OptimalDX

Functional Health Report

A comprehensive analysis of your test results.

BLOOD CHEMISTRY ANALYSIS

Patient Report

Prepared for	Male Sample 59 year old male born Nov 1, 1966 56 years old at the time this lab test was taken Fasting

Requested by	Kate Karo, AFMHC, RHP, FNTP Breakthrough Functional Medicine + Nutrition

Collected Date	Jan 24, 2023
Lab	Quest

What's Inside?

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An introduction to Functional Blood Chemistry Analysis and your Functional Health Report (FHR).

Introduction

Patient Report

Your report is the result of a detailed and proprietary algorithmic analysis of your complex and comprehensive blood biomarkers.

Kate Karo, AFMHC, RHP, FNTP
Breakthrough Functional Medicine + Nutrition

THE FUNCTIONAL HEALTH REPORT

Your blood test results have been analyzed for their hidden meaning and the subtle, web-like patterns concealed within the numbers that signal the first stages of functional change in your body. The Functional Health Report (FHR) takes all of this analytical information and provides a comprehensive interpretation of the results in a written and graphical format.

The report gives you a window into the state of health in the main functional physiological systems of the body, its supporting accessory systems, and the degree of deficiency in individual nutrients. The report is broken down into 3 main sections:

ASSESSMENT

The Assessment section is at the very heart of the Functional Health Report. It is here that the findings of the risk analysis are presented.

The Functional Body Systems and Accessory reports show the risk of dysfunction in the various physiological and supporting accessory systems in your body.

The Nutrient Status report gives you an indication of your general nutritional status and the Nutrient Deficiencies report shows the risk of deficiency for individual nutrients.

Each of the assessment reports is accompanied by a section that contains detailed descriptions and explanations of the results presented in each of the reports in this section.

ANALYSIS

The Analysis section shows you the actual results of your blood test itself.

The Blood Test Results Report lists your blood test results and shows if an individual biomarker is optimal, outside the optimal range or outside of the standard range.

The Blood Test Results Comparative Report compares results of the latest and previous blood test and gives you a sense of whether or not there has been an improvement in the individual biomarker results.

The Blood Test History report allows you to compare results over time and see where improvement has been made and allows you to track progress in the individual biomarkers.

The Out of Optimal Range report shows all of the biomarkers that are out of the optimal range and gives you some important information as to why each biomarker might be elevated or decreased. Each biomarker in the Out of Optimal Range report hyperlinks back into the Blood Test Results report so you can see a more detailed view of the blood test results.

HEALTH CONCERNS

All the information on the Assessment and Analysis sections of the report are summarized in the Health Concerns section, which focuses on the top areas of need as presented in this report.

2

A full breakdown of all the individual biomarker results, showing if a particular biomarker is outside the optimal range or the standard range, plus a comparative and historical view.

Analytics

Blood Test Results

The Blood Test Results Report lists the results from your Chemistry Screen and CBC and shows you whether or not an individual biomarker is optimal, outside of the optimal range, or outside of the standard range. The biomarkers are grouped into their most common categories.

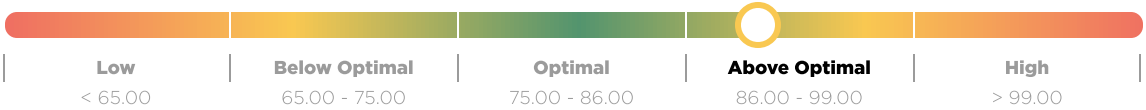
Some biomarkers in the Blood Test Results Report that are above or below the Optimal or marked Low or High may be hyperlinked into the "Out of Optimal Range Report", so you can read some background information on those biomarkers and why they may be high or low.

0	3	24	72	16	6	0	121
Alarm Low	**Low**	**Below Optimal**	**Optimal**	**Above Optimal**	**High**	**Alarm High**	**Total**

BLOOD GLUCOSE

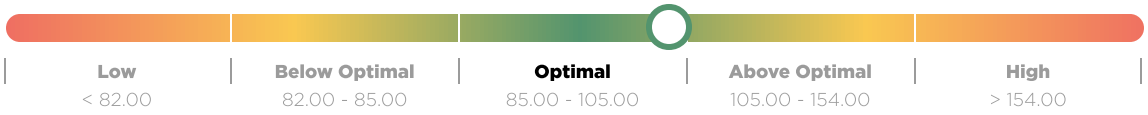
Keeping your blood sugar balanced is one of the best ways to maintain steady energy and overall wellness. The tests in this category show how well your body handles sugar both day-to-day and over longer periods, helping to catch early signs of trouble before they turn into bigger issues. By taking a functional approach, we can use these results to make simple yet powerful changes to support healthier blood sugar levels.

Glucose Fasting
90.00 mg/dL



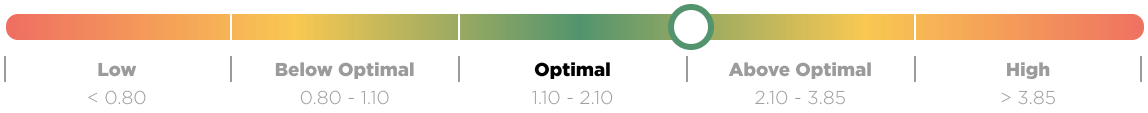
Hemoglobin A1C
5.20 %

eAG
103.00 mg/dL



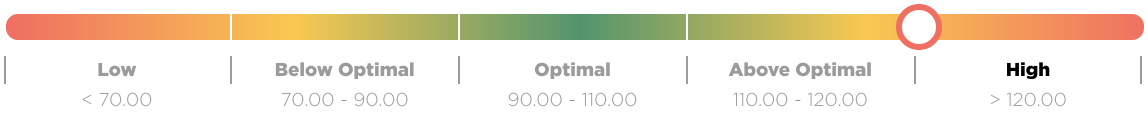
Insulin
5.20 µIU/mL

C-Peptide
2.10 ng/mL

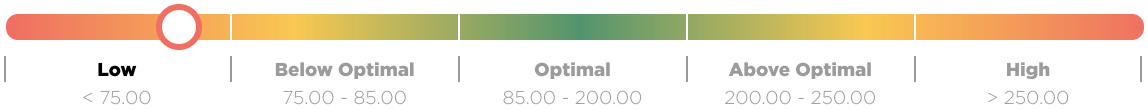


Fructosamine
193.70 µmol/L

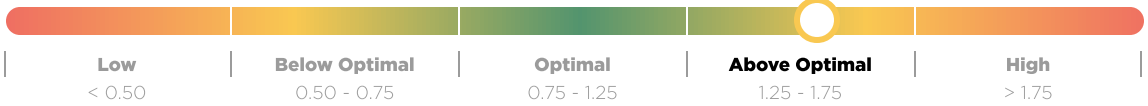
HOMA2-%B
128.20 %



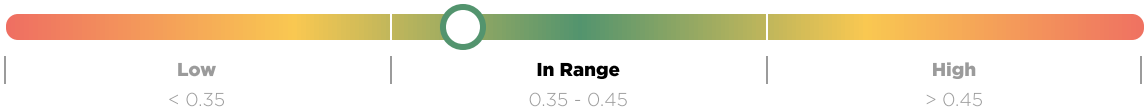
HOMA2-%S
65.00 %



HOMA2-IR
1.53 Index



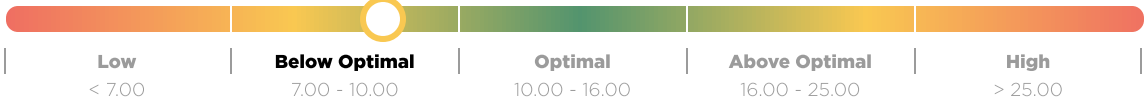
QUICKI
0.37 Index



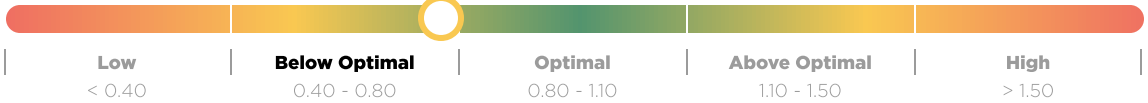
KIDNEY

Your kidneys act as filters, clearing out waste and keeping the right balance of fluids and minerals in your blood. These biomarkers measure how well your kidneys are doing their job, often catching early changes so we can address them before they become bigger problems. A functional approach means looking at the whole picture—from diet and hydration to everyday habits that support kidney health.

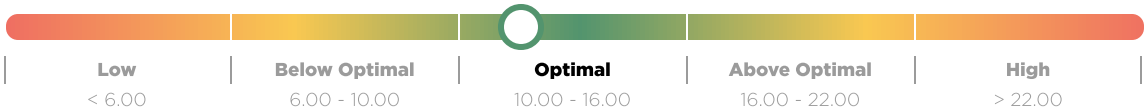
BUN
9.00 mg/dL



Creatinine
0.77 mg/dL



BUN/Creatinine
11.69 Ratio



eGFR
107.00 mL/min

PROSTATE

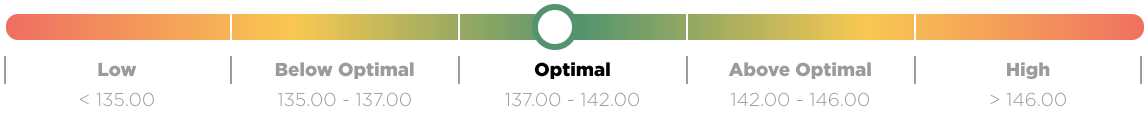
Your prostate gland's health can be monitored through specific proteins it produces, helping us understand how it's functioning over time. By tracking these markers, we can detect changes early and guide you toward choices that support optimal prostate health as you age.

PSA - Total
0.40 ng/mL

ELECTROLYTES

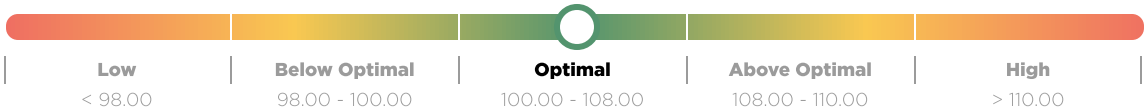
Electrolytes help your body stay hydrated, regulate blood pressure, and keep your muscles and nerves working properly. When these levels are out of balance, you may feel fatigued, dizzy, or have muscle cramps. By monitoring these important minerals in your blood, we can understand how well your body maintains its internal balance and guide you toward the right choices to help you feel energized and well.

Sodium
139.00 mEq/L



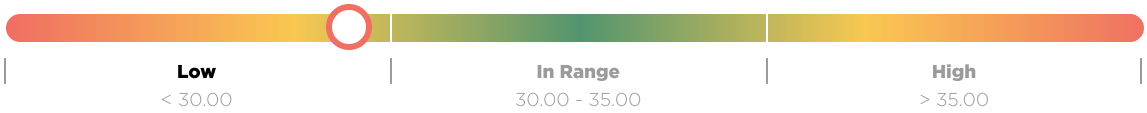
Potassium
4.70 mEq/L

Chloride
104.00 mEq/L



CO2, bicarbonate
25.00 mEq/L

Sodium : Potassium
29.57 ratio



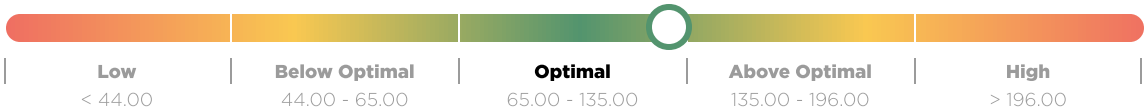
METABOLIC

Metabolic biomarker analysis provides key insights into how your body manages energy, muscle function, and electrolyte balance. By spotting early changes in these biomarkers, we can develop appropriate support strategies to keep your metabolism running smoothly.

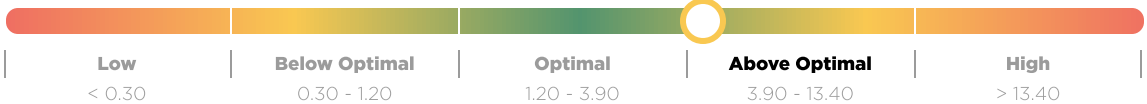
Anion Gap
14.70 mEq/L

Uric Acid
4.30 mg/dL

Creatine Kinase (CK)
130.00 U/L



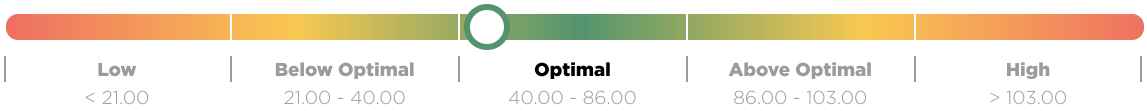
Leptin
4.50 ng/mL



ENZYMES

Your body's enzymes help break down food and convert nutrients into energy. By looking at your enzyme levels, we can identify why you might be experiencing digestive issues or other symptoms and guide you toward choices that support your body's natural enzyme function.

Amylase
45.00 U/L



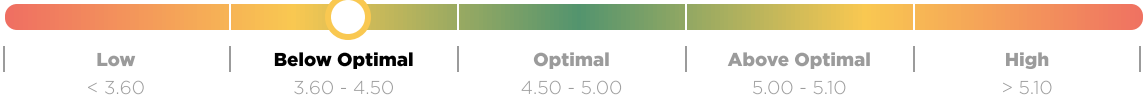
Lipase
43.00 U/L

PROTEINS

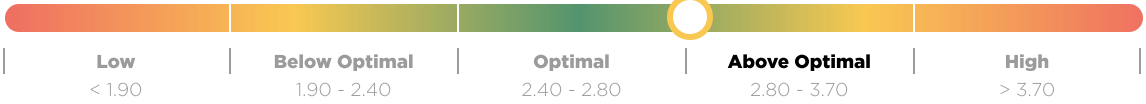
Protein analysis gives us a clear look at the proteins in your blood, which play a vital role in keeping you healthy by supporting everything from your immune system to your overall nutrition. With these insights, we can help you maintain a balanced level of these important proteins and boost your well-being.

Protein - Total
6.86 g/dL

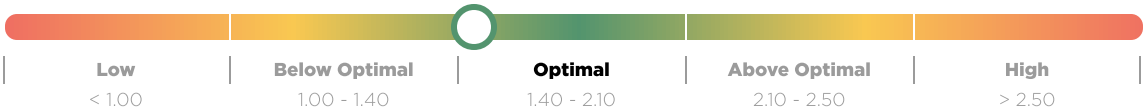
Albumin
4.05 g/dL



Globulin - Total
2.81 g/dL



Albumin/Globulin Ratio
1.44 ratio



MINERALS

Minerals are essential for everything from bone health to energy production and immune function. By measuring both the minerals in your blood and inside your cells, we can understand if you're getting and properly using these vital nutrients, helping us guide you toward choices that maintain optimal mineral balance for your health.

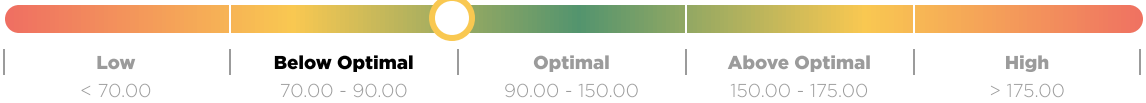
Calcium
9.12 mg/dL

Phosphorus
2.92 mg/dL

Magnesium - Serum
2.10 mg/dL

Magnesium - RBC
5.80 mg/dL

Copper - Serum
89.20 µg/dL

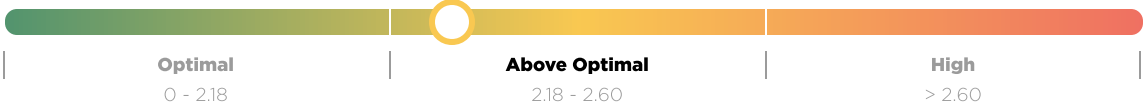


Zinc - Serum
76.20 µg/dL

Zinc - RBC
9.10 mg/L

Copper : Zinc Ratio
1.17 Ratio

Calcium : Albumin
2.25 ratio

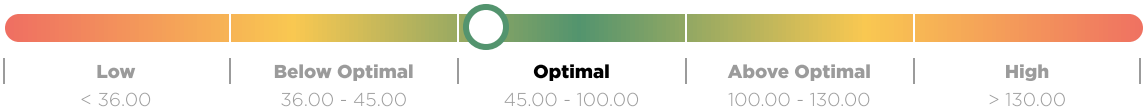


Calcium : Phosphorus
3.12 ratio

LIVER AND GB

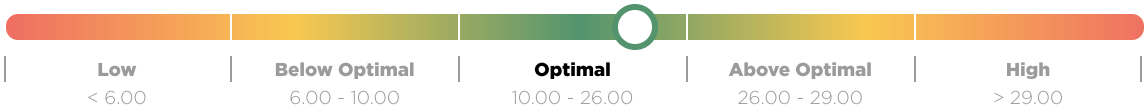
Liver and gallbladder biomarkers give us an indication of how well your liver and gallbladder are working to support your overall health. By spotting early signs of stress or imbalance, we can make appropriate support strategies to help keep these vital organs functioning smoothly and support their optimal function.

Alkaline Phosphatase
51.00 IU/L



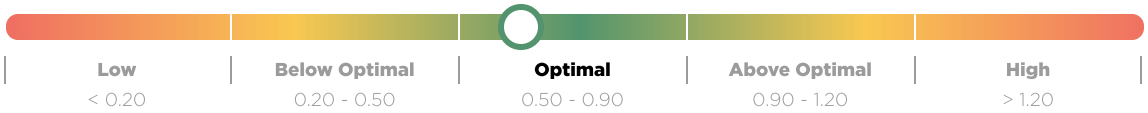
AST
12.00 IU/L

ALT
22.00 IU/L



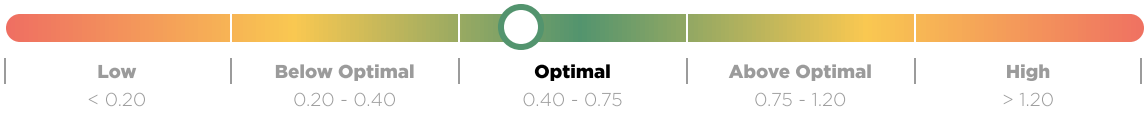
LDH
131.00 IU/L

Bilirubin - Total
0.60 mg/dL

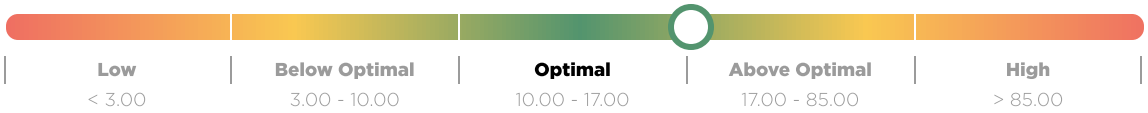


Bilirubin - Direct
0.10 mg/dL

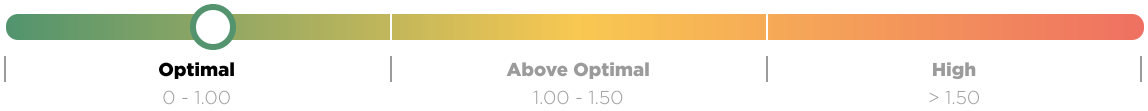
Bilirubin - Indirect
0.50 mg/dL



GGT
17.00 IU/L



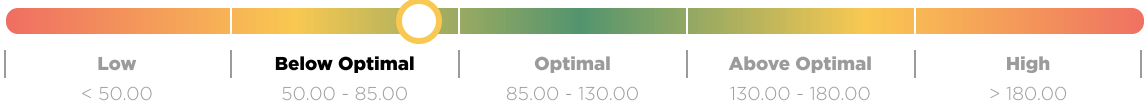
AST : ALT
0.55 Ratio



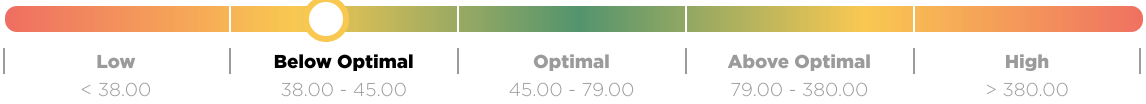
IRON MARKERS

Iron is a key mineral your body relies on to keep you feeling energized and healthy. Around 70% of your total iron is found in red blood cells, where it carries oxygen from your lungs to all the parts of your body that need it. By measuring different aspects of how your body handles iron, we can understand if you're getting and using the right amount – not too little or too much – and guide you toward choices that help maintain healthy iron levels for optimal energy and wellness.

Iron - Serum
78.00 µg/dL

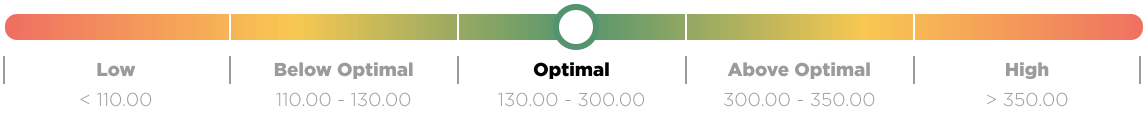


Ferritin
41.00 ng/mL

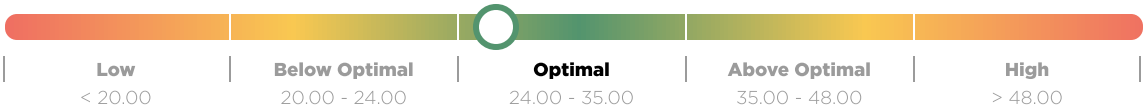


TIBC
300.00 µg/dL

UIBC
222.00 µg/dL



% Transferrin saturation
26.00 %



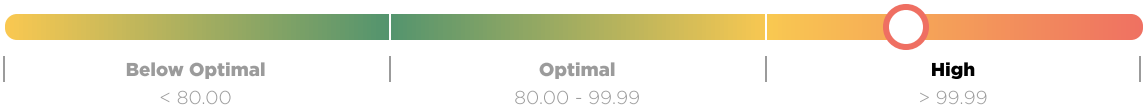
LIPIDS

The lipid panel assesses the distribution and ratios of various lipid fractions. By examining these different markers, we can better understand the role lipids play in your cardiovascular health

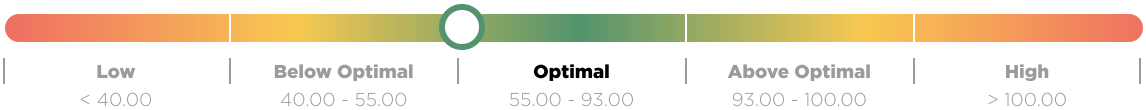
Cholesterol - Total
203.00 mg/dL

Triglycerides
96.00 mg/dL

LDL Cholesterol
122.00 mg/dL

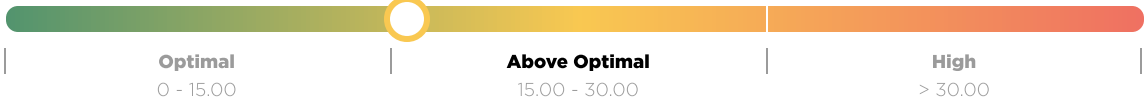


HDL Cholesterol
56.00 mg/dL

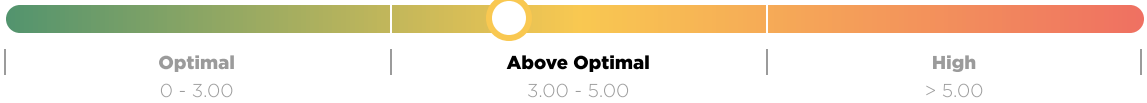


Non-HDL Cholesterol
147.00 mg/dL

VLDL Cholesterol
15.60 mg/dL

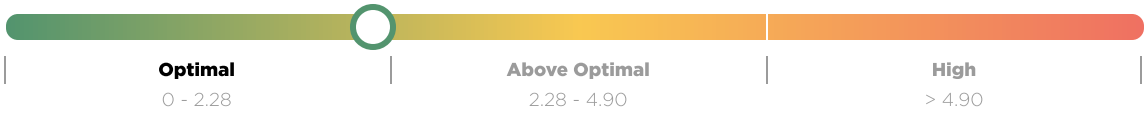


Total Cholesterol/HDL-C Ratio
3.62 Ratio



Triglyceride:HDL
1.71 ratio

LDL : HDL
2.18 Ratio



CARDIOMETABOLIC

Your heart and blood vessel health depends on many complex factors, and these specialized tests help us understand how your cardiovascular system is working at a deeper level than standard heart tests. By looking at these biomarkers, we can spot potential concerns early and guide you toward specific strategies that best support your long-term heart health and overall wellness.

Homocysteine
7.30 µmol/L

THYROID

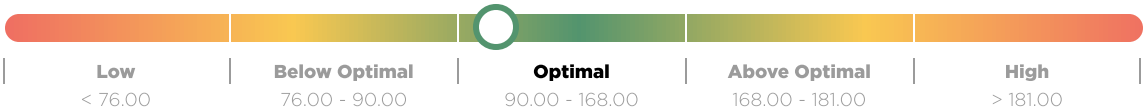
Your thyroid is like your body's metabolic thermostat, controlling energy production, temperature regulation, and countless other functions throughout your body. By looking at thyroid biomarkers, we can understand how well your thyroid is working at every stage, helping us guide you toward strategies that support optimal thyroid function.

TSH
1.31 mIU/L

T4 - Total
8.30 µg/dL

T4 - Free
1.30 ng/dL

T3 - Total
103.00 ng/dL



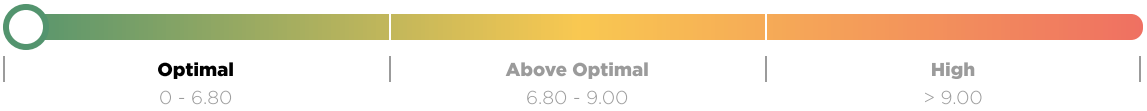
T3 - Free
3.30 pg/mL

Reverse T3
13.00 ng/dL

T3 Uptake
31.00 %

Free Thyroxine Index (T7)
2.60 Index

Thyroid Peroxidase (TPO) Abs
0.20 IU/mL



Thyroglobulin Abs
<1.00 IU/mL

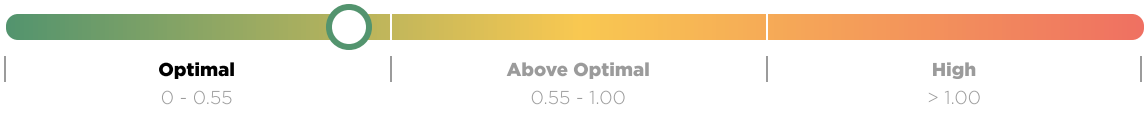
Free T3 : Reverse T3
25.38 Ratio

Free T3 : Free T4
2.54 Ratio

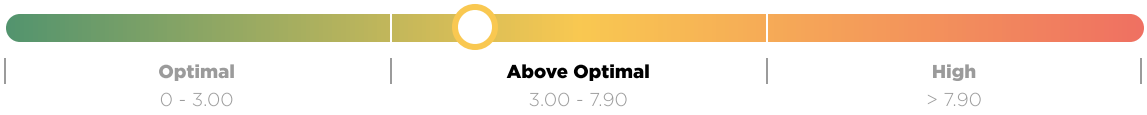
INFLAMMATION

Inflammatory biomarkers enable us to evaluate both acute and chronic systemic inflammation. While some inflammation is normal and helpful, too much can affect your energy, mood, and overall health, which is why we measure these markers to guide personalized recommendations that can help your body maintain a healthy balance.

Hs CRP
0.50 mg/L



C-Reactive Protein
4.10 mg/L



ESR
4.80 mm/hr

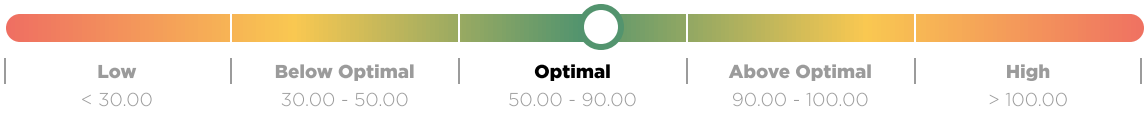
Fibrinogen Activity
283.00 mg/dL

Neutrophil : Lymphocyte (NLR)
1.01 Ratio

VITAMINS

Vitamin biomarker analysis helps us see if your body is getting the right vitamins to produce energy, support your immune system, and maintain overall health. By measuring both the amounts and active forms of these vital nutrients, we can understand if you're getting and properly using the vitamins you need, helping us guide you toward choices that optimize your nutritional status.

Vitamin D (25-OH) - Total
74.00 ng/mL

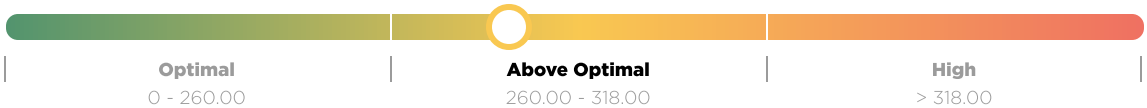


Vitamin B12
427.00 pg/mL

Folate - Serum
14.20 ng/mL

Folate - RBC
398.10 ng/mL

Methylmalonic Acid
278.20 nmol/L

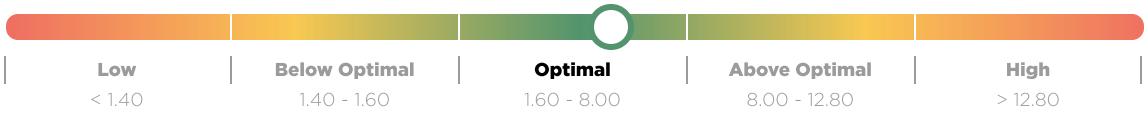


HORMONES

Hormones act as your body's messengers, controlling energy, mood, sleep, and overall well-being. When they are out of balance, you may feel tired, stressed, or have trouble with weight, focus, or sleep. By measuring various hormone levels, we can understand how well your endocrine system is performing as a whole and guide you toward strategies that help maintain optimal hormonal balance.

DHEA-S
75.00 µg/dL

FSH
5.90 mIU/mL

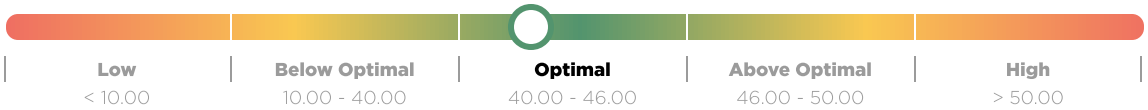


LH
4.30 mIU/mL

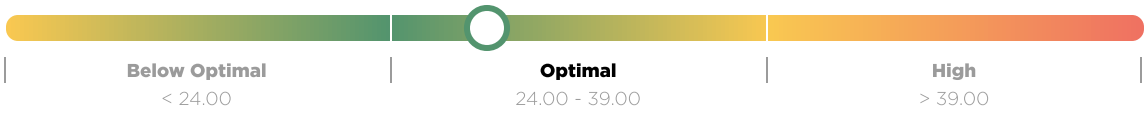
Testosterone Total
650.00 ng/dL

Testosterone Free
127.44 pg/mL

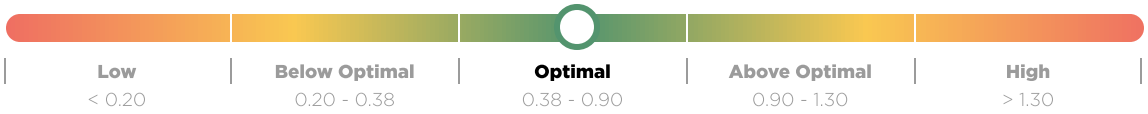
Sex Hormone Binding Globulin
42.00 nmol/L



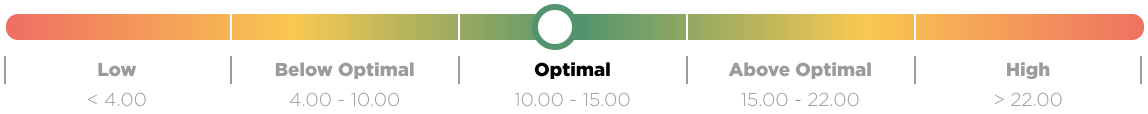
Estradiol
28.00 pg/mL



Progesterone
0.65 ng/mL



Cortisol - Total/AM
12.20 µg/dL



Cortisol : DHEA-S
0.16 ratio

Cortisol - PM
7.80 µg/dL

Gastrin
42.50 pg/mL

Testosterone Bioavailable
281.23 ng/dL

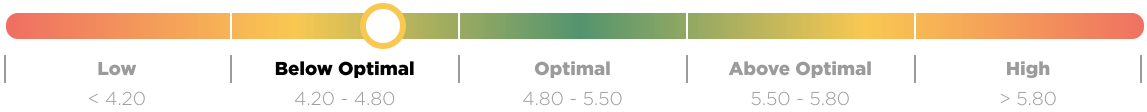
% Testosterone Bioavailable
43.27 %

% Testosterone Free
1.96 %

RBCS

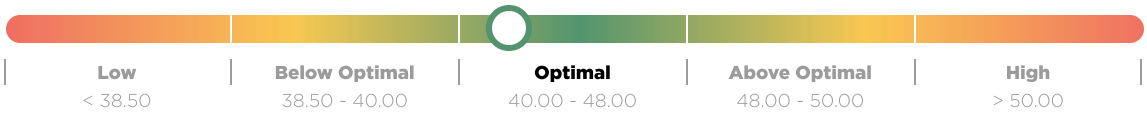
Your blood is responsible for carrying oxygen and supporting your immune system. The biomarkers on the Complete Blood Count (CBC) help us understand how well they're doing their job. By looking at the number, size, and characteristics of the different blood cells in the CBC, we can spot early signs of imbalances that might affect your energy, immune function, or overall health. We can then guide you toward choices that support healthy blood cell production.

RBC
4.60 m/cumm

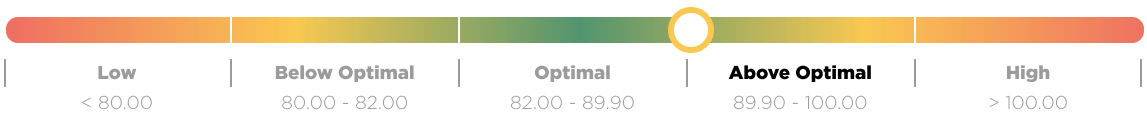


Hemoglobin
14.20 g/dL

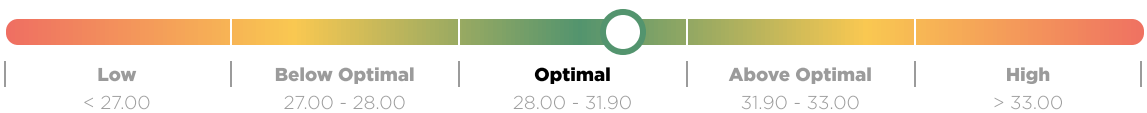
Hematocrit
41.60 %



MCV
90.40 fL

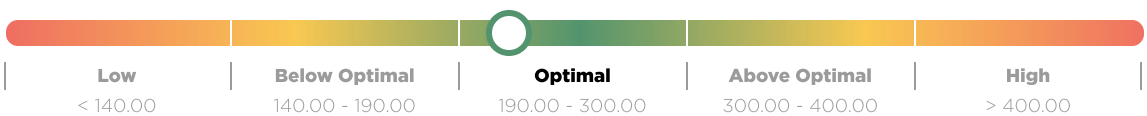


MCH
30.90 pg



MCHC
34.10 g/dL

Platelets
217.00 10E3/uL



MPV
11.20 fL

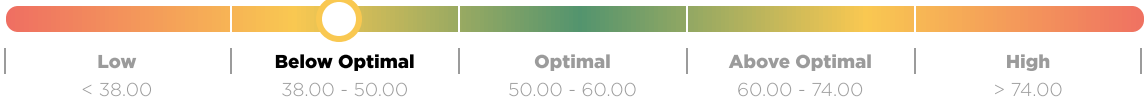
RDW
12.40 %

WBCS

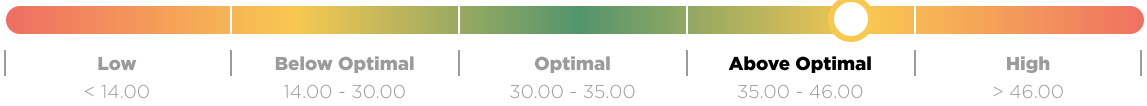
White blood cell analysis checks the different types of cells that help fight off infections and keep your body balanced. With this information, we can spot any early signs of immune-related issues and put together strategies to support your immune health and overall well-being.

Total WBCs
4.30 k/cumm

Neutrophils - %
43.40 %

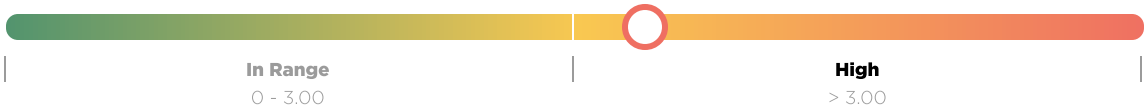


Lymphocytes - %
43.00 %

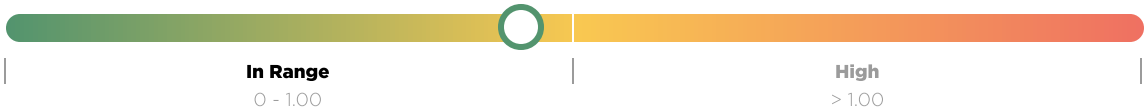


Monocytes - %
8.20 %

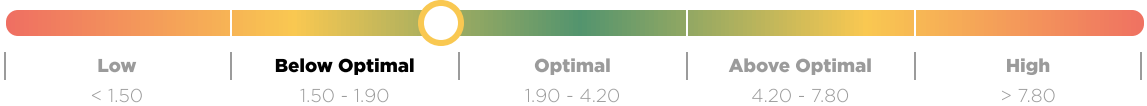
Eosinophils - %
4.50 %



Basophils - %
0.90 %



Neutrophils - Absolute
1.87 k/cumm

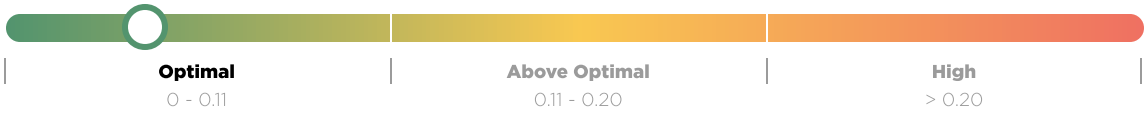


Lymphocytes - Absolute
1.85 k/cumm

Monocytes - Absolute
0.35 k/cumm

Eosinophils - Absolute
0.19 k/cumm

Basophils - Absolute
0.04 k/cumm



Out of Optimal Range

The following report shows all of the biomarkers that are out of the optimal range and gives you some important information as to why each biomarker might be elevated or decreased.

0	3	24	16	6	0
Alarm Low	**Low**	**Below Optimal**	**Above Optimal**	**High**	**Alarm High**

BLOOD GLUCOSE

HOMA2-%S

65.00 %

Low	Below Optimal	Optimal	Above Optimal	High
< 75.00 > 250.00	75.00 - 85.00	85.00 - 200.00	200.00 - 250.00	

HOMA2-%S is a calculation that estimates how well your body's cells respond to insulin. If your HOMA2-%S is low, it means your cells aren't taking in sugar from your bloodstream as effectively, which can lead to higher blood sugar levels over time. This reduced sensitivity can be an early warning sign of prediabetes or Type 2 Diabetes.

HOMA2-IR

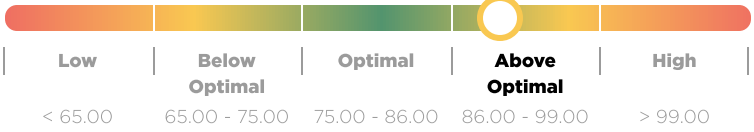
1.53 Index

Low	Below Optimal	Optimal	Above Optimal	High
< 0.50	0.50 - 0.75	0.75 - 1.25	1.25 - 1.75	> 1.75

HOMA2-IR is a way to estimate how much your body resists insulin, a hormone that helps control your blood sugar. A score above 1 suggests your body is becoming less responsive to insulin, a condition called insulin resistance. Over time, this can lead to higher blood sugar levels and raise your risk for conditions like metabolic syndrome or Type 2 Diabetes.

Glucose Fasting

90.00 mg/dL

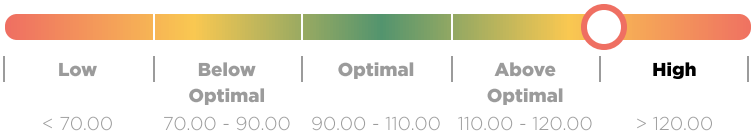


Low	Below Optimal	Optimal	**Above Optimal**	High
< 65.00	65.00 - 75.00	75.00 - 86.00	86.00 - 99.00	> 99.00

Fasting blood glucose (FBG) measures how much sugar is in your blood after you've gone without eating for several hours. Insulin and glucagon are two key hormones that help keep blood sugar in balance: insulin lowers your blood sugar by helping it move into your cells, and glucagon raises your blood sugar by telling your liver to release stored sugar. When FBG levels are high, it often means your body isn't making enough insulin or isn't using it effectively. This happens in type 1 diabetes, where the pancreas doesn't produce enough insulin, and type 2 diabetes, where the body becomes resistant to insulin over time. High FBG can also be a sign of other conditions, like prediabetes or metabolic syndrome, which both indicate possible trouble with how your body handles sugar and other nutrients.

HOMA2-%B

128.20 %

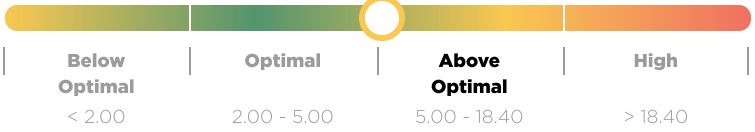


Low	Below Optimal	Optimal	Above Optimal	**High**
< 70.00	70.00 - 90.00	90.00 - 110.00	110.00 - 120.00	> 120.00

HOMA2-%B is a calculation that helps estimate how well the insulin-producing cells (beta cells) in your pancreas are working. If your HOMA2-%B is high, it can mean your pancreas is working overtime to produce extra insulin—often because your body's cells aren't responding to insulin as effectively as they should. This is sometimes an early indication of blood sugar dysregulation.

Insulin

5.20 µIU/mL



Below Optimal	Optimal	**Above Optimal**	High
< 2.00	2.00 - 5.00	5.00 - 18.40	> 18.40

Insulin is the hormone released by the pancreas in response to rising blood glucose. It decreases blood glucose by transporting it into the cells. Fasting insulin is the amount of insulin in your blood after you haven't eaten for several hours, usually overnight. If your fasting insulin level is high, it can be a sign that your cells aren't responding as well to insulin (often called "insulin resistance"). Over time, this can raise your risk for health problems like Type 2 Diabetes or heart and blood vessel issues.

KIDNEY

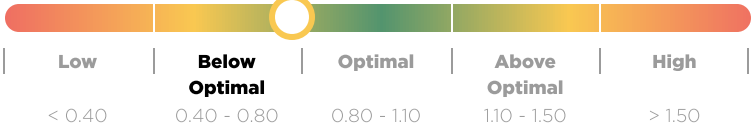
BUN

9.00 mg/dL

Blood Urea Nitrogen (BUN) is a test that measures a waste product called urea in your blood, which can give clues about how your body is breaking down protein and how well your kidneys and liver are working. If your BUN level is low, it usually isn't a big concern. It can sometimes happen if you're drinking a lot of fluids (diluting the urea), you're low in protein, or your liver isn't producing as much urea as usual.

Creatinine

0.77 mg/dL

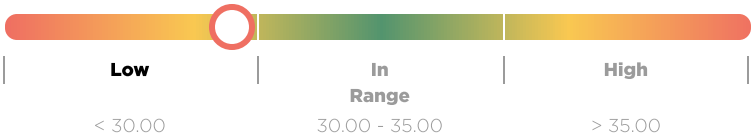


Serum creatinine is a waste product that comes from muscle activity and is normally filtered out by the kidneys. If your serum creatinine is low, it often simply means you have less muscle mass, or you've been losing muscle for some reason (like inactivity or certain health conditions).

ELECTROLYTES

Sodium : Potassium

29.57 ratio

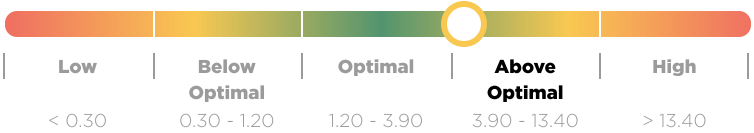


The sodium:potassium ratio compares two important minerals in your blood, both controlled by hormones from your adrenal glands. If your ratio is low, it may mean you've been under long-term stress that has caused diminished adrenal function. When your adrenal glands aren't as active, they don't make enough of the hormone (aldosterone) that helps keep sodium and potassium in balance. This can lead to lower sodium and higher potassium levels.

METABOLIC

Leptin

4.50 ng/mL

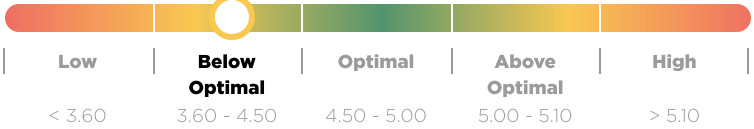


Leptin is a hormone made by your body's fat cells. It helps control your appetite and plays a role in your overall energy levels. If your leptin level is high, it often means you have more body fat, or your body isn't responding to leptin correctly—a condition sometimes called leptin resistance. This situation is often linked to weight gain, insulin resistance, and other health issues.

PROTEINS

Albumin

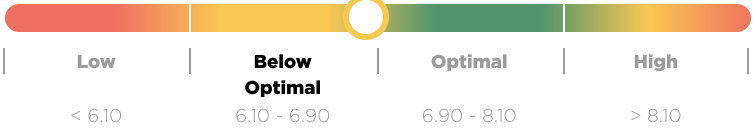
4.05 g/dL



Albumin is the main protein in your blood that helps keep fluid inside your blood vessels and carries nutrients around your body. When your albumin level is low, it can suggest you're not getting enough protein in your diet, your liver isn't working well, or your body is dealing with long-term inflammation.

Protein - Total

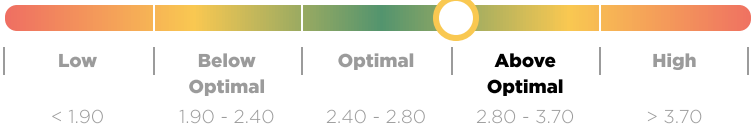
6.86 g/dL



Your blood's total protein is mainly made up of two kinds of proteins: albumin and globulins. If your total protein is low, it may be because you're not getting enough nutrients or you aren't digesting your food as well as you should. It can also happen if your liver isn't making enough protein.

Globulin - Total

2.81 g/dL

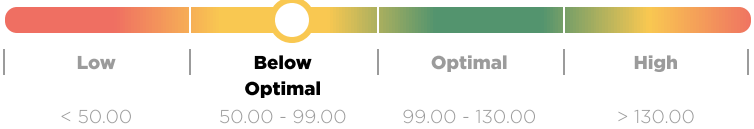


Total globulin is a measure of proteins in your blood that help with fighting infections and carrying other substances through your body. If your total globulin is high, it can mean your body is dealing with inflammation or stress, or you might have a condition affecting your liver or digestive system.

MINERALS

Zinc - Serum

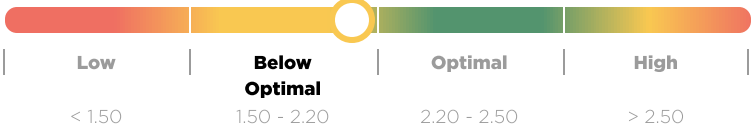
76.20 µg/dL



Zinc is a vital mineral that plays a crucial role in numerous bodily processes, including immune support and wound healing. When blood zinc is low, it indicates a deficiency that can impair immune function, slow tissue repair, and disrupt metabolism.

Magnesium - Serum

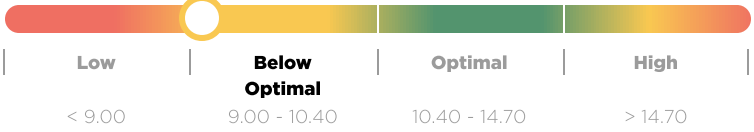
2.10 mg/dL



Serum magnesium is a measure of the magnesium found in your blood, which is important for your muscles, nerves, and bones. If your magnesium level is low, it might be because you're not getting enough from your diet, your body isn't absorbing it well (for example, if your stomach acid is low), or your kidneys are losing too much. Low magnesium can cause muscle cramps, twitching, or irregular heartbeats.

Zinc - RBC

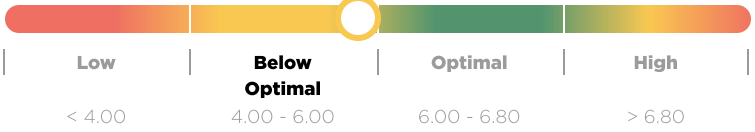
9.10 mg/L



Zinc is a key mineral involved in numerous bodily processes, including immune defense and wound healing. When zinc levels inside red blood cells are low, it indicates a true zinc deficiency, which can weaken the immune system, slow healing, and disrupt metabolism.

Magnesium - RBC

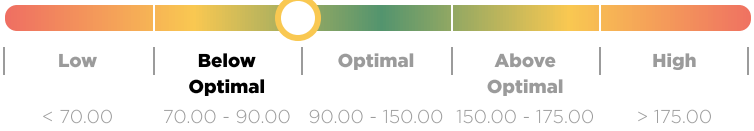
5.80 mg/dL



Magnesium is an essential mineral that supports numerous bodily processes, including bone maintenance, carbohydrate and protein metabolism, and muscle contraction. RBC Magnesium measures the amount of magnesium stored inside your red blood cells, providing a more accurate assessment of your long-term magnesium status than serum measurement. If your RBC magnesium is low, you might experience muscle cramps, weakness, headaches, irregular heartbeats, or other symptoms since your cells aren't getting enough of this essential mineral.

Copper - Serum

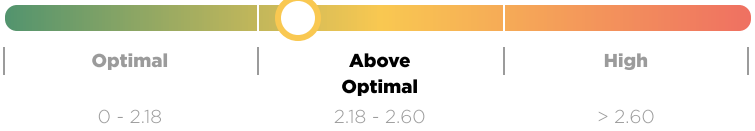
89.20 µg/dL



Serum copper is a measure of the copper in your blood, a mineral important for energy, brain function, blood cell production, and building strong bones. Low copper levels can affect your brain, liver, and other tissues, leading to issues with movement, poor blood health, or changes in your skin and hair. This may occur due to a poor diet or difficulties with nutrient absorption. Insufficient copper intake or excessive zinc intake can lead to copper deficiency as well.

Calcium : Albumin

2.25 ratio

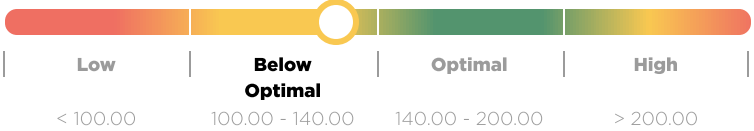


The Calcium:Albumin ratio looks at how much calcium you have in your blood compared to a protein called albumin. A high ratio can be a sign that you have too much calcium for the amount of albumin in your blood. Sometimes, this can be related to low albumin levels or conditions that raise your blood calcium.

LIVER AND GB

LDH

131.00 IU/L

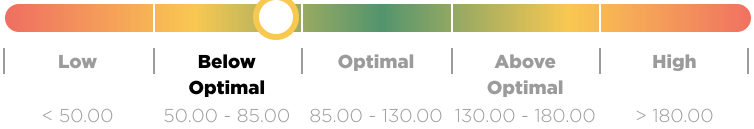


LDH represents a group of enzymes that help your body turn sugar into energy. When LDH levels are unusually low, it often points to problems with blood sugar control, such as reactive hypoglycemia, or issues with how the pancreas and other tissues process glucose.

IRON MARKERS

Iron - Serum

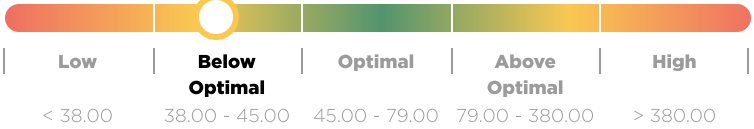
78.00 µg/dL



Iron is an essential mineral vital for carrying oxygen in hemoglobin, generating energy, and supporting cognitive functions. Serum iron measures the iron bound to proteins, such as transferrin, in your blood. When levels drop, it signals that your body's iron stores are winding down, often seen before anemia sets in, and can be due to iron deficiency, low stomach acid, or internal bleeding.

Ferritin

41.00 ng/mL

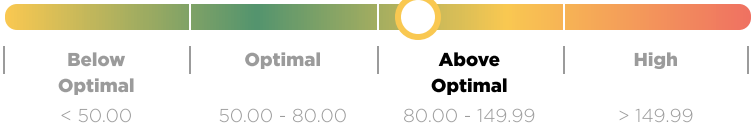


Ferritin is the primary way your body stores iron. When ferritin levels are low, it's the most sensitive sign of iron deficiency, indicating that your iron reserves are depleted.

LIPIDS

Triglycerides

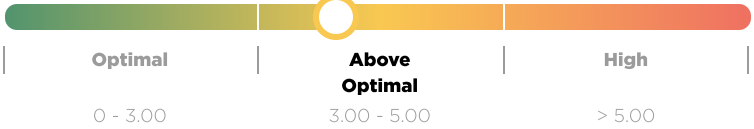
96.00 mg/dL



Serum triglycerides are fatty molecules in the blood derived from the liver or from excess fat or carbohydrate in the diet. Elevated levels occur in metabolic syndrome, fatty liver, and conditions with higher cardiovascular risk, as well as in pancreatitis, hypothyroidism, and adrenal dysfunction.

Total Cholesterol/HDL-C Ratio

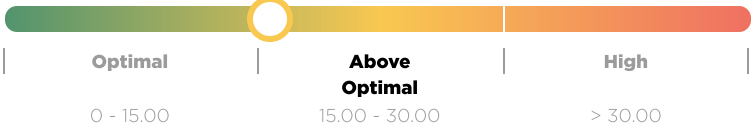
3.62 Ratio



The ratio of total cholesterol to HDL is a far better predictor of cardiovascular risk than total cholesterol alone. When this ratio rises above 3.0, it indicates an imbalance with too much cholesterol relative to protective HDL. Each one-point increase (for example, from 3.0 to 4.0) is associated with approximately a 60% higher risk of cardiovascular dysfunction, suggesting that a high ratio may be a strong warning sign that warrants further investigation.

VLDL Cholesterol

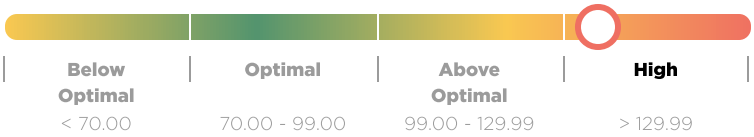
15.60 mg/dL



VLDL is a lipoprotein made by the liver that carries triglycerides, cholesterol, and other fats through your bloodstream. High VLDL cholesterol levels can contribute to plaque buildup in arteries and increase the risk of cardiovascular issues.

Non-HDL Cholesterol

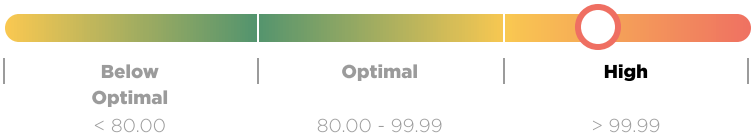
147.00 mg/dL



Non-HDL cholesterol measures all the cholesterol in your blood except what's carried by HDL. When non-HDL cholesterol is elevated, it indicates that more of the cholesterol particles that aren't carried by HDL are circulating. This raises the likelihood they'll get oxidized and stick to vessel walls, increasing the risk of blockages and cardiovascular dysfunction.

LDL Cholesterol

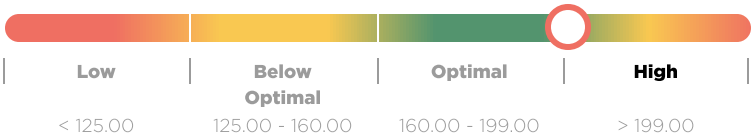
122.00 mg/dL



LDL carries cholesterol and fatty acids from the liver to tissues around the body for use or storage. Elevated LDL cholesterol (LDL-C) suggests more cholesterol is being delivered to tissues and arterial walls, which increases the risk of cardiovascular dysfunction. High LDL-C levels are also associated with metabolic syndrome, oxidative stress, and fatty liver changes.

Cholesterol - Total

203.00 mg/dL

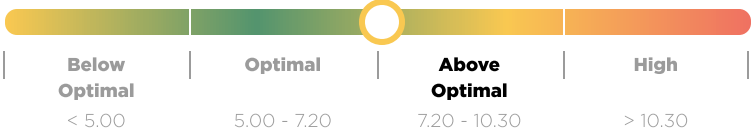


Cholesterol is a type of fat in your blood that your body needs to make cells and hormones. It is the most abundant fat in the brain and crucial to nerve health and function. Maintaining a healthy cholesterol level is essential. Excessive cholesterol in the blood can be a problem, especially when combined with oxidation and a poor diet. High cholesterol may be genetic and is one of several factors that can increase your risk of heart and blood vessel issues. It can also be linked to other health concerns, including blood sugar dysregulation, thyroid problems, issues with bile flow in the liver, and a condition associated with excess fat build-up in the liver.

CARDIOMETABOLIC

Homocysteine

7.30 µmol/L

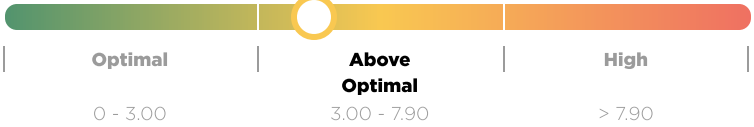


Homocysteine is a substance that naturally forms in your body, but it needs to be broken down properly to stay at healthy levels. When your body can't break it down well, homocysteine builds up in your blood. High levels of homocysteine can increase your risk of heart and blood vessel issues. High homocysteine can also be a sign that you're not getting enough of certain B vitamins - specifically B6, B12, or folate. Your body needs these vitamins to maintain optimal homocysteine levels.

INFLAMMATION

C-Reactive Protein

4.10 mg/L

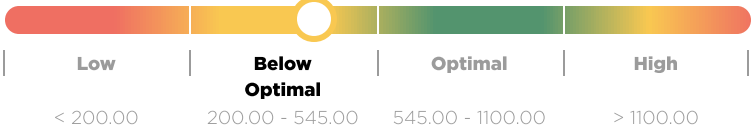


C-Reactive Protein (CRP) is a marker of inflammation made by the liver. When CRP levels rise, it signals that your body is experiencing inflammation. Elevated CRP can occur with infections or chronic inflammatory conditions and is also linked to excess belly fat, gum disease, high blood pressure, and an increased likelihood of cardiovascular dysfunction. It may also be seen in people with diabetes or depression, reflecting how inflammation can play a role in a variety of health issues.

VITAMINS

Vitamin B12

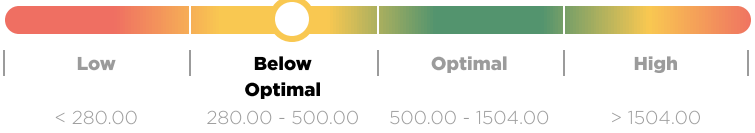
427.00 pg/mL



Vitamin B12 is essential for producing DNA, forming red blood cells, and maintaining nerve health. Low blood B12 levels mean you're not getting or absorbing enough, which can lead to anemia and nerve problems.

Folate - RBC

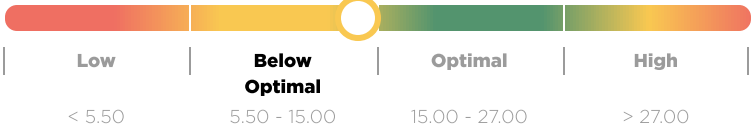
398.10 ng/mL



Folate is a member of the B complex family of vitamins and is also known as vitamin B9. Red blood cell folate reflects your long-term folate stores, which are essential for DNA production, cell growth, and the formation of healthy red blood cells. When RBC folate is low, it often means you haven't had enough folate (or possibly vitamin B12), which can impair DNA synthesis, disrupt methylation processes, and increase risks like neural tube defects or elevated homocysteine.

Folate - Serum

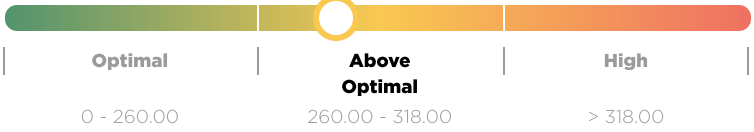
14.20 ng/mL



Folate is a member of the B complex family of vitamins and is also known as vitamin B9. Folate helps your body produce DNA and form red blood cells properly. When folate levels are low, due to a poor diet, compromised absorption, certain medications, pregnancy, or excessive alcohol consumption, your body can't produce healthy blood cells. This leads to larger-than-normal cells that don't mature correctly, causing a type of anemia that leaves you feeling tired and weak.

Methylmalonic Acid

278.20 nmol/L

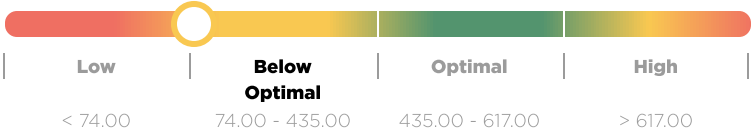


Methylmalonic acid (MMA) is produced when your body breaks down certain fats and proteins, a process that needs vitamin B12. High MMA levels indicate that B12-dependent metabolism is impaired, commonly reflecting an early vitamin B12 deficiency even before other signs appear.

HORMONES

DHEA-S

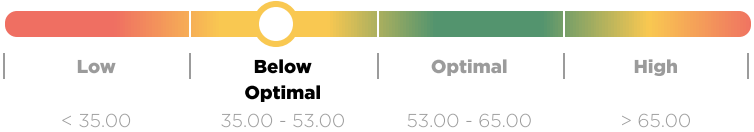
75.00 µg/dL



DHEA is a key steroid made by your adrenal glands that supports over 150 repair and growth functions in the body and brain, and serves as the raw material for sex hormones. When DHEA-S, the water-soluble form in circulation, falls below the levels typical of a healthy 30-year-old, it's linked to adrenal insufficiency and age-related issues, such as changes in heart and metabolic function, weaker bones, mood shifts, and lower sexual health.

% Testosterone Bioavailable

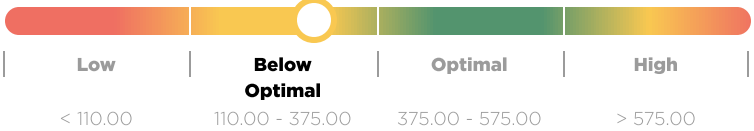
43.27 %



The % bioavailable testosterone test measures how much of your total testosterone is available for your body to utilize. When that percentage is low, it's linked to issues like weight gain around the belly, higher risk for heart and metabolic problems, lower sex drive, and trouble with erections.

Testosterone Bioavailable

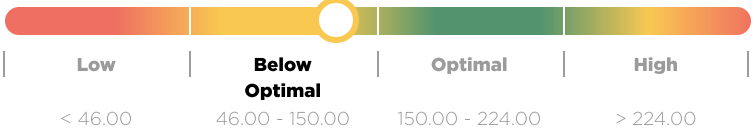
281.23 ng/dL



Bioavailable testosterone is the portion of testosterone in your blood that's immediately active. When it's low, it's linked to metabolic issues like metabolic syndrome, a higher risk of heart problems, extra belly fat, reduced sex drive, and difficulty with erections.

Testosterone Free

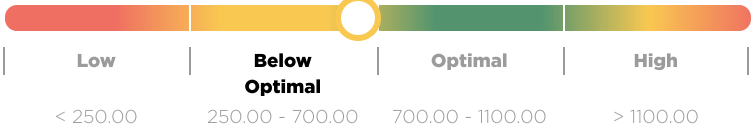
127.44 pg/mL



Testosterone is the main male sex hormone. The free testosterone test measures the fraction not bound to sex hormone-binding globulin (SHBG) or albumin. When free testosterone is low, it's linked to metabolic syndrome, higher cardiovascular risk, increased belly fat, lower libido, and erectile challenges.

Testosterone Total

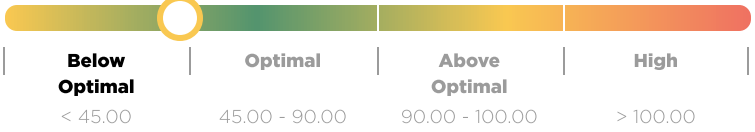
650.00 ng/dL



The total testosterone test measures all the testosterone in your blood—both the portion bound to proteins and the free, active form. When total testosterone is low, it's linked with metabolic issues like insulin resistance and excess belly fat, a higher chance of heart problems, reduced sex drive, and difficulties with erections.

Gastrin

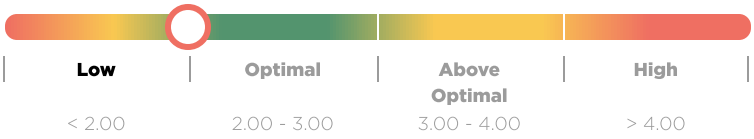
42.50 pg/mL



Gastrin is a hormone that tells your stomach's acid-producing cells to release hydrochloric acid (HCl). When gastrin levels are low, it often means your stomach isn't making enough acid. This can be accompanied by problems digesting food, such as inadequate pancreatic enzyme release or issues with bile flow.

% Testosterone Free

1.96 %



This test measures the % of free testosterone found in the blood. Ideally, 1.5 - 2.2% of the testosterone in the blood should be "free". Decreased levels of % free testosterone could mean too much testosterone is being bound and therefore unavailable. Talk with your provider to discuss ways to increase the availability of free testosterone in your body.

Cortisol : DHEA-S

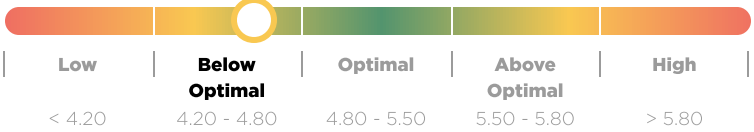
0.16 ratio

Cortisol and DHEA are both hormones produced by the adrenal glands, and both can impact immunity, stress resilience, brain function, and behavior. The cortisol:DHEA-S ratio compares two hormones made by your adrenal glands. When this ratio is high, it indicates that cortisol levels are elevated relative to DHEA-S, reflecting chronic stress. A high ratio is associated with features of metabolic syndrome, including insulin resistance and central fat gain, and may be linked to weakened immune function.

RBCS

RBC

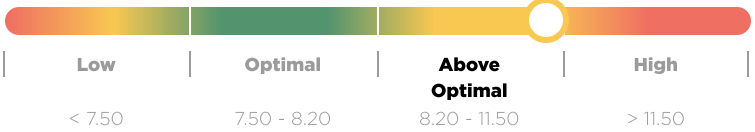
4.60 m/cumm



Your RBC count tells you how many red blood cells are in a tiny drop of blood. When this count is low, it usually indicates anemia, so there aren't enough cells to carry oxygen efficiently to your tissues.

MPV

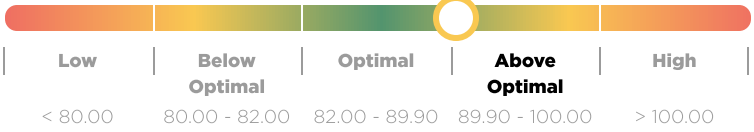
11.20 fL



Mean Platelet Volume (MPV) reflects the average size of platelets in your blood. When MPV is high, it means that platelets are larger than usual, which typically occurs when older platelets are being destroyed. The bone marrow produces bigger, younger platelets to replace them.

MCV

90.40 fL

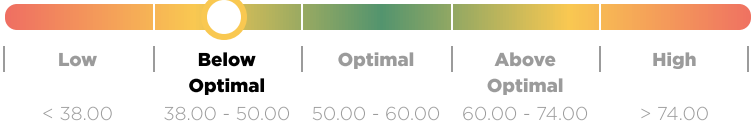


Mean Corpuscular Volume (MCV) is one of the red blood cell indices used to determine the cause of anemia and which nutrients may be in short supply. The MCV measures the average size of your red blood cells. When MCV is high, it means that your cells are larger than normal (macrocytic), which can occur due to deficiencies in vitamin B12, folate, or vitamin C.

WBCS

Neutrophils - %

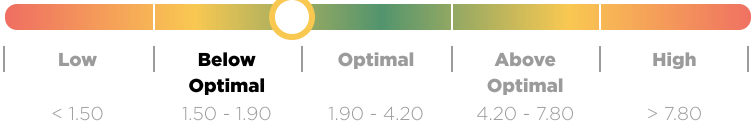
43.40 %



Neutrophils are the white blood cells your body uses first to fight bacterial infections. When their percentage in your total white blood cell count is low, it often means you're experiencing a prolonged viral response, as your body shifts resources toward lymphocytes instead of neutrophils.

Neutrophils - Absolute

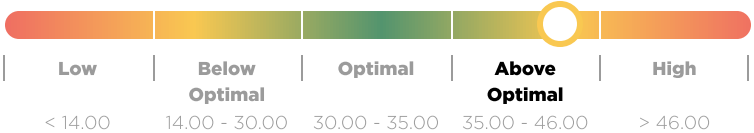
1.87 k/cumm



Neutrophils are your body's frontline white blood cells against bacterial invaders. The absolute neutrophil count tells you exactly how many are in a given volume of blood. When this count is low, it often means you're in a prolonged viral phase or your immune system is weakened, reducing the number of cells available to fight bacteria.

Lymphocytes - %

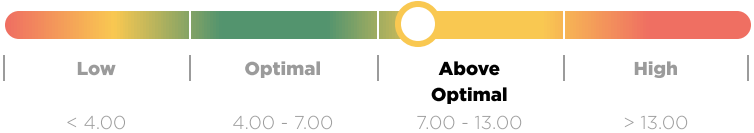
43.00 %



An elevated lymphocyte percentage usually indicates that your immune system is responding to a viral infection. It can also reflect increased toxins in the body or general inflammation, as your lymphocytes ramp up to address these challenges.

Monocytes - %

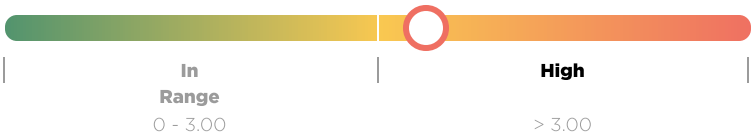
8.20 %



Monocytes are a type of white blood cell that ingest and digest microbes, dead cells, and debris in the bloodstream. Monocytes serve as the body's second line of defense, patrolling the blood and clearing away pathogens and damaged tissue. Elevated monocyte counts typically emerge during the recovery phase of an infection or in chronic infections, reflecting the immune system's ongoing cleanup and repair efforts.

Eosinophils - %

4.50 %



Eosinophils are a type of White Blood Cell. When eosinophil levels rise, it often signals that your immune system is reacting to something, commonly intestinal parasites or sensitivities to foods or environmental allergens. Elevated eosinophils show that your body is mobilizing this cell type to help fight off these triggers.

Blood Test Results Comparative

The Blood Test Results Comparative Report lists the results of this blood test and compares it to a previous blood test thus allowing you to visualize change in your biomarker results. The thumbs-up and down icons help to show change, whether it is moving in the right direction or further away from optimal. Even though a result may be out of the optimal or standard range, a thumbs up indicates that the most recent result is moving toward optimal.

A comparison of the total number of biomarkers by optimal range

	Alarm Low	Low	Below Optimal	Optimal	Above Optimal	High	Alarm High
Current	0	3	24	72	16	6	0

Biomarker	Quest Current Jan 24, 2023	Optimal Range	Standard Range	Units
BLOOD GLUCOSE				
Glucose Fasting	90.00 ↑	75.00 - 86.00	65.00 - 99.00	mg/dL
Hemoglobin A1C	5.20	4.60 - 5.30	0 - 5.70	%
eAG	103.00	85.00 - 105.00	82.00 - 154.00	mg/dL
Insulin	5.20 ↑	2.00 - 5.00	0 - 18.40	µIU/mL
C-Peptide	2.10	1.10 - 2.10	0.80 - 3.85	ng/mL
Fructosamine	193.70	190.00 - 228.00	190.00 - 270.00	µmol/L
HOMA2-%B	128.20 ↑ ↑	90.00 - 110.00	70.00 - 120.00	%
HOMA2-%S	65.00 ↓ ↓	85.00 - 200.00	75.00 - 250.00	%
HOMA2-IR	1.53 ↑	0.75 - 1.25	0.50 - 1.75	Index
QUICKI	0.37		0.35 - 0.45	Index
KIDNEY				
BUN	9.00 ↓	10.00 - 16.00	7.00 - 25.00	mg/dL
Creatinine	0.77 ↓	0.80 - 1.10	0.40 - 1.50	mg/dL
BUN/Creatinine	11.69	10.00 - 16.00	6.00 - 22.00	Ratio
eGFR	107.00	75.00 - 160.00	60.00 - 160.00	mL/min
PROSTATE				
PSA - Total	0.40	0 - 2.00	0 - 4.00	ng/mL
ELECTROLYTES				

Biomarker	Quest Current Jan 24, 2023	Optimal Range	Standard Range	Units
Sodium	139.00	137.00 - 142.00	135.00 - 146.00	mEq/L
Potassium	4.70	4.00 - 5.00	3.50 - 5.30	mEq/L
Chloride	104.00	100.00 - 108.00	98.00 - 110.00	mEq/L
CO2, bicarbonate	25.00	25.00 - 30.00	19.00 - 30.00	mEq/L
Sodium : Potassium	29.57 ↓ ↓		30.00 - 35.00	ratio
METABOLIC				
Anion Gap	14.70	11.00 - 16.00	10.00 - 20.00	mEq/L
Uric Acid	4.30	3.50 - 5.40	3.45 - 8.00	mg/dL
Creatine Kinase (CK)	130.00	65.00 - 135.00	44.00 - 196.00	U/L
Leptin	4.50 ↑	1.20 - 3.90	0.30 - 13.40	ng/mL
ENZYMES				
Amylase	45.00	40.00 - 86.00	21.00 - 103.00	U/L
Lipase	43.00	22.00 - 51.00	13.00 - 60.00	U/L
PROTEINS				
Protein - Total	6.86 ↓	6.90 - 8.10	6.10 - 8.10	g/dL
Albumin	4.05 ↓	4.50 - 5.00	3.60 - 5.10	g/dL
Globulin - Total	2.81 ↑	2.40 - 2.80	1.90 - 3.70	g/dL
Albumin/Globulin Ratio	1.44	1.40 - 2.10	1.00 - 2.50	ratio
MINERALS				
Calcium	9.12	8.90 - 9.50	8.60 - 10.40	mg/dL
Phosphorus	2.92	2.60 - 3.50	2.50 - 4.50	mg/dL
Magnesium - Serum	2.10 ↓	2.20 - 2.50	1.50 - 2.50	mg/dL
Magnesium - RBC	5.80 ↓	6.00 - 6.80	4.00 - 6.80	mg/dL
Copper - Serum	89.20 ↓	90.00 - 150.00	70.00 - 175.00	µg/dL
Zinc - Serum	76.20 ↓	99.00 - 130.00	50.00 - 130.00	µg/dL
Zinc - RBC	9.10 ↓	10.40 - 14.70	9.00 - 14.70	mg/L
Copper : Zinc Ratio	1.17	0.70 - 1.50	0.80 - 2.00	Ratio
Calcium : Albumin	2.25 ↑	0 - 2.18	0 - 2.60	ratio
Calcium : Phosphorus	3.12	2.30 - 3.20	1.90 - 4.20	ratio
LIVER AND GB				
Alkaline Phosphatase	51.00	45.00 - 100.00	36.00 - 130.00	IU/L
AST	12.00	10.00 - 26.00	10.00 - 35.00	IU/L
ALT	22.00	10.00 - 26.00	6.00 - 29.00	IU/L
LDH	131.00 ↓	140.00 - 200.00	100.00 - 200.00	IU/L
Bilirubin - Total	0.60	0.50 - 0.90	0.20 - 1.20	mg/dL
Bilirubin - Direct	0.10	0.10 - 0.15	0 - 0.20	mg/dL
Bilirubin - Indirect	0.50	0.40 - 0.75	0.20 - 1.20	mg/dL
GGT	17.00	10.00 - 17.00	3.00 - 85.00	IU/L
AST : ALT	0.55	0 - 1.00	0 - 1.50	Ratio

Biomarker	Quest Current Jan 24, 2023	Optimal Range	Standard Range	Units
IRON MARKERS				
Iron - Serum	78.00 ↓	85.00 - 130.00	50.00 - 180.00	µg/dL
Ferritin	41.00 ↓	45.00 - 79.00	38.00 - 380.00	ng/mL
TIBC	300.00	250.00 - 350.00	250.00 - 425.00	µg/dL
UIBC	222.00	130.00 - 300.00	110.00 - 350.00	µg/dL
% Transferrin saturation	26.00	24.00 - 35.00	20.00 - 48.00	%
LIPIDS				
Cholesterol - Total	203.00 ↑ ↑	160.00 - 199.00	125.00 - 199.00	mg/dL
Triglycerides	96.00 ↑	50.00 - 80.00	0 - 149.99	mg/dL
LDL Cholesterol	122.00 ↑ ↑	80.00 - 99.99	0 - 99.99	mg/dL
HDL Cholesterol	56.00	55.00 - 93.00	40.00 - 100.00	mg/dL
Non-HDL Cholesterol	147.00 ↑ ↑	70.00 - 99.00	0 - 129.99	mg/dL
VLDL Cholesterol	15.60 ↑	0 - 15.00	0 - 30.00	mg/dL
Total Cholesterol/HDL-C Ratio	3.62 ↑	0 - 3.00	0 - 5.00	Ratio
Triglyceride:HDL	1.71	0.50 - 1.90	0 - 2.00	ratio
LDL : HDL	2.18	0 - 2.28	0 - 4.90	Ratio
CARDIOMETABOLIC				
Homocysteine	7.30 ↑	5.00 - 7.20	0 - 10.30	µmol/L
THYROID				
TSH	1.31	1.00 - 2.00	0.40 - 4.50	mIU/L
T4 - Total	8.30	6.00 - 11.90	4.50 - 12.00	µg/dL
T4 - Free	1.30	1.00 - 1.50	0.80 - 1.80	ng/dL
T3 - Total	103.00	90.00 - 168.00	76.00 - 181.00	ng/dL
T3 - Free	3.30	3.00 - 3.50	2.30 - 4.20	pg/mL
Reverse T3	13.00	10.00 - 25.00	8.00 - 25.00	ng/dL
T3 Uptake	31.00	27.00 - 35.00	22.00 - 35.00	%
Free Thyroxine Index (T7)	2.60	1.70 - 4.60	1.40 - 3.80	Index
Thyroid Peroxidase (TPO) Abs	0.20	0 - 6.80	0 - 9.00	IU/mL
Thyroglobulin Abs	<1.00		0 - 1.00	IU/mL
Free T3 : Reverse T3	25.38	10.00 - 28.00	2.00 - 28.00	Ratio
Free T3 : Free T4	2.54	2.40 - 2.70	2.20 - 2.90	Ratio
INFLAMMATION				
Hs CRP	0.50	0 - 0.55	0 - 1.00	mg/L
C-Reactive Protein	4.10 ↑	0 - 3.00	0 - 7.90	mg/L
ESR	4.80	0 - 5.00	0 - 15.00	mm/hr
Fibrinogen Activity	283.00	175.00 - 300.00	175.00 - 425.00	mg/dL
Neutrophil : Lymphocyte (NLR)	1.01	1.00 - 1.70	1.00 - 3.00	Ratio
VITAMINS				
Vitamin D (25-OH) - Total	74.00	50.00 - 90.00	30.00 - 100.00	ng/mL

Biomarker	Quest Current Jan 24, 2023	Optimal Range	Standard Range	Units
Vitamin B12	427.00 ↓	545.00 - 1100.00	200.00 - 1100.00	pg/mL
Folate - Serum	14.20 ↓	15.00 - 27.00	5.50 - 27.00	ng/mL
Folate - RBC	398.10 ↓	500.00 - 1504.00	280.00 - 1504.00	ng/mL
Methylmalonic Acid	278.20 ↑	0 - 260.00	0 - 318.00	nmol/L
HORMONES				
DHEA-S	75.00 ↓	435.00 - 617.00	74.00 - 617.00	µg/dL
FSH	5.90	1.60 - 8.00	1.40 - 12.80	mIU/mL
LH	4.30	1.50 - 6.15	1.50 - 9.30	mIU/mL
Testosterone Total	650.00 ↓	700.00 - 1100.00	250.00 - 1100.00	ng/dL
Testosterone Free	127.44 ↓	150.00 - 224.00	46.00 - 224.00	pg/mL
Sex Hormone Binding Globulin	42.00	40.00 - 46.00	10.00 - 50.00	nmol/L
Estradiol	28.00	24.00 - 39.00	0 - 39.00	pg/mL
Progesterone	0.65	0.38 - 0.90	0.20 - 1.30	ng/mL
Cortisol - Total/AM	12.20	10.00 - 15.00	4.00 - 22.00	µg/dL
Cortisol : DHEA-S	0.16 ↑ ↑		0 - 0.09	ratio
Cortisol - PM	7.80	4.00 - 10.00	3.00 - 17.00	µg/dL
Gastrin	42.50 ↓	45.00 - 90.00	0 - 100.00	pg/mL
Testosterone Bioavailable	281.23 ↓	375.00 - 575.00	110.00 - 575.00	ng/dL
% Testosterone Bioavailable	43.27 ↓	53.00 - 65.00	35.00 - 65.00	%
% Testosterone Free	1.96 ↓ ↓	2.00 - 3.00	2.00 - 4.00	%
RBCS				
RBC	4.60 ↓	4.80 - 5.50	4.20 - 5.80	m/cumm
Hemoglobin	14.20	14.00 - 15.00	13.20 - 17.10	g/dL
Hematocrit	41.60	40.00 - 48.00	38.50 - 50.00	%
MCV	90.40 ↑	82.00 - 89.90	80.00 - 100.00	fL
MCH	30.90	28.00 - 31.90	27.00 - 33.00	pg
MCHC	34.10	34.00 - 36.00	32.00 - 36.00	g/dL
Platelets	217.00	190.00 - 300.00	140.00 - 400.00	10E3/uL
MPV	11.20 ↑	7.50 - 8.20	7.50 - 11.50	fL
RDW	12.40	11.00 - 12.60	11.00 - 15.00	%
WBCS				
Total WBCs	4.30	3.80 - 6.00	3.80 - 10.80	k/cumm
Neutrophils - %	43.40 ↓	50.00 - 60.00	38.00 - 74.00	%
Lymphocytes - %	43.00 ↑	30.00 - 35.00	14.00 - 46.00	%
Monocytes - %	8.20 ↑	4.00 - 7.00	4.00 - 13.00	%
Eosinophils - %	4.50 ↑ ↑		0 - 3.00	%
Basophils - %	0.90		0 - 1.00	%
Neutrophils - Absolute	1.87 ↓	1.90 - 4.20	1.50 - 7.80	k/cumm
Lymphocytes - Absolute	1.85	1.44 - 2.54	0.85 - 3.90	k/cumm
Monocytes - Absolute	0.35	0.20 - 0.40	0.20 - 0.95	k/cumm
Eosinophils - Absolute	0.19	0.03 - 0.20	0 - 0.50	k/cumm

Biomarker	Quest			
	Current Jan 24, 2023	Optimal Range	Standard Range	Units
Basophils - Absolute	0.04	0 - 0.11	0 - 0.20	k/cumm

Blood Test History

The Blood Test History Report lists the results of your blood test results side by side with the latest test listed on the right-hand side. This report allows you to compare results over time and see where improvement has been made, allowing you to track your progress towards optimal health.

Key

- Optimal
- Above / Below Optimal
- High/ Low
- Alarm High / Alarm Low

Biomarker	Latest Test Result Quest Jan 24, 2023
BLOOD GLUCOSE	
Glucose Fasting	90.00 ↑
Hemoglobin A1C	5.20
eAG	103.00
Insulin	5.20 ↑
C-Peptide	2.10
Fructosamine	193.70
HOMA2-%B	128.20 ↑ ↑
HOMA2-%S	65.00 ↓ ↓
HOMA2-IR	1.53 ↑
QUICKI	0.37
KIDNEY	
BUN	9.00 ↓
Creatinine	0.77 ↓
BUN/Creatinine	11.69
eGFR	107.00
PROSTATE	
PSA - Total	0.40

Biomarker	Latest Test Result Quest Jan 24, 2023
ELECTROLYTES	
Sodium	139.00
Potassium	4.70
Chloride	104.00
CO2, bicarbonate	25.00
Sodium : Potassium	29.57 ↓ ↓
METABOLIC	
Anion Gap	14.70
Uric Acid	4.30
Creatine Kinase (CK)	130.00
Leptin	4.50 ↑
ENZYMES	
Amylase	45.00
Lipase	43.00
PROTEINS	
Protein - Total	6.86 ↓
Albumin	4.05 ↓
Globulin - Total	2.81 ↑
Albumin/Globulin Ratio	1.44
MINERALS	
Calcium	9.12
Phosphorus	2.92
Magnesium - Serum	2.10 ↓
Magnesium - RBC	5.80 ↓
Copper - Serum	89.20 ↓

Biomarker	Latest Test Result Quest Jan 24, 2023
Zinc - Serum	76.20 ↓
Zinc - RBC	9.10 ↓
Copper : Zinc Ratio	1.17
Calcium : Albumin	2.25 ↑
Calcium : Phosphorus	3.12
LIVER AND GB	
Alkaline Phosphatase	51.00
AST	12.00
ALT	22.00
LDH	131.00 ↓
Bilirubin - Total	0.60
Bilirubin - Direct	0.10
Bilirubin - Indirect	0.50
GGT	17.00
AST : ALT	0.55
IRON MARKERS	
Iron - Serum	78.00 ↓
Ferritin	41.00 ↓
TIBC	300.00
UIBC	222.00
% Transferrin saturation	26.00
LIPIDS	
Cholesterol - Total	203.00 ↑ ↑
Triglycerides	96.00 ↑
LDL Cholesterol	122.00 ↑ ↑

Biomarker	Latest Test Result Quest Jan 24, 2023
HDL Cholesterol	56.00
Non-HDL Cholesterol	147.00 ↑ ↑
VLDL Cholesterol	15.60 ↑
Total Cholesterol/HDL-C Ratio	3.62 ↑
Triglyceride:HDL	1.71
LDL : HDL	2.18
CARDIOMETABOLIC	
Homocysteine	7.30 ↑
THYROID	
TSH	1.31
T4 - Total	8.30
T4 - Free	1.30
T3 - Total	103.00
T3 - Free	3.30
Reverse T3	13.00
T3 Uptake	31.00
Free Thyroxine Index (T7)	2.60
Thyroid Peroxidase (TPO) Abs	0.20
Thyroglobulin Abs	<1.00
Free T3 : Reverse T3	25.38
Free T3 : Free T4	2.54
INFLAMMATION	
Hs CRP	0.50
C-Reactive Protein	4.10 ↑
ESR	4.80

Biomarker	Latest Test Result Quest Jan 24, 2023
Fibrinogen Activity	283.00
Neutrophil : Lymphocyte (NLR)	1.01
VITAMINS	
Vitamin D (25-OH) - Total	74.00
Vitamin B12	427.00 ↓
Folate - Serum	14.20 ↓
Folate - RBC	398.10 ↓
Methylmalonic Acid	278.20 ↑
HORMONES	
DHEA-S	75.00 ↓
FSH	5.90
LH	4.30
Testosterone Total	650.00 ↓
Testosterone Free	127.44 ↓
Sex Hormone Binding Globulin	42.00
Estradiol	28.00
Progesterone	0.65
Cortisol - Total/AM	12.20
Cortisol : DHEA-S	0.16 ↑ ↑
Cortisol - PM	7.80
Gastrin	42.50 ↓
Testosterone Bioavailable	281.23 ↓
% Testosterone Bioavailable	43.27 ↓
% Testosterone Free	1.96 ↓ ↓
RBCS	
RBC	4.60 ↓

Biomarker	Latest Test Result Quest Jan 24, 2023
Hemoglobin	14.20
Hematocrit	41.60
MCV	90.40 ↑
MCH	30.90
MCHC	34.10
Platelets	217.00
MPV	11.20 ↑
RDW	12.40
WBCS	
Total WBCs	4.30
Neutrophils - %	43.40 ↓
Lymphocytes - %	43.00 ↑
Monocytes - %	8.20 ↑
Eosinophils - %	4.50 ↑ ↑
Basophils - %	0.90
Neutrophils - Absolute	1.87 ↓
Lymphocytes - Absolute	1.85
Monocytes - Absolute	0.35
Eosinophils - Absolute	0.19
Basophils - Absolute	0.04

3

A comprehensive assessment of Functional Body Systems plus a detailed evaluation of your Nutrient Status, ensuring a holistic understanding of your health and well-being.

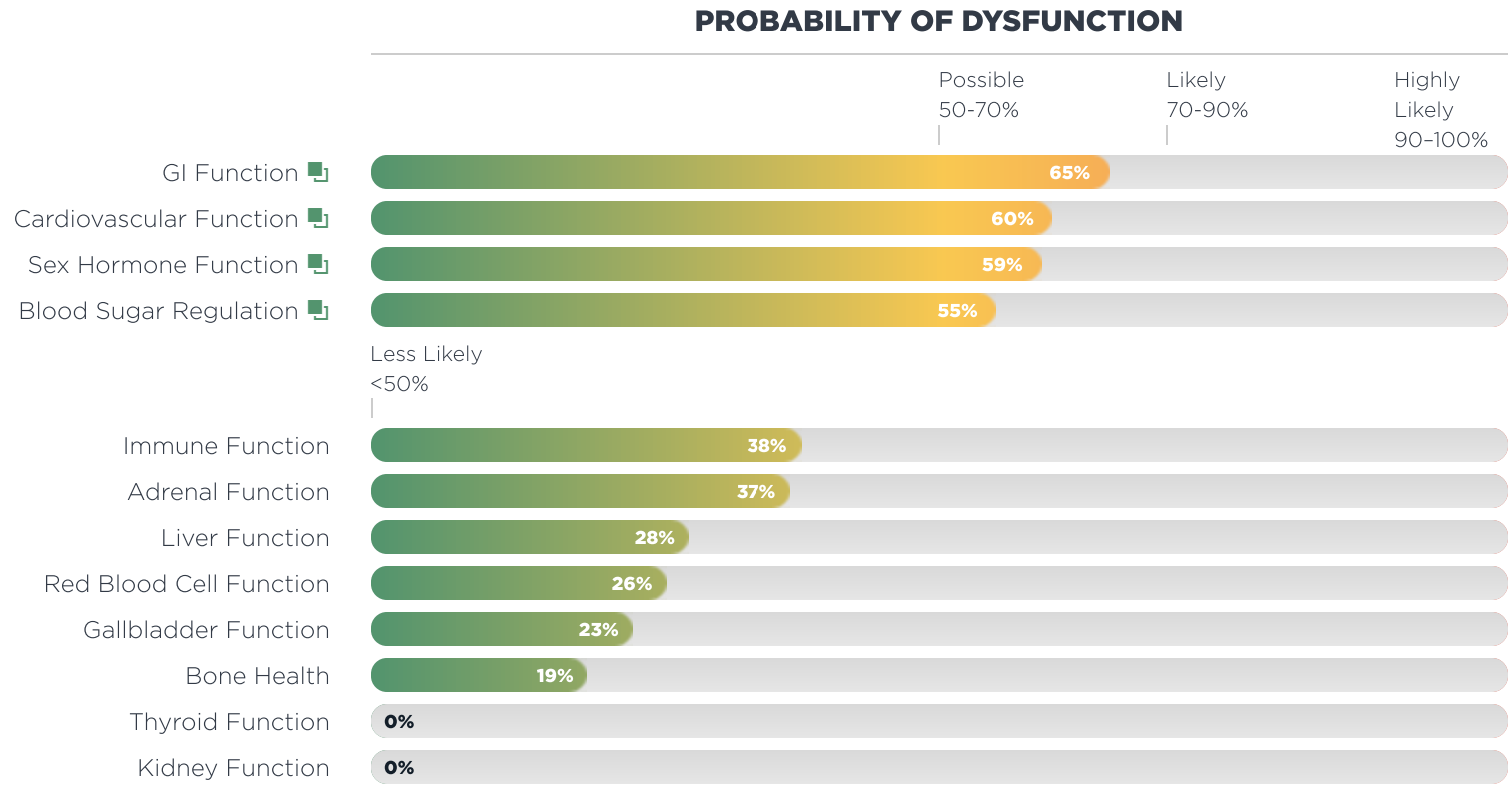
Assessment

Functional Body Systems

The Functional Body System results represent an algorithmic analysis of this blood test. These results have been converted into your individual Functional Body Systems Report based on our latest research.

This report gives you an indication of the level of dysfunction that exists in the various physiological systems in your body.

Each Body System that has a probability of dysfunction above 50% is included in the section that follows so you can read a detailed description and individual explanation of the results shown in this report.



Functional Body Systems Details

This section contains detailed descriptions and explanations of the results presented in the Functional Body Systems Report including all the biomarkers considered in the algorithmic analysis and the rationale behind the interpretation.

Dysfunction Possible
There may be improvement needed in certain areas.

GI FUNCTION

It is possible that you may be at risk of an emerging dysfunction in your gastrointestinal (GI) system. While this may not require immediate attention, we will want to watch this on future blood tests and consider support.

Rationale

BUN ↓, Protein - Total ↓, Globulin - Total ↑, Albumin ↓, MCV ↑, Eosinophils - % ↑, Iron - Serum ↓, Creatinine ↓, Gastrin ↓

Biomarkers considered

BUN, Protein - Total, Globulin - Total, Albumin, Phosphorus, Alkaline Phosphatase, MCV, Eosinophils - %, Basophils - %, Iron - Serum, Creatinine, Chloride, Calcium, Total WBCs, Gastrin

Dysfunction Possible
There may be improvement needed in certain areas.

CARDIOVASCULAR FUNCTION

It is possible that you may be at risk of an emerging cardiometabolic dysfunction. While this may not require immediate attention, we will want to watch this on future blood tests.

Rationale

Glucose Fasting ↑, Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑, Homocysteine ↑, Testosterone Total ↓, Insulin ↑, Testosterone Free ↓

Biomarkers considered

Triglyceride:HDL, Glucose Fasting, LDH, Cholesterol - Total, Triglycerides, LDL Cholesterol, HDL Cholesterol, Ferritin, Fibrinogen Activity, Hs CRP, Homocysteine, Hemoglobin A1C, Estradiol, Testosterone Total, Insulin, Vitamin D (25-OH) - Total, Testosterone Free

Biomarkers not available in this test - consider having run in future tests:

Lipoprotein (a), Omega-3 Index

Dysfunction Possible
There may be improvement needed in certain areas.

SEX HORMONE FUNCTION

It is possible that you may be at risk of an emerging hormonal dysfunction. While this may not require immediate attention, we will want to watch this on future blood tests.

Rationale

Testosterone Free ↓, Testosterone Total ↓, DHEA-S ↓

Biomarkers considered

Estradiol, Testosterone Free, Testosterone Total, Progesterone, Sex Hormone Binding Globulin, DHEA-S

Dysfunction Possible
There may be improvement needed in certain areas.

BLOOD SUGAR REGULATION

The Blood Sugar Regulation score tells us how well your body regulates the sugar in your blood. Blood sugar dysregulation is widespread but doesn't suddenly emerge but develops slowly. The Blood Sugar Regulation score looks for clues in your blood test that can help us determine if there's dysregulation and, if so, what it is. Your score is moderate, which indicates that your blood sugar regulation is not functioning as well as it should and may need support moving forward.

Rationale

Glucose Fasting ↑, HOMA2-IR ↑, LDH ↓, Cholesterol - Total ↑, Insulin ↑, LDL Cholesterol ↑, DHEA-S ↓

Biomarkers considered

Glucose Fasting, Hemoglobin A1C, HOMA2-IR, eAG, LDH, Cholesterol - Total, Triglycerides, HDL Cholesterol, Insulin, C-Peptide, LDL Cholesterol, DHEA-S, Fructosamine

Biomarkers not available in this test - consider having run in future tests:

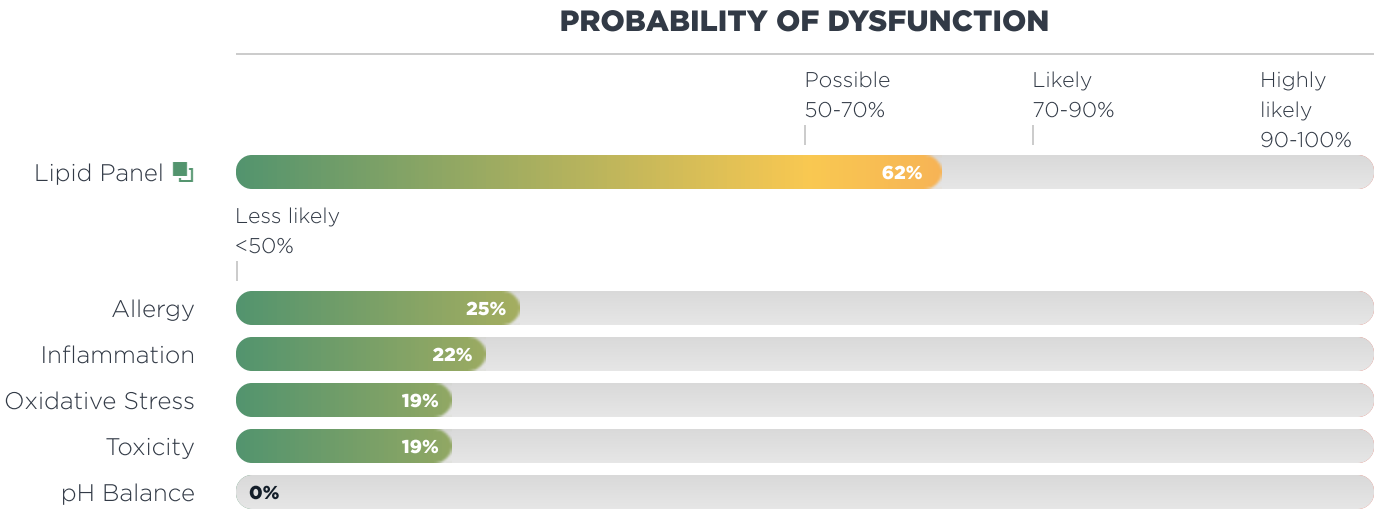
Triglyceride-Glucose Index (TyG)

Accessory Systems

The Accessory Systems are additional physiological systems that are not related to individual organs or body systems.

The Accessory Systems Report represents an algorithmic analysis of this blood test. These results have been converted into an individualized risk evaluation based on the latest research.

Each Accessory System that has a probability of dysfunction above 50% is included in the section that follows so you can read a detailed description and individual explanation of the results shown in this report.



Accessory Systems Details

This section contains detailed descriptions and explanations of the results presented in the Accessory Systems report including all the biomarkers considered in the algorithmic analysis and the rationale behind the interpretation.

Dysfunction Possible. There may be improvement needed in certain areas.

LIPID PANEL

It is possible that you are starting to show signs of an imbalance in your blood fats (cholesterol, Triglycerides, etc.), causing an increase in your Lipid Panel score. While this may not require immediate attention, we will want to keep an eye on this in future blood tests.

Rationale

Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑

Biomarkers considered

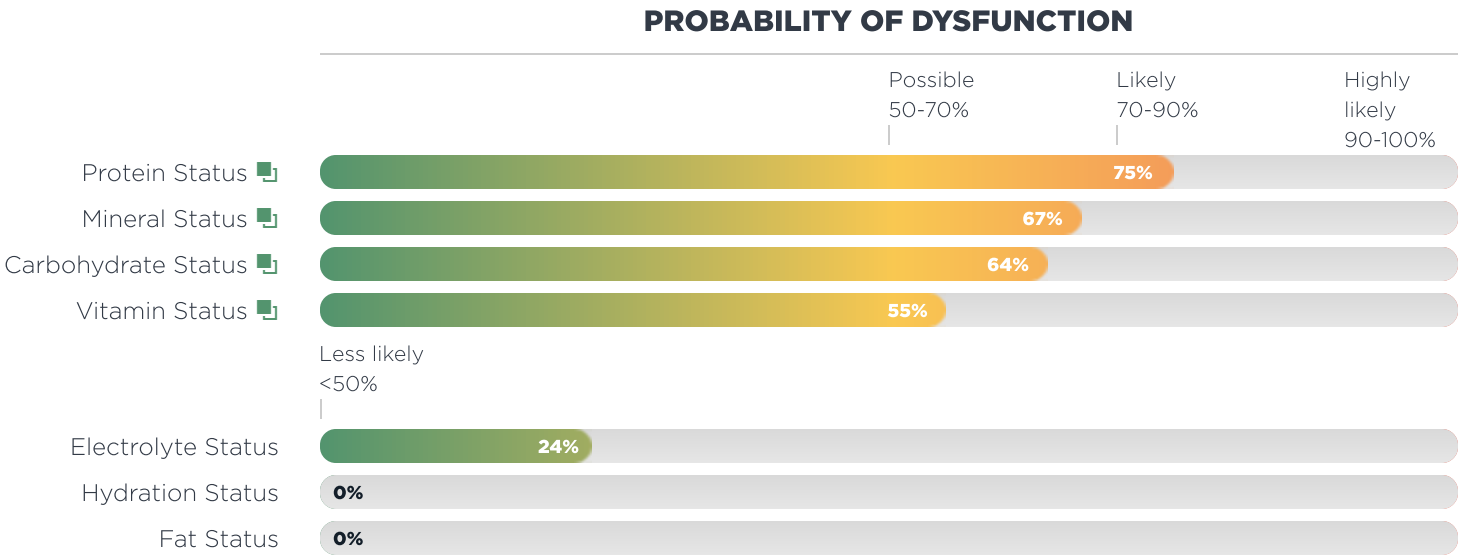
Cholesterol - Total, Triglycerides, LDL Cholesterol, Total Cholesterol/HDL-C Ratio, Triglyceride:HDL, HDL Cholesterol

Nutrient Status

The Nutrient Status results represent an algorithmic analysis of this blood test. These results have been converted into your individual Nutrient Status Report based on our latest research.

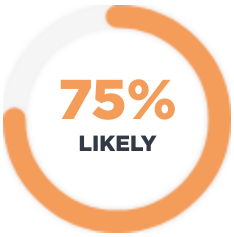
This report gives you an indication of your general nutritional status. The Nutrient Status is influenced by actual dietary intake, digestion, absorption, assimilation, and cellular uptake of the nutrients themselves.

Each Nutrient category that has a probability of dysfunction above 50% is included in the section that follows so you can read a detailed description and individual explanation of the results shown in this report.



Nutrient Status Details

This section contains detailed descriptions and explanations of the results presented in the Nutrient Status report including all the biomarkers considered in the algorithmic analysis and the rationale behind the interpretation.



Dysfunction Likely.
Improvement required.

PROTEIN STATUS

You may be trending toward a protein deficiency or need, causing an increase in your Protein Status score. Protein is an essential nutrient for the body and a vital part of every tissue, cell, and organ. Your Protein Status score is higher than ideal, indicating that you may need protein support moving forward.

Dysfunction Likely.
Improvement required.

Dysfunction Possible.
There may be improvement needed in certain areas.

MINERAL STATUS

You may be in the early stages of mineral deficiency or need, causing an increase in your Mineral Status score. While this may not require immediate attention, we will want to keep an eye on your mineral levels and monitor this in future blood tests.

Dysfunction Possible.
There may be improvement needed in certain areas.

Dysfunction Possible.
There may be improvement needed in certain areas.

CARBOHYDRATE STATUS

You may be in the early stages of having difficulties handling your dietary intake of carbohydrates, especially refined carbohydrates and sugars. This may begin to cause shifts in your ability to regulate blood sugar. While this may not require immediate attention, we will want to monitor this on future blood tests.

Dysfunction Possible.
There may be improvement needed in certain areas.

Dysfunction Possible.
There may be improvement needed in certain areas.

VITAMIN STATUS

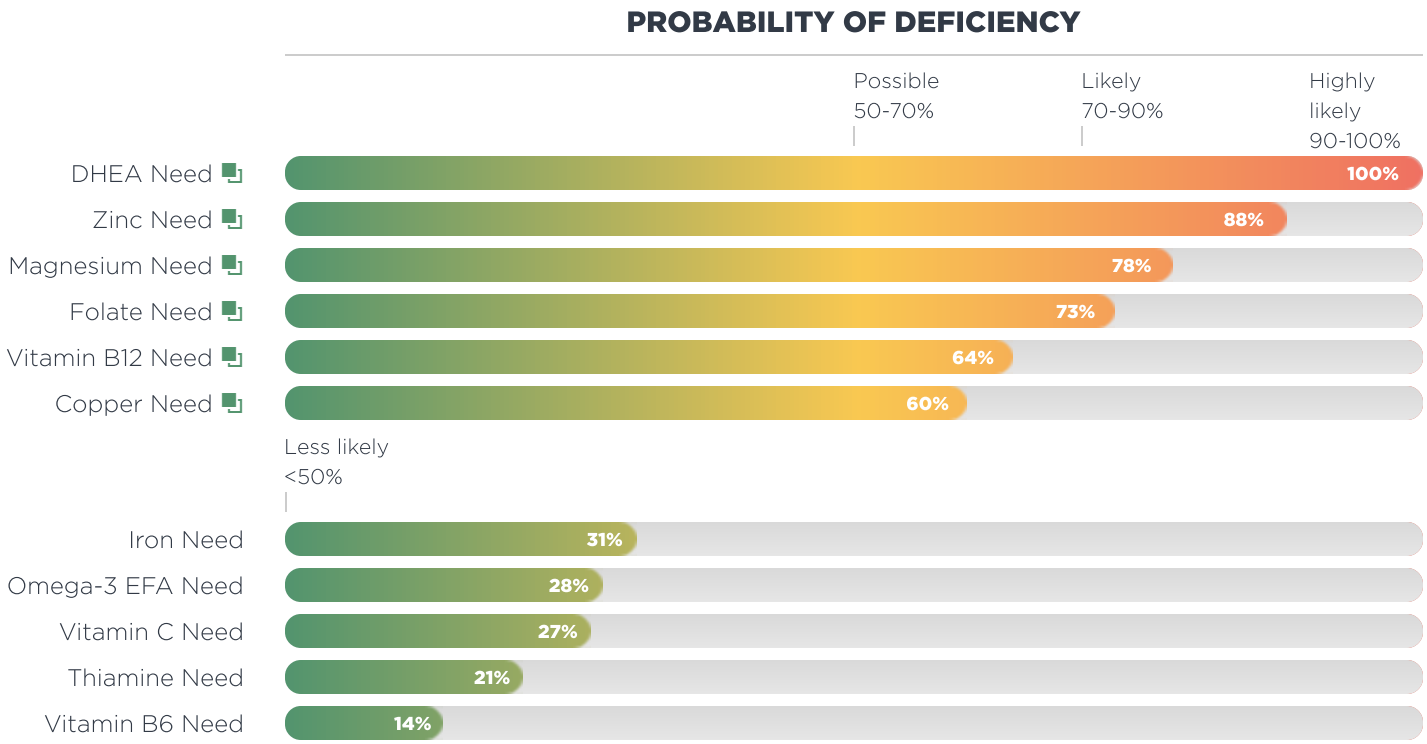
You may be in the early stages of vitamin deficiency or need, which may cause an increase in your Vitamin Status score. While this may not require immediate attention, we will want to monitor your vitamin levels on future blood tests.

Dysfunction Possible.
There may be improvement needed in certain areas.

Individual Nutrient Deficiencies

The scores represent the degree of deficiency for individual nutrients based on your blood results. The status of an individual nutrient is based on a number of factors such as actual dietary intake, digestion, absorption, assimilation and cellular uptake of the nutrients themselves. All of these factors will be taken into consideration before determining whether or not you actually need an individual nutrient.

Each individual Nutrient Deficiency that has a probability of dysfunction above 50% is included in the section that follows so you can read a detailed description and individual explanation of the results shown in this report.



Individual Nutrient Deficiency Details

This section contains detailed descriptions and explanations of the results presented in the Nutrient Deficiencies report including all the biomarkers considered in the algorithmic analysis and the rationale behind the interpretation.

Deficiency Highly Likely. Much improvement required.

DHEA NEED

Your blood test results show a high need for DHEA, indicating that you are very likely not getting enough of this important hormone. Low DHEA levels can lead to problems like low energy, mood changes, and a weakened immune system. To help improve your DHEA levels, focus on a healthy lifestyle that includes regular exercise, a balanced diet, and stress management techniques. If you have conditions that affect your hormone levels, such as chronic stress or aging, it might be harder for your body to maintain adequate DHEA levels.

Rationale

DHEA-S ↓

Biomarkers considered

DHEA-S

Deficiency Likely. Improvement required.

ZINC NEED

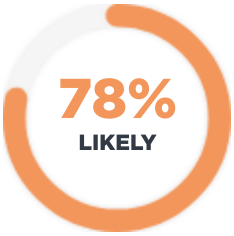
Your blood test results suggest that you might be moving toward a zinc deficiency. This means you are likely not getting enough zinc in your diet. You may notice that you get sick more often, have issues with your skin, or experience slow healing of cuts. To help prevent further decline, try to eat more foods rich in zinc, such as beef, pumpkin seeds, and chickpeas. Some conditions, like digestive issues or taking certain medications, can make it harder for your body to absorb zinc. With regular monitoring, we will be in the best position to manage and improve your zinc levels.

Rationale

Zinc - Serum ↓, Zinc - RBC ↓

Biomarkers considered

Zinc - Serum, Zinc - RBC, Alkaline Phosphatase



Deficiency Likely.
Improvement required.

MAGNESIUM NEED

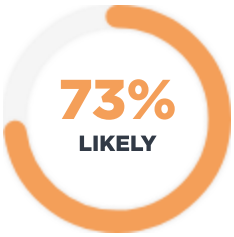
Your blood test results suggest that you are likely not getting enough magnesium, which can affect your muscle and nerve function. To help prevent further decline in magnesium levels, try to include more magnesium-rich foods in your diet, such as spinach, almonds, and black beans. Some conditions, like digestive issues or high levels of stress, can make it harder for your body to maintain adequate magnesium levels.

Rationale

Magnesium - Serum ↓, Magnesium - RBC ↓

Biomarkers considered

Magnesium - Serum, Magnesium - RBC



Deficiency Likely.
Improvement required.

FOLATE NEED

Your blood test results suggest that you are likely not getting enough folate, which can affect your energy levels and overall health. To help prevent further decline in folate levels, try to include more folate-rich foods in your diet, such as broccoli, avocados, and fortified cereals. Some conditions or dietary choices can make it harder for your body to maintain adequate folate levels. Discuss with your healthcare provider how to best manage and improve your folate levels, including whether you need to make specific dietary changes or consider supplements.

Rationale

Folate - RBC ↓, Folate - Serum ↓, Homocysteine ↑, MCV ↑

Biomarkers considered

Folate - RBC, Folate - Serum, Homocysteine, MCV, RDW

Deficiency Possible. There may be improvement needed in certain areas.

VITAMIN B12 NEED

Your blood test results show that you may be starting to have a vitamin B12 deficiency. Although it may not be a major concern yet, it is important to monitor your vitamin B12 levels and include more vitamin B12-rich foods in your diet. Keep an eye on your energy levels and cognitive function, and talk to us about any conditions or lifestyle factors that might affect your vitamin B12 absorption.With regular monitoring, we can likely prevent further deficiency.

Rationale

Vitamin B12 ↓, Methylmalonic Acid ↑, Homocysteine ↑, MCV ↑

Biomarkers considered

Vitamin B12, Methylmalonic Acid, Homocysteine, LDH, MCV, RDW

Biomarkers not available in this test - consider having run in future tests:

Active B12

Deficiency Possible. There may be improvement needed in certain areas.

COPPER NEED

Your blood test results show that you may be starting to have a copper deficiency. Although it may not be a major concern yet, it is important to monitor your copper levels and include more copper-rich foods in your diet. Keep an eye on your overall health and talk to us about any conditions or lifestyle factors that might affect your copper absorption. With regular monitoring, we can likely prevent further deficiency.

Rationale

Copper - Serum ↓

Biomarkers considered

Copper - Serum

Biomarkers not available in this test - consider having run in future tests:

Copper - RBC

4

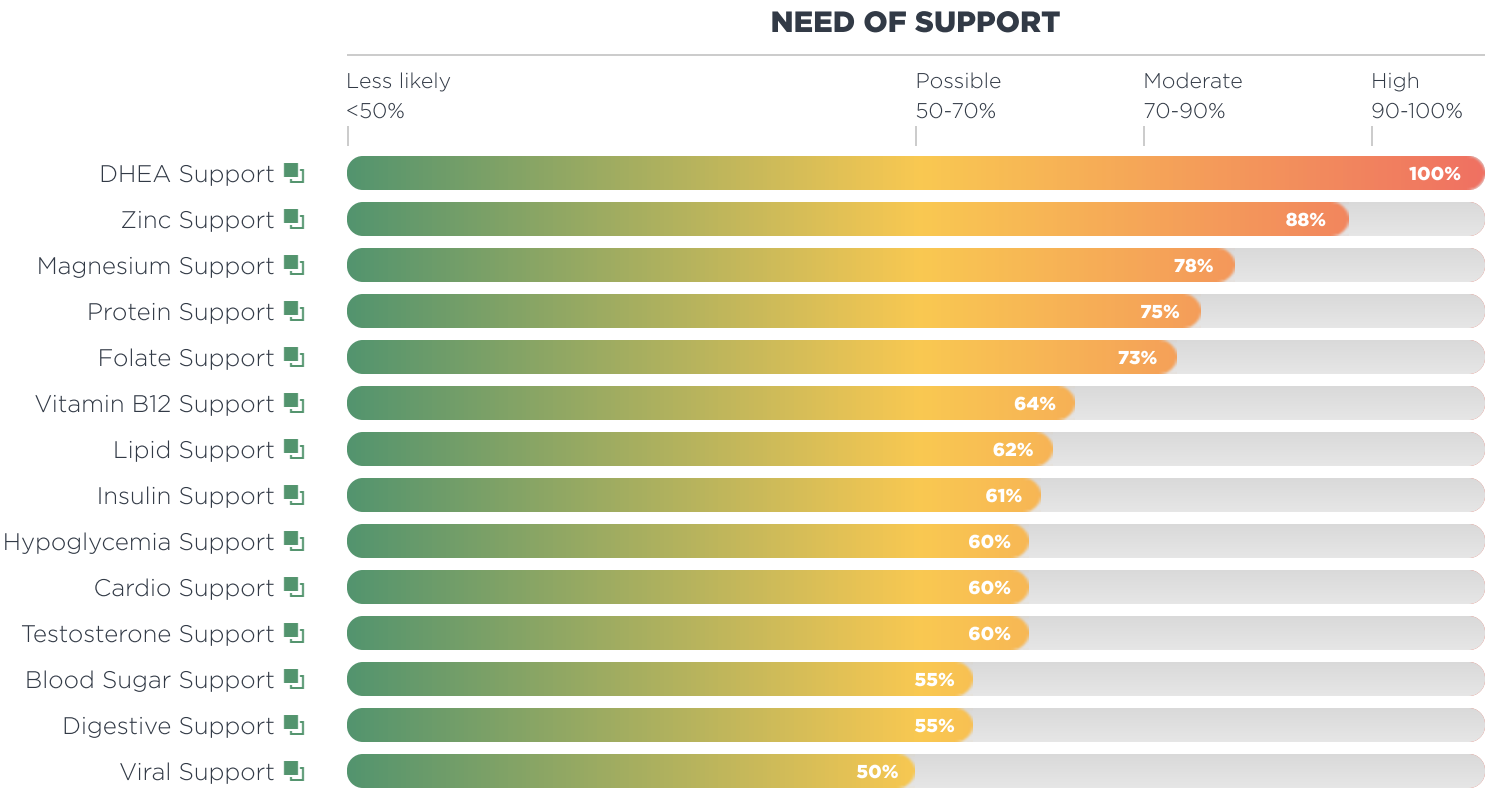
The Health Concerns report takes all the information on this report and focuses on the top areas that need the most support.

Health Concerns

Health Concerns Report

The Health Concerns Report takes all the information in this report and focuses on the top areas that need the most support.

Each health concern is included in the following section so you can read an explanation of the results shown in this report.



Health Concerns Details

This section contains an explanation of the results presented in the Health Concerns Report including all the biomarkers considered in the analysis and the rationale behind the interpretation.

DHEA SUPPORT

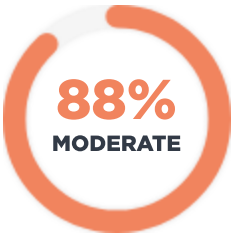
Test results of your blood test indicate that your DHEA levels might be lower than optimal and shows a need for DHEA supplementation.

Rationale

DHEA-S ↓

ZINC SUPPORT

The results of your blood test indicate that your zinc levels might be lower than optimal and shows a need for zinc supplementation.*

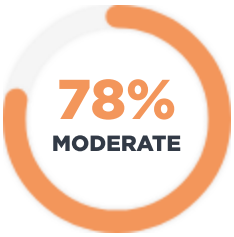


Rationale

Zinc - Serum ↓, Zinc - RBC ↓

MAGNESIUM SUPPORT

The results of your blood test indicate that your magnesium levels might be lower than optimal and shows a need for magnesium supplementation.

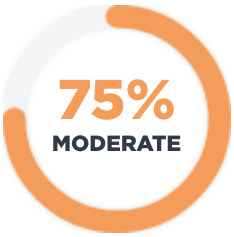


Rationale

Magnesium - Serum ↓, Magnesium - RBC ↓

PROTEIN SUPPORT

The results of your blood test indicate that your protein levels might be lower than optimal and shows a need for protein supplementation.

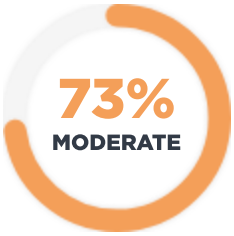


Rationale

Protein - Total ↓, Albumin ↓, BUN ↓, Calcium : Albumin ↑, Creatinine ↓, C-Reactive Protein ↑

FOLATE SUPPORT

The blood test results indicate that your folate levels might be lower than optimal and that folate supplementation may be needed.



Rationale

Folate - RBC ↓, Folate - Serum ↓, Homocysteine ↑, MCV ↑

VITAMIN B12 SUPPORT

The blood test results indicate that your vitamin B12 levels might be lower than optimal and that vitamin B12 supplementation may be needed.

Rationale

Vitamin B12 ↓, Methylmalonic Acid ↑, Homocysteine ↑, MCV ↑

LIPID SUPPORT

The results of your blood test indicate that you have higher than optimal levels of cholesterol and fat in your blood (a condition called hyperlipidemia), which is associated with an increased risk of cardiovascular disease. There is a need for cardiovascular support, especially support to help lower excessive blood fats.

Rationale

Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑

INSULIN SUPPORT

The results of this blood test indicate a tendency towards insulin resistance and a need for insulin support.

Rationale

HOMA2-IR ↑, Triglycerides ↑, Insulin ↑, Glucose Fasting ↑, Cholesterol - Total ↑

HYPOGLYCEMIA SUPPORT

The results of your blood test indicate a tendency towards hypoglycemia or low blood sugar and a need for blood sugar support.

Rationale

LDH ↓

CARDIO SUPPORT

The results of your blood test indicate a higher than optimal cardiovascular risk and show a need for cardiovascular support.

Rationale

Glucose Fasting ↑, Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑, Homocysteine ↑, Testosterone Total ↓, Insulin ↑, Testosterone Free ↓

TESTOSTERONE SUPPORT

The results of your blood test indicate a trend towards testosterone deficiency and a need for testosterone metabolism support.

Rationale

Testosterone Total ↓, Testosterone Free ↓

BLOOD SUGAR SUPPORT

The results of your blood test indicate a tendency towards blood sugar dysregulation and a need for blood sugar support.

Rationale

Glucose Fasting ↑, HOMA2-IR ↑, LDH ↓, Cholesterol - Total ↑, Insulin ↑, LDL Cholesterol ↑, DHEA-S ↓

DIGESTIVE SUPPORT

The results of your blood test indicate a tendency towards hypochlorhydria, a condition of low stomach acid, and a need for digestive support.

Rationale

Protein - Total ↓, Globulin - Total ↑, Albumin ↓, MCV ↑, Iron - Serum ↓, Gastrin ↓

VIRAL SUPPORT

The results of your blood test indicate a tendency towards a viral infection and a need for immune support.

Rationale

Lymphocytes - % ↑, Monocytes - % ↑, Neutrophils - % ↓

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