IU/L	A metabolic enzyme found in the liver, muscle, heart, and kidney cells. High levels of the enzyme will be released into the bloodstream when there is damage to these cells.
ALT (SGPT) [Female]		10 - 25 IU/L	A metabolic enzyme found in the liver, muscle, heart, and kidney cells. High levels of the enzyme will be released into the bloodstream when there is damage to these cells.
GGT (GGPT)		18 - 28 IU/L	A metabolic enzyme found mainly in the heart, liver, and muscles. In the Krebs cycle, Vitamin B6 is a major co-factor for AST's reactions.

Lipid Panel	Your Result	Functional Range	What it is
Cholesterol		170 - 200 mg/dL	A waxy fat-like substance which is transported through the blood by lipoproteins and plays an essential role in numerous functions in the body.
Triglycerides		70 - 80 mg/dL	The fats in the blood which can be derived from the diet or synthesized by the liver. Triglycerides serve as a source of fuel for all the muscles of the body and carry the fat-soluble vitamins in the blood.
HDL Cholesterol		55 - 85 mg/dL	The primary lipoprotein that transports cholesterol (and other nutrients) from the peripheral tissues back to the liver.
LDL Cholesterol		80 - 100 mg/dL	The primary lipoprotein that transports cholesterol, fat-soluble vitamins, and essential fatty acids from the liver to the peripheral tissues.
Triglycerides/HDL Ratio		0 - 2	Calculate by dividing triglycerides by HDL
Total Cholesterol/HDL Ratio		0 - 4.4	Calculate by dividing total cholesterol by HDL

Iron Panel	Your Result	Functional Range	What it is
Iron (Serum)		85 - 130 µg/dL	Measures the level of iron in the liquid portion of the blood.
TIBC		250 - 350 µg/dL	Measures the blood's capacity to bind iron with transferrin, a protein produced by the liver that is needed to carry iron ions through the bloodstream.
Iron Saturation		25 - 35%	This is a percentage calculated by dividing the serum iron level by TIBC. It reflects the amount of iron bound to transferrin in the blood.
Ferritin		50 - 100 ng/mL	Measures the amount of stored iron in the body and is an early warning of iron deficiency when it is low.

Complete Blood Count (CBC)	Your Result	Functional Range	What it is
WBC		3.0 - 6.5 x103/µL	The count of the number of white blood cells (WBCs) in the blood. WBCs are part of the immune system and defend the body against infection.
RBC [Male]		4.2 - 4.9 x106/µL	The count of the number of red blood cells (RBCs) in the blood. RBCs carry oxygen from the lungs to the rest of the body and carry carbon dioxide away from the cells in your body.
RBC [Female]		3.9 - 4.5 x106/µL	The count of the number of red blood cells (RBCs) in the blood. RBCs carry oxygen from the lungs to the rest of the body and carry carbon dioxide away from the cells in your body.
Hemoglobin [Male]		14.0 - 15.0 g/dL	The total amount of the iron-rich protein in RBCs that carries oxygen and gives the blood cell its red color. Hemoglobin fills up the RBCs and is a good measure of the blood's ability to carry oxygen throughout the body.
Hemoglobin [Female]		13.5 - 14.5 g/dL	The total amount of the iron-rich protein in RBCs that carries oxygen and gives the blood cell its red color. Hemoglobin fills up the RBCs and is a good measure of the blood's ability to carry oxygen throughout the body.
Hematocrit [Male]		40 - 48%	The percentage of a person's total blood volume that consists of RBCs. A value of 40% means that 40% of the blood's volume is made of red blood cells. This measurement is affected by the number and size of RBCs.
Hematocrit [Female]		37 - 44%	The percentage of a person's total blood volume that consists of RBCs. A value of 40% means that 40% of the blood's volume is made of red blood cells. This measurement is affected by the number and size of RBCs.
MCV		82.0 - 89.9 fL	The measurement of the average size of the RBCs. Smaller-sized RBCs result in a lower MCV, while larger-sized RBCs result in a higher MCV.
MCH		28.0 - 31.9 pg	The calculation of the average amount of hemoglobin inside RBCs. RBCs with more hemoglobin result in a higher MCH.
MCHC		32 - 35 g/dL	The calculation of the average concentration of hemoglobin inside RBCs.
RDW		11 - 13%	The calculation of the variation in the size of RBCs. This shows whether the cells are all the same or different sizes or shapes.
Platelets		150 - 385 x103/µL	The count of the number of this smallest type of blood cell which is important for normal blood clotting.

Complete Blood Count (CBC)	Your Result	Functional Range	What it is
Neutrophils		40 - 60%	The percentage of neutrophils, a type of WBC which responds quickly to infection by moving toward bacteria and then swallowing them up so the bacteria can't harm the body. Normally the most abundant circulating WBC.
Lymphocytes		24 - 37%	The percentage of lymphocytes, a type of WBC which protects the body against bacteria and viruses.
Monocytes		0 - 7%	The percentage of monocytes, a type of WBC which consumes dead or damaged cells. Monocytes are the "clean-up crew."
Eosinophils		0 - 3%	The percentage of eosinophils, a type of WBC which kill parasites and is produced as part of the allergic response.
Basophils		0 - 1%	The percentage of basophils, a type of WBC that releases histamine, heparin, and other biologically active molecules in response to parasite infections and during allergic reactions.

Thyroid Panel	Your Result	Functional Range	What it is
TSH		0.5 - 2.0 µIU/mL	Measures the amount of TSH, the hormone produced by the anterior pituitary gland which "talks" to the thyroid gland and tells the thyroid to increase or decrease production of T4 (thyroxine) or conversion to T3 depending on the amounts of T4 and T3 circulating in the bloodstream.
Total T4		6.0 - 11.9 µg/dL	Total amount of T4 bound and unbound.
Free T4		1.4 - 1.8 ng/dL	Measures the amount of unbound T4 hormone available in the body
Total T3		120 - 180 ng/dL	Total amount of T3 bound and unbound.
Free T3		3.4 - 4.4 pg/mL	Measures the amount of unbound T3 hormone available in the body
T3 Uptake		28 - 38%	
Reverse T3		< 15 ng/dL	Measures the amount of a form of T3 which opposes the biological action of normal T3 and slows metabolism. It is produced by the body as a protective mechanism when it can't tolerate the normal amount of thyroid hormone throughout the entire body.
TPO Antibody (Thyroid Peroxidase Ab)		< 10 IU/mL	Measures the amount of antibodies produced by the immune system to attack TPO, an enzyme expressed in the thyroid gland which initiates the synthesis of T4
TBG Antibody (Thyroglobulin Ab)		< 20 IU/mL	Measures the amount of antibodies produced by the immune system to attack Thyroglobulin, a protein precursor to thyroid hormone

Additional Markers	Your Result	Functional Range	What it is
Vitamin D		60 - 80 ng/mL	Measures the level of the fat-soluble, hormone-like nutrient Vitamin D in the storage form
Insulin		1 - 5 µIU/mL	Measures the level of the hormone insulin, which enables cells to take in glucose
Hemoglobin A1C		4.5 - 5.5 %	Measures the percentage of blood sugar attached to hemoglobin and indicates the average blood sugar (glucose) levels over the last 3 months
Homocysteine		6.0 - 7.2 umol/L	Measures the level of the amino acid homocysteine in the blood
Histamine (Whole Blood)		40 - 70 ng/mL	Measures the level of the chemical compound histamine in the blood
Hs-CRP [Male]		< 0.55 mg/L	Measures amount of inflammation in the body
Hs-CRP [Female]		< 1.5 mg/L	Measures amount of inflammation in the body
PSA [Male]		0 - 2.6 ng/mL	
Fibrinogen		200 - 300 mg/dL	
Anion Gap		7 - 12 mEq/L	
Magnesium (RBC) - This is a special lab. It's not on a normal blood draw.		6.0 - 6.5 mg/dL	Magnesium in the blood. Keep in mind that 99% of magnesium lives in the cells
Vitamin B12 (serum)		800 - 900 pg/mL	B12 floating around the blood. Urine is a better way to assess.