THE HEALTH FORMULA

Functional Health Report

A comprehensive analysis of your test results.

BLOOD CHEMISTRY ANALYSIS

Patient Report

Prepared for	. Sample Report 53 year old male born Aug 12, 1970 48 years old at the time this lab test was taken Fasting
Requested by	Dr. Rick Davids, Osteopath & Functional Medicine Practitioner The Health Formula
Collected Date	Aug 03, 2019
Lab	Quest
Powered by	ODX | OptimalDX

What's Inside?

SECTION 1: INTRODUCTION

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

1 What's Inside?
3 FBCA Introduction
4 Patient Report

SECTION 2: ASSESSMENT

An in-depth functional system and nutrient evaluation.

6 Functional Body Systems
12 Accessory Systems
15 Nutrient Status
19 Nutrient Deficiencies

SECTION 3: ANALYSIS

An in-depth analysis of your biomarker results.

24 Blood Test Results
33 Out of Optimal Range

SECTION 4: HEALTH CONCERNS

The health concerns that need the most support.

47 Health Concerns

SECTION 5: DISCLAIMER

Additional information pertinent to this report.

51 Disclaimer

1

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

Introduction

1 What's Inside?

3 FBCA Introduction

4 Patient Report

Functional Blood Chemistry Analysis (FBCA)

Functional Blood Chemistry Analysis, or FBCA, takes a deep dive into what your blood can tell us about your health. It's a way of sorting through all the different markers in your blood to get a clear picture of how your body's systems are doing. Think of it as a comprehensive health check-up that looks not just at how your body is working right now, but also checks if you're getting all the nutrients you need. Plus, it helps us see if you're moving towards better health or if there are areas we need to work on to get you feeling your best.

Dr. Rick Davids, Osteopath & Functional Medicine Practitioner
The Health Formula

WHY BLOOD TESTING?

Your blood tells a comprehensive story about your health. Among all medical lab tests, the Blood Chemistry and CBC/hematology test stands out as the most frequently ordered. It's a cornerstone of Western clinical medicine, helping doctors make informed diagnostic decisions. You've likely been told that blood testing is a standard procedure for assessing health.

Yet, many people start feeling unwell long before traditional blood tests show anything amiss. Often, you might hear from your doctor that "everything on your blood test looks normal," even when you don't feel right.

NORMAL IS NOT OPTIMAL

If you're feeling "unwell" but your blood test comes back "normal," it doesn't necessarily mean everything is fine. Clinical experience shows that being "normal" is quite different from being functionally optimal. You might not have a diagnosed disease, but it's possible to be dysfunctional, meaning your body's systems aren't operating as well as they should, and you're starting to feel the effects.

The problem isn't with the blood tests themselves—they're powerful diagnostic tools. The issue lies in the reference ranges used, which are based on average populations, not indicators of optimal health or function. "Normal" ranges are often too broad to detect early signs of health issues or to identify when you're moving away from optimal health.

THE FUNCTIONAL APPROACH

The functional approach to blood testing focuses on changes in your body's function rather than looking for disease. We use optimal physiological ranges instead of "normal" population averages. This results in a more precise "Functional Physiological Range." It helps us spot issues within the "normal" range that could indicate your body's systems are starting to struggle. This approach enables us to detect shifts in your physiological function and identify what might be preventing you from reaching your best physiological, biochemical, and metabolic health.

Unlike traditional methods, which examine each biomarker in isolation, Functional Blood Chemistry Analysis uses trends and relationships between biomarkers to uncover hidden risks and opportunities for improving your health.

THE FUNCTIONAL HEALTH REPORT

The Functional Health Report is generated from an in-depth algorithmic analysis of your blood test results. Our software digs into the data, uncovering the intricate patterns and subtle indicators of functional changes in your body, often before you're aware anything's amiss.

SUMMARY

Blood testing has evolved beyond its role in diagnosing disease or managing injury. It's now an essential element of Functional Medicine, offering a critical window into your health. It helps reveal hidden health trends and is a key tool in promoting overall wellness and preventing disease.

Patient Report

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

Dr. Rick Davids, Osteopath & Functional Medicine Practitioner
The Health Formula

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 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

6 Functional Body Systems

12 Accessory Systems

15 Nutrient Status

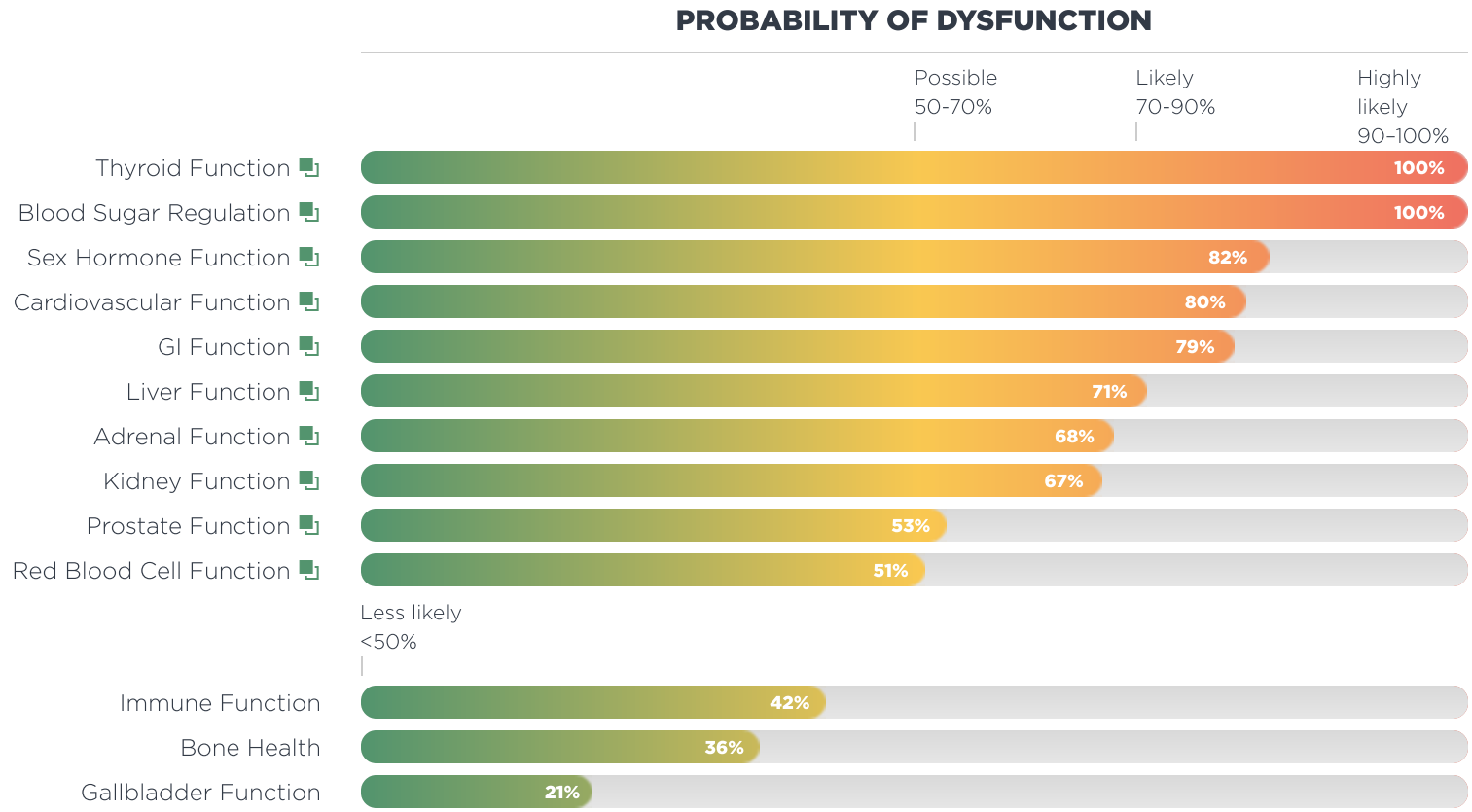
19 Nutrient Deficiencies

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.

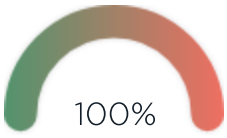
This report gives you an indication of the level of dysfunction that exists in the various physiological systems in your body.

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 Highly Likely. Much improvement required.

THYROID FUNCTION

The Thyroid Function score allows us to assess the functional health of your thyroid. The thyroid produces hormones that control how the body uses energy. They are responsible for controlling metabolism in the body, maintaining body temperature, regulating cholesterol, and controlling mood. By examining specific biomarkers on the blood test we can see if your thyroid is in a state of increased activity, in a state of decreased function (hypothyroidism), or hopefully optimal function!

Rationale

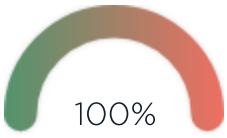
TSH ↑, T4 - Free ↓, T3 - Free ↓

Biomarkers considered

TSH, T4 - Free, T3 - Free

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

T4 - Total, T3 - Total, Reverse T3, T3 Uptake, Free T3 : Reverse T3, Free Thyroxine Index (T7)



Dysfunction Highly Likely. Much improvement required.

BLOOD SUGAR REGULATION

The Blood Sugar Regulation score tells us how well your body is regulating blood glucose. Blood sugar dysregulation is very common. It doesn't suddenly emerge but rather develops slowly, so we can look for clues in your blood test that can help us determine if there's dysregulation and if so what it is. Some conditions associated with blood sugar dysregulation include hypoglycemia (periods of low blood sugar), metabolic syndrome, hyperinsulinemia and diabetes.

Rationale

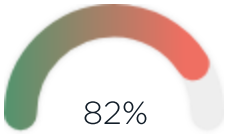
Glucose Fasting ↑, HOMA2-IR ↑, Hemoglobin A1C ↑, Insulin - Fasting ↑, Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑, DHEA-S - Male ↓, C-Peptide ↑

Biomarkers considered

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

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

Leptin - Male, Fructosamine



Dysfunction Likely
Improvement required.

SEX HORMONE FUNCTION

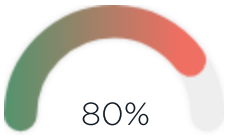
The Sex Hormone Function score helps us assess levels of essential hormones in your body: testosterone, DHEA, progesterone, Sex Hormone Binding Globulin (SHBG), and estradiol. Blood levels of these crucial hormones diminish with age, contributing to age-related dysfunctions such as low libido, blood sugar problems, excess weight, heart disease, etc. We can measure sex hormone levels in your blood and determine from the Sex Hormone Function score whether the levels are optimal for your continued optimal health and wellness. Your score is moderate, indicating that the regulation of these hormones may not function as well as it should and may need support moving forward.

Rationale

Estradiol - Male ↑, Testosterone Free - Male ↓, Testosterone Total - Male ↓

Biomarkers considered

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



Dysfunction Likely
Improvement required.

CARDIOVASCULAR FUNCTION

The Cardiovascular Function score looks at biomarkers on a blood test to assess your risk of cardiovascular dysfunction. Your Cardiovascular Function score indicates that you may be at an increasing risk of developing cardiovascular disease. The Cardiovascular Function score will be used along with information from an examination of your diet, lifestyle, exercise, body mass index, and family history to give us a more complete picture of what is going on.

Rationale

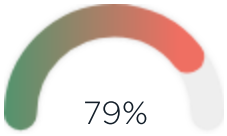
Triglyceride:HDL ↑, Glucose Fasting ↑, Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑, Homocysteine ↑, Hemoglobin A1C ↑, Estradiol - Male ↑, Testosterone Total - Male ↓, Insulin - Fasting ↑, Vitamin D (25-OH) ↓, Testosterone Free - Male ↓

Biomarkers considered

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

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

Lipoprotein (a), Fibrinogen, Hs CRP - Male



Dysfunction Likely
Improvement required.

GI FUNCTION

The GI Function score reflects the degree of function in your gastrointestinal (GI) system. The gastrointestinal system is responsible for the digestion and breakdown of macronutrients (proteins, fats, and carbohydrates) into small particles so they can be easily absorbed and utilized. The GI system is also responsible for the excretion and elimination of waste from the body. Your body's nutritional status is directly affected by your ability to digest macronutrients and also to absorb key vitamins, minerals, amino acids, essential fatty acids, and accessory nutrients such as bioflavonoids, CoQ10, etc. Factors affecting the GI function include inadequate chewing, eating when stressed or in a hurry, lack of appropriate stomach acid (a condition called hypochlorhydria), inflammation in the stomach lining (a condition called gastritis), a decrease in digestive enzymes (a condition called pancreatic insufficiency), an overgrowth of non-beneficial bacteria in your digestive system (a condition called dysbiosis) and/or a condition called Leaky Gut Syndrome.

Rationale

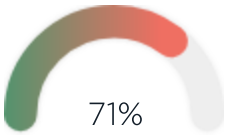
BUN ↑, Protein - Total ↓, Globulin - Total ↑, Albumin ↓, Alk Phos ↓, MCV ↑, Basophils - % ↑

Biomarkers considered

BUN, Protein - Total, Globulin - Total, Albumin, Phosphorus, Alk Phos, MCV, Eosinophils - %, Basophils - %, Iron - Serum, Creatinine, Chloride, Calcium, Total WBCs

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

Gastrin



Dysfunction Likely
Improvement required.

LIVER FUNCTION

The Liver Function score reflects the degree of function in your liver. The liver has over 500 known functions. It is involved in detoxification, digestion, the hormonal system, the immune system, controlling blood sugar, storing nutrients, and protein and fat metabolism. The liver also produces a substance called bile that is stored in the gallbladder. Bile is essential for proper fat digestion and is also a major route of elimination for the body. Factors affecting liver function include the accumulation of fat within the liver (a condition called fatty liver), inflammation of the liver cells from infections, toxins, etc. (a condition called hepatitis), actual damage to the liver cells themselves (a condition called cirrhosis) or a decrease in the ability of the liver to detoxify, which leads to detoxification issues. There are biomarkers in the blood that we can measure that can indicate the relative function of the liver.

Rationale

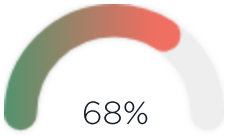
ALT ↑, Albumin ↓, Globulin - Total ↑, Albumin : Globulin ↓, AST ↑, Cholesterol - Total ↑, Protein - Total ↓

Biomarkers considered

ALT, BUN, Albumin, Globulin - Total, Albumin : Globulin, Alk Phos, AST, LDH, Bilirubin - Total, Cholesterol - Total, Iron - Serum, Ferritin, GGT, Protein - Total, AST : ALT

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

Bilirubin - Direct



Dysfunction Possible
There may be improvement needed in certain areas.

ADRENAL FUNCTION

The Adrenal Function score reflects the degree of function in your adrenal glands. The adrenal glands produce certain hormones in response to stress. They are responsible for what is commonly called “the fight or flight response”. Unfortunately, when your body is under constant stress, which is very common, your adrenal glands become less functional. Adrenal dysfunction can be caused by an increased output of stress hormones (adrenal stress) or more commonly a decreased output of adrenal hormones (adrenal insufficiency).

Rationale

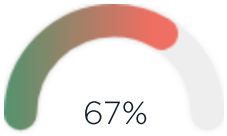
Sodium ↑, Potassium ↓, DHEA-S - Male ↓, Chloride ↑

Biomarkers considered

Sodium : Potassium, Sodium, Potassium, Cortisol - Total/AM, DHEA-S - Male, Chloride

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

Aldosterone, Cortisol - PM



Dysfunction Possible
There may be improvement needed in certain areas.

KIDNEY FUNCTION

The Kidney Function score reflects the degree of function in your kidneys. The kidneys help to filter waste and toxins from the body and also help regulate fluid and mineral balance, help regulate blood pressure and regulate acid-alkaline balance in the body. Factors affecting kidney function include heavy metal toxicity, dehydration, caffeine and alcohol, liver dysfunction and many over the counter and prescription drugs. Kidney dysfunction can be a slow decrease in function (a condition called renal insufficiency) or impaired function associated with kidney infections and disease.

Rationale

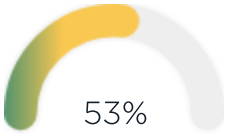
BUN ↑, Creatinine ↑, eGFR ↓, Uric Acid - Male ↑, AST ↑

Biomarkers considered

BUN, Creatinine, BUN : Creatinine, Phosphorus, eGFR, Uric Acid - Male, AST, LDH, Magnesium - Serum

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

eGFR African American



Dysfunction Possible
There may be improvement needed in certain areas.

PROSTATE FUNCTION

The Prostate Function score can help us identify dysfunctions in your prostate. These can be a swollen prostate (a condition called Benign Prostatic Hypertrophy – BPH), an infection in the prostate (a condition called prostatitis), or a Urinary Tract Infection (UTI).

Rationale

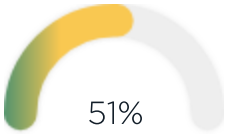
Creatinine ↑, Monocytes - % ↑

Biomarkers considered

Creatinine, Monocytes - %

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

PSA - Total



Dysfunction Possible
There may be improvement needed in certain areas.

RED BLOOD CELL FUNCTION

The Red Blood Cell Function score assesses the body's ability to produce red blood cells and reflects whether or not anemia may be present in the body. Red blood cells function to carry oxygen to all the tissues and cells of the body. Nutrient deficiencies and other dysfunctions can disrupt this process causing anemia. Some of the nutrient deficiency causes of anemia include deficiencies in iron, B12/folate, vitamin B6, copper, and vitamin C.

Rationale

Hemoglobin - Male ↓, MCV ↑, RDW ↑

Biomarkers considered

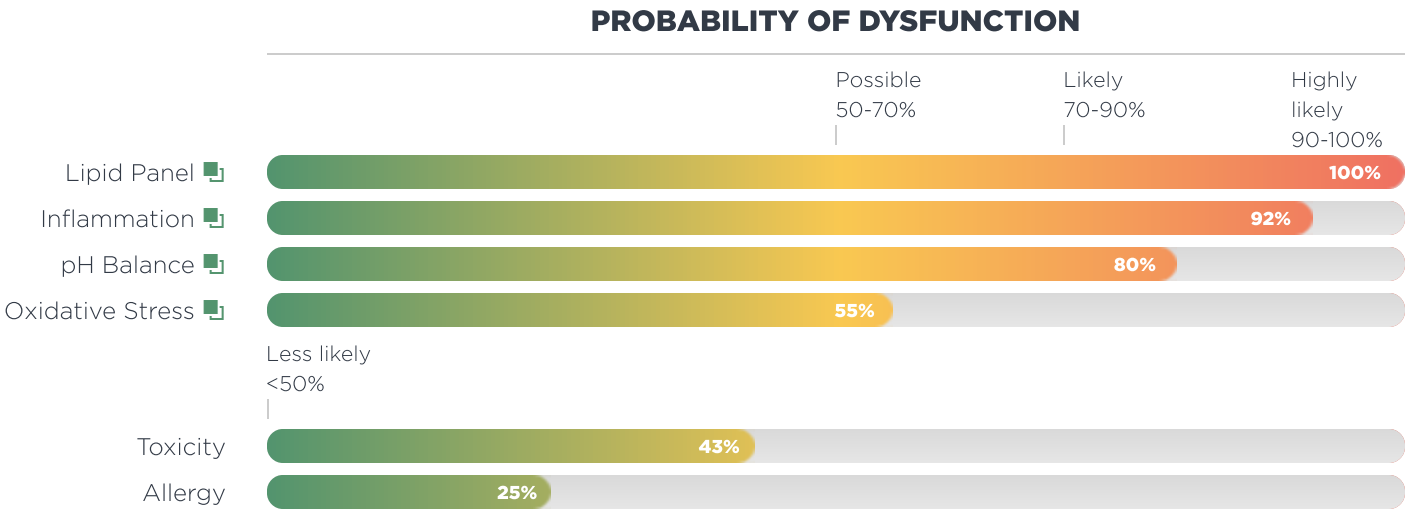
RBC - Male, Hemoglobin - Male, Hematocrit - Male, MCV, MCHC, RDW, MCH

Accessory Systems

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

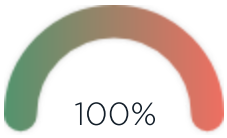
The Accessory Systems Report represents an algorithmic analysis of this blood test. These results have been converted into an individualized risk evaluation based on the latest research.

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 Highly Likely. Much improvement required.

LIPID PANEL

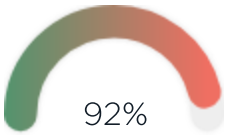
The Lipid Panel score gives us an indication of the levels of cholesterol and fat in your blood. An increased Lipid Panel score indicates that you have higher than optimal levels of cholesterol and fat in your blood (a condition called hyperlipidemia). Hyperlipidemia is associated with an increased risk of cardiovascular disease and may be genetic or be due to dietary factors, hormonal imbalances, blood sugar dysregulation and/or other metabolic imbalances.

Rationale

Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑, Cholesterol : HDL ↑, Triglyceride:HDL ↑

Biomarkers considered

Cholesterol - Total, Triglycerides, LDL Cholesterol, Cholesterol : HDL, Triglyceride:HDL, HDL Cholesterol



Dysfunction Highly Likely. Much improvement required.

INFLAMMATION

The Inflammation score can help us identify whether or not you are suffering from inflammation. This is important because inflammation can be silent, i.e. not have any symptoms. A number of biomarkers on a blood test can indicate the presence of inflammation. These are markers of inflammation and are not specific to any particular inflammatory condition or disease but they can help us look at the underlying dysfunctions that are the true cause of inflammation in the body.

Rationale

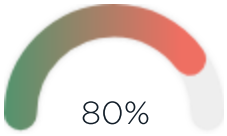
Homocysteine ↑, Uric Acid - Male ↑, RDW ↑, Neutrophil : Lymphocyte ↑, ESR - Male ↑, Basophils - % ↑, Albumin ↓, ALT ↑, Platelet : Lymphocyte (PLR) ↑, Vitamin D (25-OH) ↓, C-Reactive Protein ↑

Biomarkers considered

Homocysteine, Uric Acid - Male, LDH, RDW, Neutrophil : Lymphocyte, Cholesterol - Total, Triglycerides, HDL Cholesterol, Iron - Serum, Ferritin, ESR - Male, Lymphocytes - %, Basophils - %, Albumin, ALT, Platelet : Lymphocyte (PLR), Vitamin D (25-OH), C-Reactive Protein

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

Hs CRP - Male, Fibrinogen, Myeloperoxidase (MPO), Omega 3 Index, Creatine Kinase



Dysfunction Likely. Improvement required.

PH BALANCE

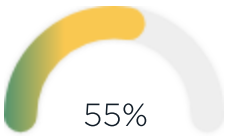
Your risk of an imbalance in your pH system is quite likely. The pH Balance score can help us pinpoint imbalances in the body's pH (acid-alkaline) regulation system. You are trending towards a higher risk of imbalance. Please work with your physician to help bring this score down in future blood test results.

Rationale

Anion Gap ↑, Potassium ↓, CO2 ↑

Biomarkers considered

Anion Gap, Potassium, Chloride, CO2, Calcium



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

OXIDATIVE STRESS

You may be in the early stages of oxidative stress, causing an increase in your Oxidative Stress score. While this may not require immediate attention, we will want to keep an eye on this on future blood tests.

Rationale

Albumin ↓, Globulin - Total ↑, Lymphocytes - % ↓, GGT ↑, Uric Acid - Male ↑, LDL Cholesterol ↑

Biomarkers considered

Albumin, Globulin - Total, Cholesterol - Total, Platelets, Lymphocytes - %, GGT, Uric Acid - Male, Bilirubin - Total, HDL Cholesterol, Lymphocytes - Absolute, LDL Cholesterol, Ferritin, Neutrophils - %, Homocysteine

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

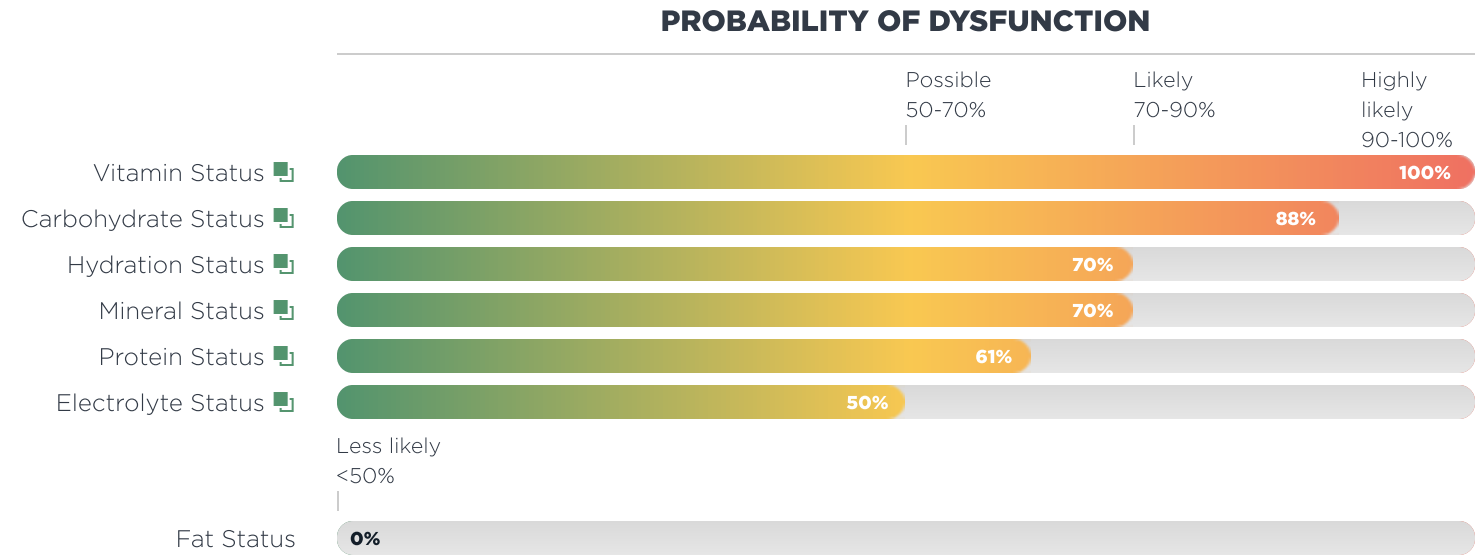
Bilirubin - Indirect

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.

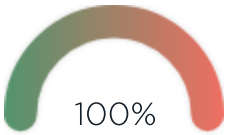
This report gives you an indication of your general nutritional status. The Nutrient Status is influenced by actual dietary intake, digestion, absorption, assimilation, and cellular uptake of the nutrients themselves.

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 Highly Likely. Much improvement required.

VITAMIN STATUS

The Vitamin Status score gives us a general indication of the balance of certain vitamins in your body. Vitamin levels are constantly fluctuating based on a number of factors, such as the amount in your diet, your ability to digest and break down individual vitamins from the food or supplements you consume, the ability of those vitamins to be absorbed, transported and ultimately taken up into the cells themselves.

Rationale

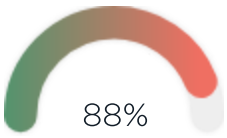
Anion Gap ↑, Albumin ↓, Homocysteine ↑, Vitamin D (25-OH) ↓, MCV ↑, Methylmalonic Acid ↑, Folate - Serum ↓, Vitamin B12 ↓

Biomarkers considered

Anion Gap, Albumin, AST, ALT, GGT, Homocysteine, Vitamin D (25-OH), MCV, Methylmalonic Acid, Folate - Serum, Vitamin B12

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

Folate - RBC



Dysfunction Likely. Improvement required.

CARBOHYDRATE STATUS

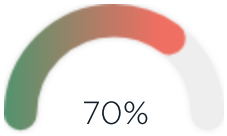
The Carbohydrate Status score gives us an assessment of how your body copes with your dietary intake of carbohydrates, especially refined carbohydrates (white flour, white rice, white pasta, etc.) and sugars. A diet high in refined carbohydrates and sugars will deplete important nutrients that are used by the body to handle carbohydrates and may also increase blood glucose and blood fat levels, all of which can be measured in your blood.

Rationale

Glucose Fasting ↑, Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑

Biomarkers considered

Glucose Fasting, Phosphorus, LDH, Cholesterol - Total, Triglycerides, LDL Cholesterol, HDL Cholesterol, Total WBCs



Dysfunction Likely. Improvement required.

HYDRATION STATUS

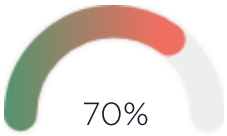
The Hydration Status score gives us a good indication of how well hydrated you were at the time your blood was drawn. Adequate hydration is necessary for many basic chemical reactions in your body, including digestion, electrolyte balance, hormone transport, and kidney and heart function. Dehydration is a very common problem and is most often due to insufficient water intake and/or excessive use of diuretics (substances that increase water loss from the body). These would include certain over-the-counter and prescription drugs, botanical medicines, caffeine, etc. These are some of the most common causes of dehydration and may be why your Hydration score is a little higher than we would like to see.

Rationale

BUN ↑, Sodium ↑, RBC - Male ↑, Hematocrit - Male ↑

Biomarkers considered

Albumin, BUN, Sodium, Potassium, Protein - Total, RBC - Male, Hemoglobin - Male, Hematocrit - Male



Dysfunction Likely. Improvement required.

MINERAL STATUS

You may be trending towards a mineral deficiency or need, causing an increase in your Mineral Status score. Mineral levels in the body are closely regulated and deficiency in one or more minerals may be due to a number of factors such as the amount in your diet, the ability to digest and break down individual minerals from the food or supplements you consume, and the ability of those minerals to be absorbed, transported and ultimately taken up by the cells themselves.

Rationale

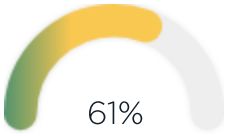
Magnesium - Serum ↓, Copper - Serum ↓, Zinc - Serum ↓, Potassium ↓, Alk Phos ↓

Biomarkers considered

Magnesium - Serum, Copper - Serum, Zinc - Serum, Potassium, Uric Acid - Male, Calcium, Phosphorus, Alk Phos, Iron - Serum, Ferritin

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

Selenium - Serum, Zinc - RBC, Selenium - RBC, Chromium, Copper - RBC, Magnesium - RBC



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

PROTEIN STATUS

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

Rationale

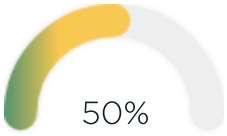
Protein - Total ↓, Albumin ↓, Calcium : Albumin ↑, C-Reactive Protein ↑, ALT ↑, AST ↑

Biomarkers considered

Protein - Total, BUN, Albumin, Calcium : Albumin, Creatinine, BUN : Creatinine, C-Reactive Protein, ALT, AST, CO2, GGT, Total WBCs

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

Hs CRP - Male, TIBC



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

ELECTROLYTE STATUS

The Electrolyte Status score gives us a sense of the balance of electrolytes in your body. Electrolytes such as calcium, potassium, sodium, and magnesium are essential for optimal health and wellness. An electrolyte imbalance can show up as low blood pressure, cold hands or feet, poor circulation, swelling in the ankles, and immune insufficiency.

Rationale

Potassium ↓, Magnesium - Serum ↓

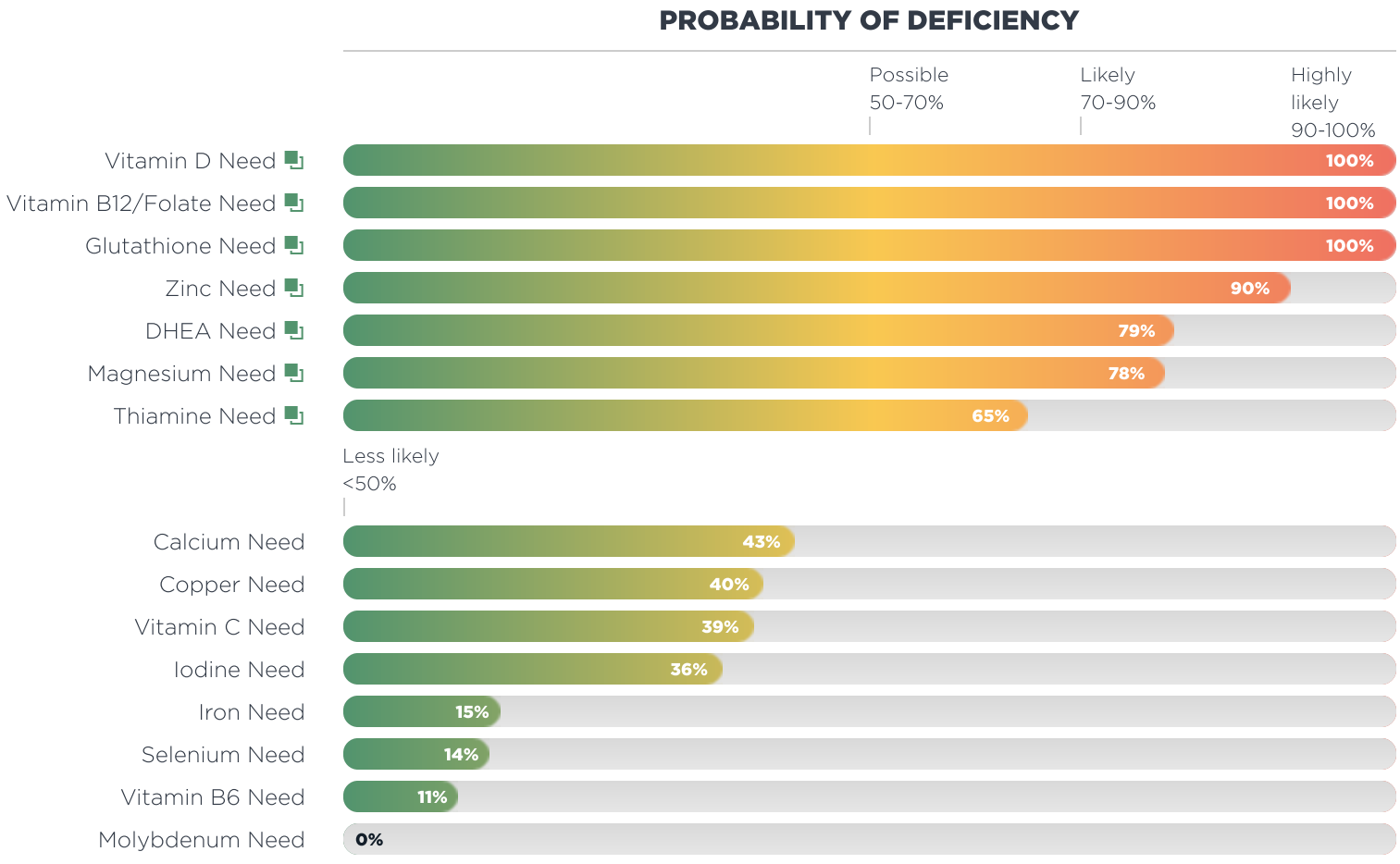
Biomarkers considered

Sodium, Potassium, Chloride, Calcium, Phosphorus, Magnesium - Serum

Individual Nutrient Deficiencies

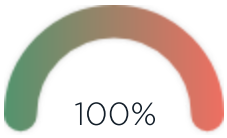
The scores represent the degree of deficiency for individual nutrients based on your blood results. The status of an individual nutrient is based on a number of factors such as actual dietary intake, digestion, absorption, assimilation and cellular uptake of the nutrients themselves. All of these factors 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.

VITAMIN D NEED

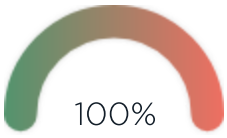
Your high Vitamin D Need score indicates that your vitamin D levels might be lower than optimal, and there may be an increased need for vitamin D.

Rationale

Vitamin D (25-OH) ↓

Biomarkers considered

Vitamin D (25-OH)



Deficiency Highly Likely. Much improvement required.

VITAMIN B12/FOLATE NEED

Your high Vitamin B12/Folate Need score indicates that your vitamin B12/folate levels might be lower than optimal, and there may be an increased need for vitamin B12/folate.

Rationale

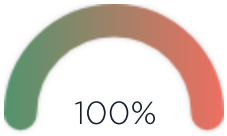
Vitamin B12 ↓, Methylmalonic Acid ↑, Active B12 ↓, MCV ↑, Homocysteine ↑, Hemoglobin - Male ↓, MCH ↑, MCHC ↑, RDW ↑, Folate - Serum ↓

Biomarkers considered

Vitamin B12, Methylmalonic Acid, Active B12, MCV, LDH, Homocysteine, RBC - Male, Hemoglobin - Male, Hematocrit - Male, MCH, MCHC, RDW, Neutrophils - %, Folate - Serum

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

Folate - RBC



Deficiency Highly Likely. Much improvement required.

GLUTATHIONE NEED

Your high Glutathione Need score indicates that your glutathione levels might be lower than optimal, and there may be an increased need for glutathione.

Rationale

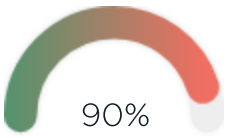
GGT ↑

Biomarkers considered

GGT

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

Glutathione - Total



Deficiency Highly Likely. Much improvement required.

ZINC NEED

Your high Zinc Need score indicates that your zinc levels might be lower than optimal, and there may be an increased need for zinc.

Rationale

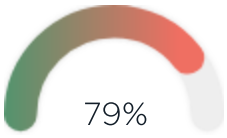
Alk Phos ↓, Zinc - Serum ↓

Biomarkers considered

Alk Phos, Zinc - Serum

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

Zinc - RBC



Deficiency Likely. Improvement required.

DHEA NEED

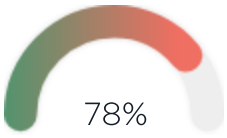
You may be trending toward a DHEA need, causing an increase in your DHEA Need score.

Rationale

DHEA-S - Male ↓

Biomarkers considered

DHEA-S - Male



Deficiency Likely. Improvement required.

MAGNESIUM NEED

You may be trending toward a magnesium need, causing an increase in your Magnesium Need score.

Rationale

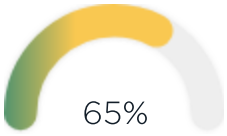
Magnesium - Serum ↓

Biomarkers considered

Magnesium - Serum, GGT

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

Magnesium - RBC



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

THIAMINE NEED

You may be in the early stages of thiamine need, causing your Thiamine Need score to rise. While this may not require immediate attention, you will want to watch this on future blood tests.

Rationale

Anion Gap ↑, Glucose Fasting ↑, Hemoglobin - Male ↓

Biomarkers considered

Anion Gap, CO2, Glucose Fasting, LDH, Hemoglobin - Male, Hematocrit - Male

3

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

24 Blood Test Results

33 Out of Optimal Range

Blood Test Results

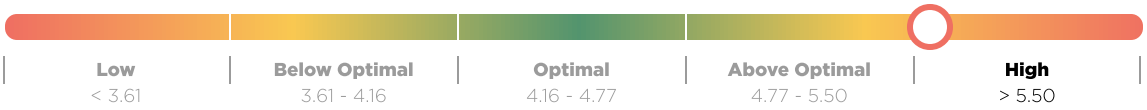
The Blood Test Results Report lists the results from your Chemistry Screen and CBC and shows you whether or not an individual biomarker is optimal, outside of the optimal range, or outside of the standard range. The biomarkers are grouped into their most common categories.

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	23	23	31	18	2	100
Alarm Low	**Low**	**Below Optimal**	**Optimal**	**Above Optimal**	**High**	**Alarm High**	**Total**

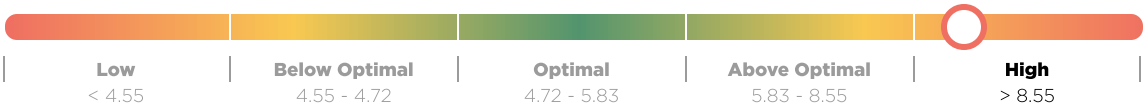
BLOOD GLUCOSE

Glucose Fasting
6.20 mmol/L



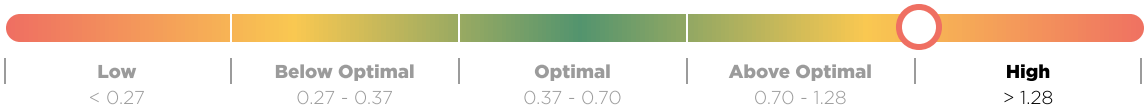
Hemoglobin A1C
7.00 %

eAG
8.56 mmol/L

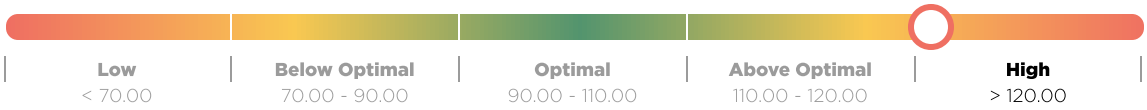


Insulin - Fasting
76.39 pmol/L

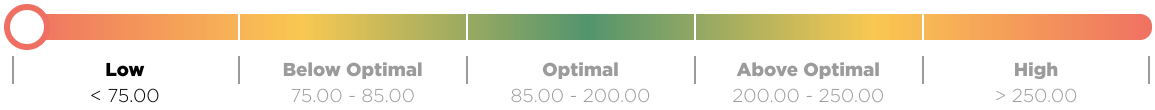
C-Peptide
1.30 nmol/L



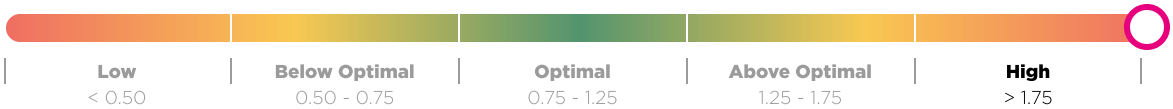
HOMA2-%B
132.90 %



HOMA2-%S
32.70 %



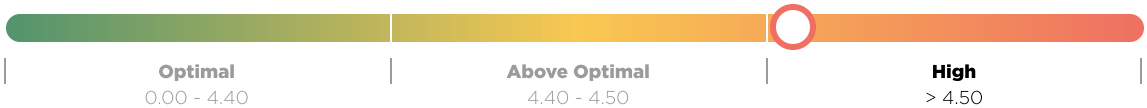
HOMA2-IR
3.05 Index ⚠



ALT : AST
1.17 Ratio

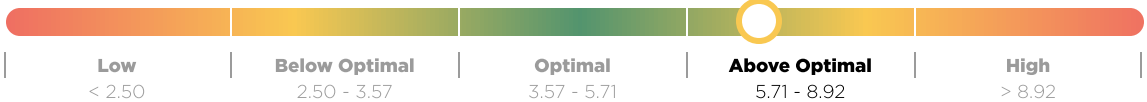
QUICKI
0.32 Index

Triglyceride-Glucose Index (TyG)
4.80 Index

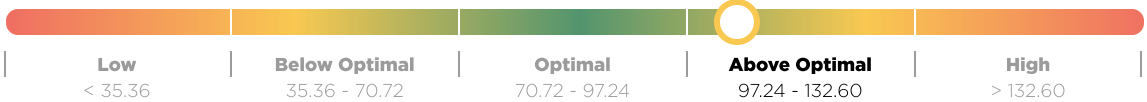


KIDNEY

BUN
6.80 mmol/L urea

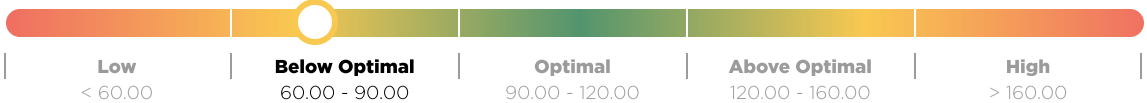


Creatinine
106.00 µmol/L



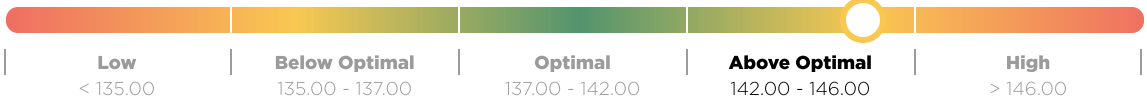
BUN : Creatinine
0.06 Ratio

eGFR
71.00 mL/min/1.73m2

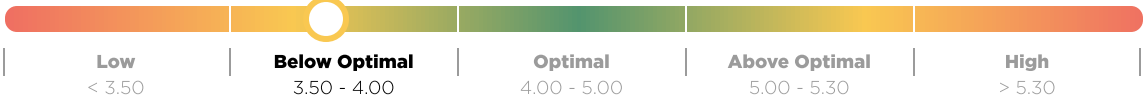


ELECTROLYTES

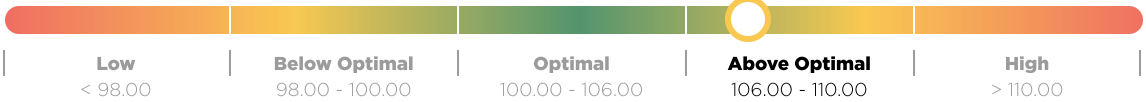
Sodium
145.00 mmol/L



Potassium
3.70 mmol/L

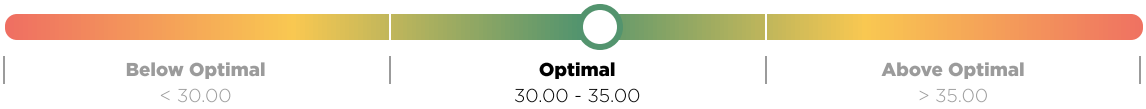


Chloride
107.00 mmol/L



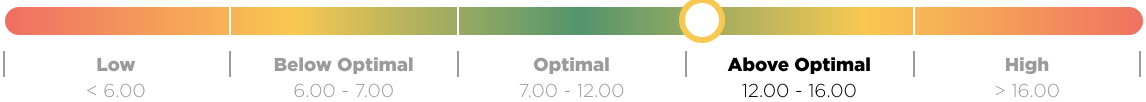
CO2
31.00 mmol/L

Sodium : Potassium
32.79 ratio

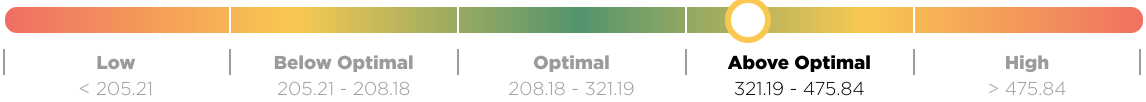


METABOLIC

Anion Gap
12.30 mmol/L



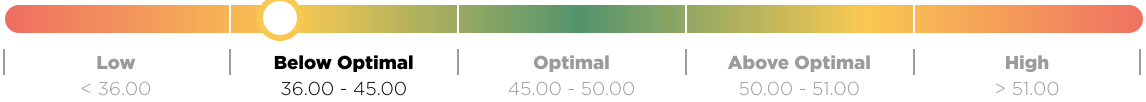
Uric Acid - Male
360.00 µmol/L



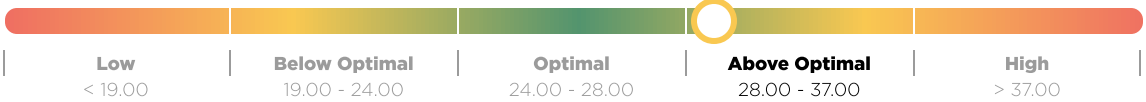
PROTEINS

Protein - Total
66.00 g/L

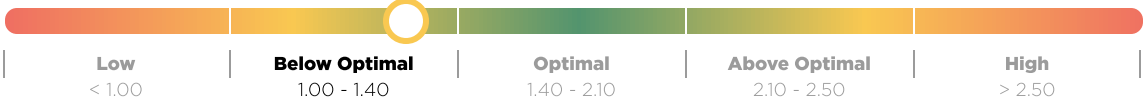
Albumin
38.00 g/L



Globulin - Total
29.00 g/L

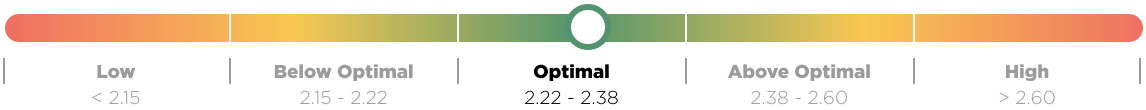


Albumin : Globulin
1.31 ratio

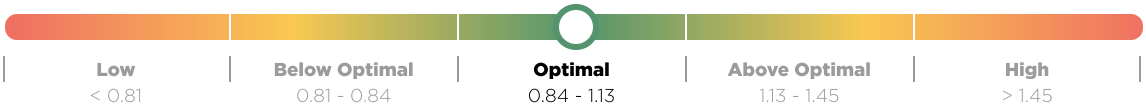


MINERALS

Calcium
2.31 mmol/L

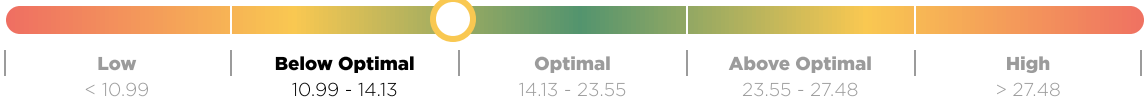


Phosphorus
0.99 mmol/L



Magnesium - Serum
0.80 mmol/L

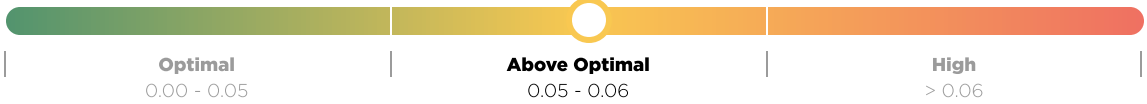
Copper - Serum
14.00 umol/L



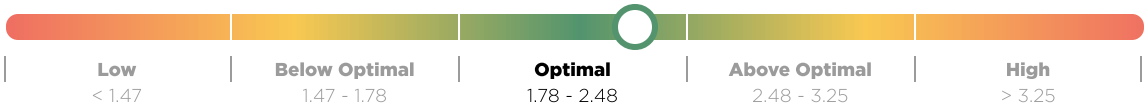
Zinc - Serum
11.00 umol/L

Copper : Zinc Ratio
1.24 Ratio

Calcium : Albumin
0.06 ratio

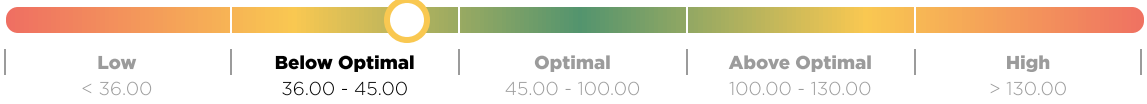


Calcium : Phosphorus
2.33 ratio



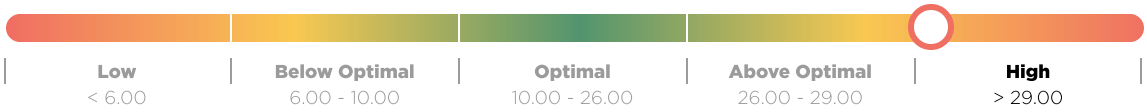
LIVER AND GB

Alk Phos
43.00 IU/L



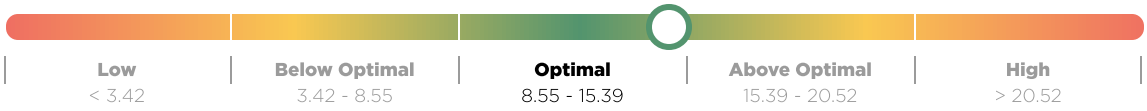
AST
29.00 U/L

ALT
34.00 U/L

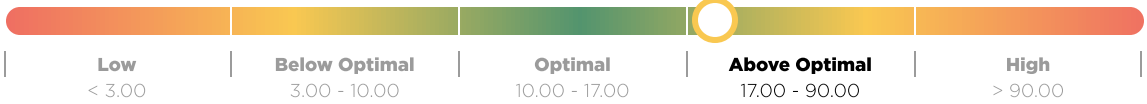


LDH
180.00 U/L

Bilirubin - Total
15.00 µmol/L



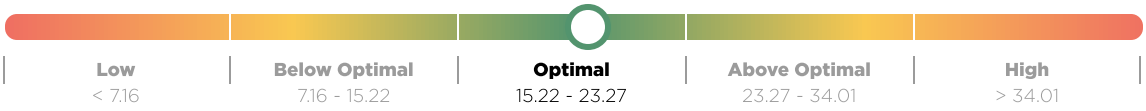
GGT
26.00 U/L



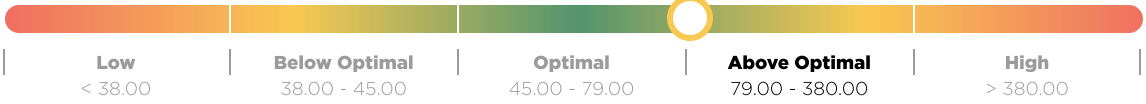
AST : ALT
0.85 Ratio

IRON MARKERS

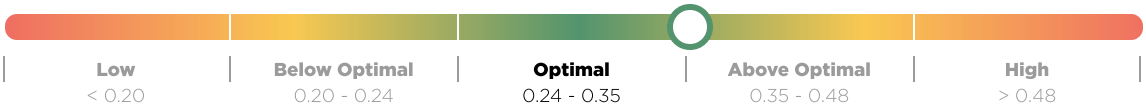
Iron - Serum
20.00 umol/L



Ferritin
85.00 µg/L



% Transferrin saturation
0.35 fraction saturation



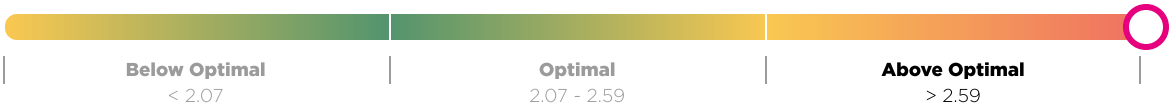
Transferrin
2.50 g/L

LIPIDS

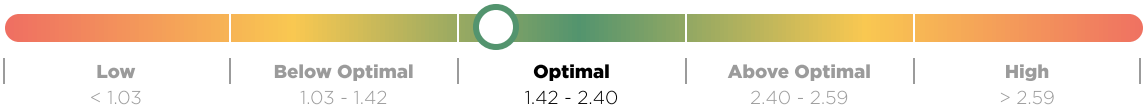
Cholesterol - Total
7.20 mmol/L

Triglycerides
1.50 mmol/L

LDL Cholesterol
4.80 mmol/L

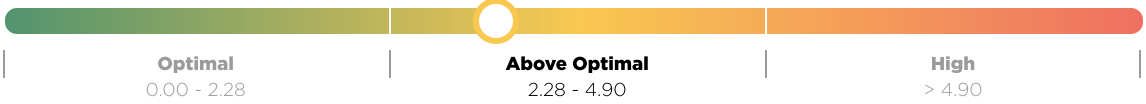


HDL Cholesterol
1.60 mmol/L



Non-HDL Cholesterol
5.50 mmol/L

LDL : HDL - Male
3.00 Ratio



Triglyceride:HDL
0.88 ratio

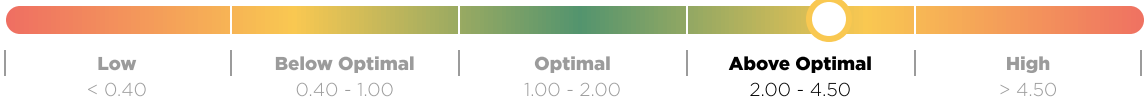
Cholesterol : HDL
4.23 Ratio

CARDIOMETABOLIC

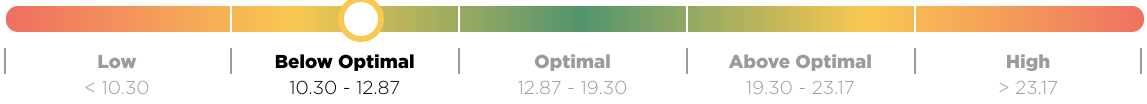
Homocysteine
10.30 umol/L

THYROID

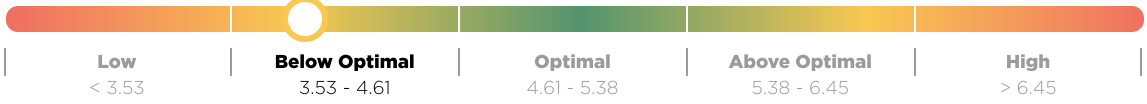
TSH
3.50 mU/L



T4 - Free
11.80 pmol/L

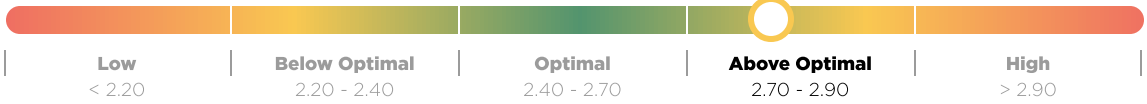


T3 - Free
3.90 pmol/L



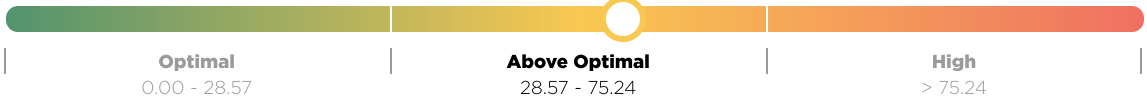
Thyroid Peroxidase (TPO) Abs LABCORP
89.00 kIU/L

Free T3 : Free T4
2.77 Ratio

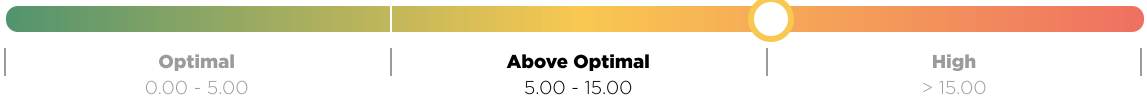


INFLAMMATION

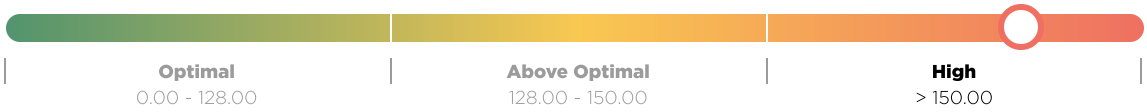
C-Reactive Protein
57.14 nmol/L



ESR - Male
15.00 mm/hr

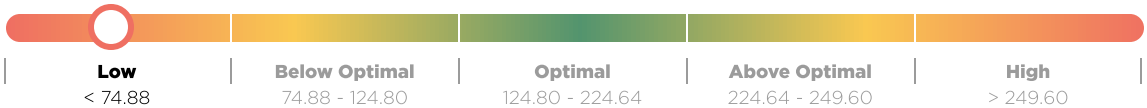


Platelet : Lymphocyte (PLR)
200.00 Ratio



VITAMINS

Vitamin D (25-OH)
62.00 nmol/L

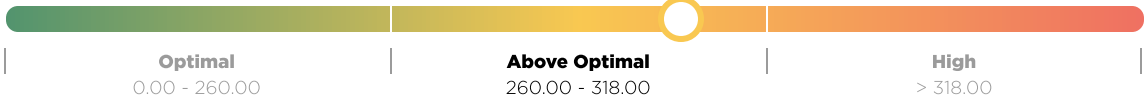


Vitamin B12
345.00 pmol/L

Folate - Serum
30.20 nmol/L

Active B12
53.00 pmol/L

Methylmalonic Acid
305.00 nmol/L



HORMONES

DHEA-S - Male
8.50 umol/L

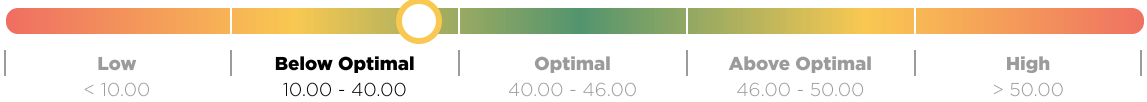
FSH - Male
6.00 mIU/ml

LH - Male
5.00 mIU/ml

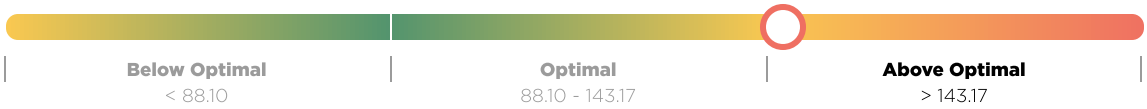
Testosterone Total - Male
19.00 nmol/L

Testosterone Free - Male
450.00 pmol/L

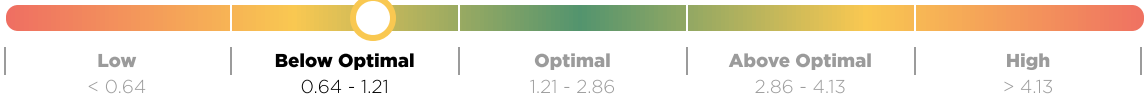
Sex Hormone Binding Globulin - Male
35.00 nmol/L



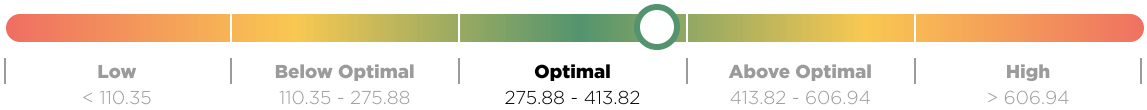
Estradiol - Male
145.00 pmol/L



Progesterone - Male
1.00 nmol/L



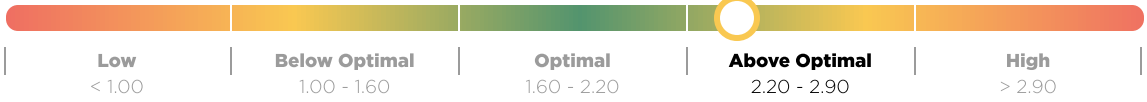
Cortisol - Total/AM
400.00 nmol/L



Cortisol : DHEA-S
0.05 ratio

% Testosterone Bioavailable - Male
48.94 %

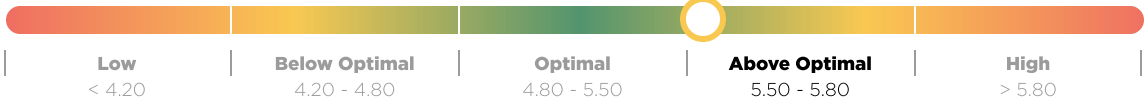
% Testosterone Free - Male
2.36 %



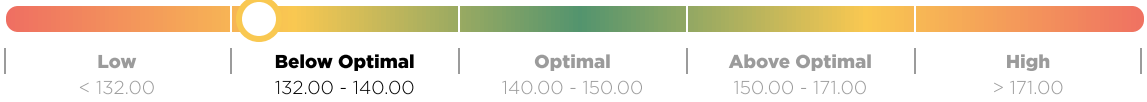
Testosterone Bioavailable - Male
9.30 nmol/L

CBC

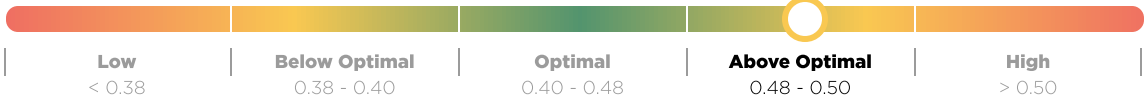
RBC - Male
5.52 10E12/L



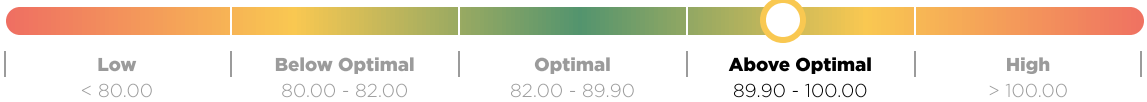
Hemoglobin - Male
133.00 g/L



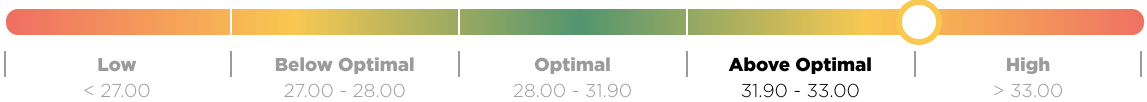
Hematocrit - Male
0.49 Prop. of 1.0



MCV
94.00 fL

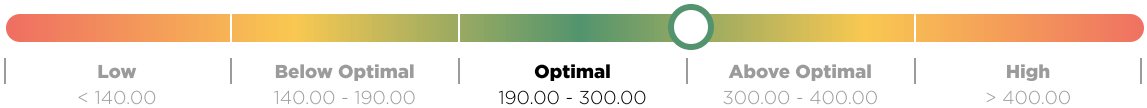


MCH
33.00 pg



MCHC
366.00 g/L

Platelets
300.00 x10E9/L

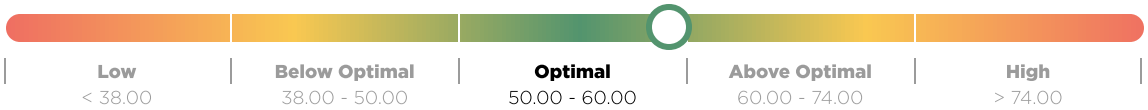


RDW
13.60 %

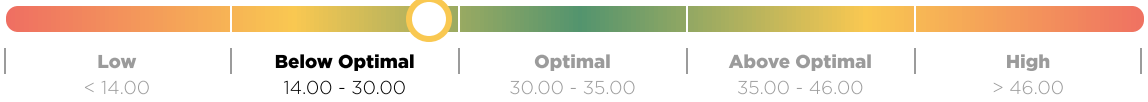
WBCS

Total WBCs
5.40 giga/L

Neutrophils - %
59.26 %



Lymphocytes - %
27.78 %

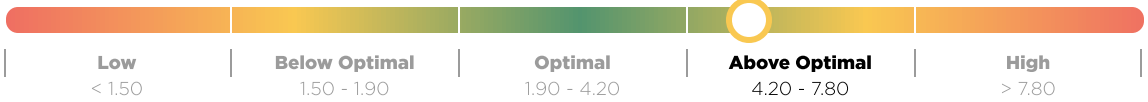


Monocytes - %
9.26 %

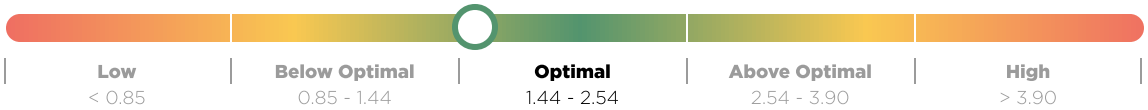
Eosinophils - %
1.85 %

Basophils - %
1.85 %

Neutrophils - Absolute
5.20 giga/L

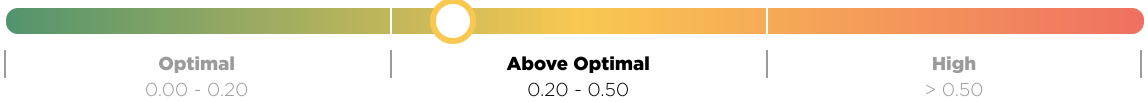


Lymphocytes - Absolute
1.50 giga/L



Monocytes - Absolute
0.50 giga/L

Eosinophils - Absolute
0.25 giga/L



Basophils - Absolute
0.10 giga/L

Neutrophil : Lymphocyte
3.47 Ratio

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.

Each biomarker in the Out of Optimal Range report hyperlinks back into the Blood Test Results report so you can a see a more detailed view of the blood test result itself.

Total number of biomarkers by range

Alarm Low	Low	Below Optimal	Optimal	Above Optimal	High	Alarm High	Total
0	3	23	23	31	18	2	100

Above Optimal

HOMA2-IR

3.05 Index

The HOMA2 (Homeostasis Model Assessment) calculator is a tool used to express the degree of insulin sensitivity and insulin resistance. HOMA2-IR helps estimate the degree of cellular resistance to the hormone insulin. A HOMA2-IR score of 1 is considered optimal. levels above 1 show an increasing trend towards metabolic syndrome, insulin resistance and type 2 diabetes.

LDL Cholesterol

4.80 mmol/L

LDL functions to transport cholesterol and other fatty acids from the liver to the peripheral tissues for uptake and metabolism by the cells. It is known as “bad cholesterol” because it is thought that this process of bringing cholesterol from the liver to the peripheral tissue increases the risk for atherosclerosis. An increased LDL cholesterol is just one of many independent risk factors for cardiovascular disease. It is also associated with metabolic syndrome, oxidative stress, and fatty liver.

Estradiol - Male

145.00 pmol/L

Estradiol is a minor hormone in men. Estradiol is synthesized from testosterone and androstenedione in men and plays a role in male sex hormone physiology. High levels of estradiol in men are associated with abdominal obesity, an increased risk of cardiovascular disease, insulin sensitivity, and blood sugar dysregulation.

Triglyceride:HDL

0.88 ratio

The Triglyceride:HDL ratio is determined from serum triglyceride and HDL levels. Increased ratios are associated with increased cardiovascular risk and an increased risk of developing insulin resistance and Type II Diabetes.

Triglyceride-Glucose Index (TyG)

4.80 Index

The Triglyceride-Glucose (TyG) Index is a helpful tool for identifying early signs of insulin resistance and related complications. When the TyG Index is elevated, it suggests difficulties in regulating glucose and metabolism. This increase in the TyG Index is associated with a higher risk of developing conditions like diabetes, cardiovascular disease, and stroke, which can affect your heart and overall health. By recognizing these markers early on, the TyG Index can play a vital role in preventing these health issues.

CO2

31.00 mmol/L

Carbon Dioxide is a measure of bicarbonate in the blood. CO2, as bicarbonate, is available for acid-base balancing. Bicarbonate neutralizes metabolic acids in the body. Elevated levels of CO2 are associated with metabolic alkalosis and hypochlorhydria.

MCHC

366.00 g/L

The Mean Corpuscular Hemoglobin Concentration (MCHC) measures the average concentration of hemoglobin in the red blood cells. It is a calculated value. It is elevated with B12/folate deficiency and hypochlorhydria.

ALT

34.00 U/L

ALT is an enzyme present in high concentrations in the liver and to a lesser extent skeletal muscle, the heart, and kidney. ALT will be liberated into the bloodstream following cell damage or destruction. Any condition or situation that causes damage to the hepatocytes will cause leakage of ALT into the bloodstream. These include exposure to chemicals, viruses (viral hepatitis, mononucleosis, cytomegalovirus, Epstein Barr, etc.), alcoholic hepatitis. The most common non-infectious cause of an increased ALT is a condition called steatosis (fatty liver).

Platelet : Lymphocyte (PLR)

200.00 Ratio

The Platelet-Lymphocyte Ratio, or PLR for short, is a way to look at your blood to get clues about inflammation and clotting in your body. If the PLR is higher than what's typical, it might mean there's more inflammation in your body. This can be linked to various health problems, including issues with the heart and circulation.

ALT : AST

1.17 Ratio

An increase in the ratio of alanine aminotransferase (ALT) to aspartate aminotransferase (AST) is independently associated with a trend towards emerging insulin resistance and metabolic syndrome.

Basophils - %

1.85 %

Basophils are a type of White Blood Cell, which will often be increased with tissue inflammation and is often seen with cases of intestinal parasites.

HOMA2-%B

132.90 %

The HOMA2 (Homeostasis Model Assessment) calculator is a tool used to express the degree of insulin sensitivity and insulin resistance. HOMA2-%B helps estimate the beta-cell function of the pancreas. Beta-cells produce insulin. Elevated HOMA2-%B levels indicate an increased beta-cell activity and an increase in insulin production. This points to an increasing trend towards pre-diabetes and insulin resistance.

Thyroid Peroxidase (TPO) Abs LABCORP

89.00 kIU/L

Thyroid peroxidase (TPO) is an enzyme inside the cells of the thyroid that attaches iodine molecules to a tyrosine molecule to form the thyroid hormone Thyroxine or T4. The Thyroid Peroxidase (TPO) antibody test measures the level of antibodies in the blood that attacks the TPO enzyme inside the thyroid cells. Elevated levels of Thyroid Peroxidase (TPO) Antibodies are found in Autoimmune Thyroiditis, such as Hashimoto's Thyroiditis.

C-Peptide

1.30 nmol/L

C-Peptide is used as an indicator for insulin production from the pancreas. It can help assess whether high blood glucose is due to reduced insulin output from the pancreas or due to reduced glucose uptake by the cells, a condition called insulin resistance. An increased C-Peptide is a finding in Type II Diabetes and is a sign of blood sugar dysregulation.

Cholesterol - Total

7.20 mmol/L

Cholesterol is a type of fat in your blood that your body needs to make cells and hormones. It's important to keep cholesterol at a healthy level. When there's too much cholesterol in your blood, it can be a problem. High cholesterol 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 the bile flow in your liver, and a condition where there's too much fat in the liver.

Glucose Fasting

6.20 mmol/L

Blood glucose levels are regulated by several important hormones including insulin and glucagon. Glucose is also directly formed in the body from carbohydrate digestion and from the conversion in the liver of other sugars, such as fructose, and fat into glucose. Increased blood glucose is associated with type 1 & 2 diabetes, metabolic syndrome, and insulin resistance.

Hemoglobin A1C

7.00 %

The Hemoglobin A1C (HgbA1C) test measures the amount of glucose that combines with hemoglobin during the normal lifespan of a red blood cell, which is about 120 days. Elevated levels of HgbA1C are associated with elevated blood glucose in the past 120 days. Hemoglobin A1C is used primarily to monitor long-term blood glucose control and to help determine therapeutic options for treatment and management. Studies have shown that the closer to normal the hemoglobin A1C levels are kept, the less likely those patients are to develop the long-term complications of diabetes.

eAG

8.56 mmol/L

Estimated Average Glucose or eAG represents average daily glucose levels over a 2-3 month period. The eAG is calculated using the Hemoglobin A1C, a measurement of the amount of hemoglobin that is bound to glucose due to elevated blood sugar. Elevated levels of eAG are associated with a hemoglobin A1C above the ODX optimal of 5.5% and point to a trend towards pre-diabetes, metabolic syndrome, insulin resistance, and diabetes.

Neutrophil : Lymphocyte

3.47 Ratio

The neutrophil-lymphocyte ratio (NLR) reflects important components of the cell-mediated inflammatory response, i.e. neutrophils and lymphocytes. Elevated levels are seen in bacterial infections and are considered a marker of systemic inflammation and metabolic dysfunction such as metabolic syndrome and thyroid dysfunction.

Non-HDL Cholesterol

5.50 mmol/L

Non-HDL cholesterol represents the circulating cholesterol not carried by HDL (the protective carrier that collects cholesterol from tissues and blood vessels and transports it back to the liver). Elevated Non-HDL Cholesterol is associated with an increased risk of cardiovascular disease and related events.

RBC - Male

5.52 10E12/L

The RBC Count determines the total number of red blood cells or erythrocytes found in a cubic millimeter of blood. The red blood cell functions to carry oxygen from the lungs to the body tissues and to transfer carbon dioxide from the tissues to the lungs where it is expelled. Increased levels are associated with dehydration, stress, a need for vitamin C and respiratory distress such as asthma.

Anion Gap

12.30 mmol/L

The anion gap is the measurement of the difference between the sum of the sodium and potassium levels and the sum of the serum CO2/bicarbonate and chloride levels. Increased levels are associated with thiamine deficiency and metabolic acidosis.

Calcium : Albumin

0.06 ratio

The Calcium:Albumin ratio is determined from serum calcium and albumin levels. Elevated levels can be a sign of protein deficiency or protein loss.

Hematocrit - Male

0.49 Prop. of 1.0

The hematocrit (HCT) measures the percentage of the volume of red blood cells in a known volume of centrifuged blood. It is an integral part of the Complete Blood Count (CBC) or Hemotology panel. Elevated levels of hematocrit are associated with dehydration. An increased hematocrit is also associated with but by no means diagnostic of asthma or emphysema. Due to the lack of optimum oxygenation of the blood, the body will increase the red blood cell count to increase the number of cells that can be oxygenated. The hematocrit will go up accordingly.

Chloride

107.00 mmol/L

Chloride plays an important role in human physiology. The amount of serum chloride is carefully regulated by the kidneys. Chloride is involved in regulating acid-base balance in the body. Increased levels are associated with metabolic acidosis and adrenal stress.

Methylmalonic Acid

305.00 nmol/L

Methylmalonic acid (MMA) is a byproduct of the metabolism of certain fatty acids and amino acids, a process that requires vitamin B12. Testing for MMA can help detect an early B12 deficiency and help differentiate between folate and B12 deficiency. Elevated levels reflect a B12 deficiency.

Ferritin

85.00 µg/L

Ferritin is the main storage form of iron in the body. Increased levels are associated with iron overload, an increasing risk of cardiovascular disease, inflammation and oxidative stress.

AST

29.00 U/L

AST is an enzyme present in highly metabolic tissues such as skeletal muscle, the liver, the heart, kidney, and lungs. This enzyme is at times released into the bloodstream following cell damage or destruction. AST levels will be increased when liver cells and/or heart muscle cells and/or skeletal muscle cells are damaged. The cause of the damage must be investigated.

Free T3 : Free T4

2.77 Ratio

The Free T3: Free T4 ratio is a measure that assesses the balance between two important thyroid hormones in your blood: Free T3 (triiodothyronine) and Free T4 (thyroxine). These hormones play vital roles in regulating energy, metabolism, and many other bodily functions. A normal ratio indicates a balanced conversion of T4 (a storage hormone) to T3 (the active hormone). A high ratio, on the other hand, indicates that there might be an excessive conversion of T4 to T3, which can be seen in situations of hyperactive thyroid function where there's excessive T3 production. In certain situations, an elevated ratio may also be associated with an emerging hypothyroidism.

Eosinophils - Absolute

0.25 giga/L

Eosinophils are a type of White Blood Cell, which are often increased in patients that are suffering from intestinal parasites or food or environmental sensitivities/allergies.

Globulin - Total

29.00 g/L

Globulins constitute the body's antibody system and Total globulin is a measurement of all the individual globulin fractions in the blood. An elevated total globulin level is associated with hypochlorhydria, liver dysfunction, immune activation, oxidative stress, and inflammation.

% Testosterone Free - Male

2.36 %

This test measures the % of free testosterone found in the blood. Roughly 2% of Testosterone is typically found in the “free” (unbound) state while the remaining 98% is bound to proteins and considered unavailable for metabolic "work". Ideally, 1.5 - 2.2% of the testosterone in the blood should be "free". Increased levels of % free testosterone may be seen if you are on a testosterone restoration protocol and are over supplementing with supplemental testosterone. It can also be a sign of testosterone overproduction in the body.

MCH

33.00 pg

The Mean Corpuscular Hemoglobin (MCH) is a calculated value and is an expression of the average weight of hemoglobin per red blood cell. MCH, along with MCV can be helpful in determining the type of anemia present. It is elevated with B12/folate deficiency and hypochlorhydria.

LDL : HDL - Male

3.00 Ratio

The calculation of the LDL Cholesterol to HDL Cholesterol ratio provides a better assessment of cardiovascular risk than measuring either biomarker alone. Increased ratios are associated with increased cardiovascular risk.

Creatinine

106.00 µmol/L

Creatinine is produced primarily from the contraction of muscle and is removed by the kidneys. A disorder of the kidney and/or urinary tract will reduce the excretion of creatinine and thus raise blood serum levels. Creatinine is traditionally used with BUN to assess for impaired kidney function. Elevated levels can also indicate dysfunction in the prostate.

Uric Acid - Male

360.00 µmol/L

Uric acid is produced as an end-product of purine, nucleic acid, and nucleoprotein metabolism. Levels can increase due to over-production by the body or decreased excretion by the kidneys. Increased uric acid levels are associated with gout, atherosclerosis, oxidative stress, arthritis, kidney dysfunction, circulatory disorders and intestinal permeability.

Cholesterol : HDL

4.23 Ratio

The ratio of total cholesterol to HDL is a far better predictor of cardiovascular disease than cholesterol by itself. A lower ratio is ideal because you want to lower cholesterol (but not too low) and raise HDL. A level below 3.0 would be ideal. Every increase of 1.0, i.e. 3.0 to 4.0 increases the risk of heart attack by 60%.

Neutrophils - Absolute

5.20 giga/L

Neutrophils are the white blood cells used by the body to combat bacterial infections and are the most numerous and important white cell in the body's reaction to inflammation. *Neutrophils - Absolute* is an actual count of the number of neutrophils in a known volume of blood. Levels will be raised in bacterial infections.

Monocytes - Absolute

0.50 giga/L

Monocytes are white blood cells that are the body's second line of defense against infection. They are phagocytic cells that are capable of movement and remove dead cells, microorganisms, and particulate matter from circulating blood. Levels tend to rise at the recovery phase of an infection or with chronic infection.

BUN

6.80 mmol/L urea

BUN or Blood Urea Nitrogen reflects the ratio between the production and clearance of urea in the body. Urea is formed almost entirely by the liver from both protein metabolism and protein digestion. The amount of urea excreted as BUN varies with the amount of dietary protein intake. Increased BUN may be due to increased production of urea by the liver or decreased excretion by the kidney. BUN is a test used predominantly to measure kidney function, where it will be increased. An increased BUN is also associated with dehydration and hypochlorhydria.

MCV

94.00 fL

The MCV is a measurement of the volume in cubic microns of an average single red blood cell. MCV indicates whether the red blood cell size appears normal (normocytic), small (microcytic), or large (macrocytic). An increase or decrease in MCV can help determine the type of anemia present. An increased MCV is associated with B12, folate, or vitamin C deficiency.

Sodium

145.00 mmol/L

Sodium is an important blood electrolyte and functions to maintain osmotic pressure, acid-base balance, aids in nerve impulse transmission, as well as renal, cardiac, and adrenal functions. Increased sodium is most often due to dehydration (sweating, diarrhea, vomiting, polyuria, etc.) or adrenal stress.

RDW

13.60 %

The Red Cell Distribution Width (RDW) is essentially an indication of the degree of abnormal variation in the size of red blood cells (called anisocytosis). Although the RDW will increase with vitamin BI2 deficiency, folic acid, and iron anemia, it is increased most frequently with vitamin B12 deficiency anemia.

Monocytes - %

9.26 %

Monocytes are white blood cells that are the body's second line of defense against infection. They are phagocytic cells that are capable of movement and remove dead cells, microorganisms, and particulate matter from circulating blood. Levels tend to rise at the recovery phase of an infection or with chronic infection.

C-Reactive Protein

57.14 nmol/L

C-Reactive Protein is a blood marker that can help indicate the level of inflammation in the body.

GGT

26.00 U/L

Gamma Glutamyl Transferase, or GGT, is a protein mainly found in the liver but also in smaller amounts in the kidneys, prostate, and pancreas. High levels of GGT in the blood can indicate damage to these organs or a blockage affecting the liver. GGT is involved in handling Glutathione, a key antioxidant that protects your body by eliminating harmful substances. If GGT levels are high, it could mean your body is running low on Glutathione. This situation can weaken your body's defense against damage and disease because Glutathione plays a crucial role in detoxifying your body. Monitoring GGT is important for checking on your liver's health and also gives an idea of how well your body is dealing with potential toxins. High GGT levels can also be a result of drinking too much alcohol over time. In essence, keeping an eye on GGT levels is a way to understand your liver's condition and your body's ability to protect itself against harmful substances.

Homocysteine

10.30 umol/L

Homocysteine is a molecule formed from the incomplete metabolism of the amino acid methionine. Increased levels of homocysteine are associated with an increased risk of cardiovascular disease and stroke.

TSH

3.50 mU/L

TSH or thyroid-stimulating hormone is a hormone produced by the anterior pituitary to control the thyroid gland's production of the thyroid hormone thyroxine (T4). TSH levels can be confusing because TSH levels increase when there is too little thyroid hormone in circulation. An elevated TSH is a sign that the body needs more thyroid hormone. Elevated levels of TSH are associated with primary hypothyroidism.

ESR - Male

15.00 mm/hr

The ESR test is based on the fact that certain blood proteins will become altered in inflammatory conditions, causing aggregation of the red blood cells. Elevated levels of ESR are associated with inflammation.

Insulin - Fasting

76.39 pmol/L

Insulin is the hormone released by the pancreas in response to rising blood glucose levels and decreases blood glucose by transporting glucose into the cells. Often people lose their ability to utilize insulin to effectively drive blood glucose into energy-producing cells. This is commonly known as “insulin resistance” and is associated with increasing levels of insulin in the blood. Excess insulin is associated with greater risks of heart attack, stroke, metabolic syndrome, and diabetes.

Triglycerides

1.50 mmol/L

Serum triglycerides are composed of fatty acid molecules that enter the bloodstream either from the liver or from the diet. Levels will be elevated in metabolic syndrome, fatty liver, in people with an increased risk of cardiovascular disease, hypothyroidism, and adrenal dysfunction

Below Optimal

QUICKI

0.32 Index

QUICKI is a simple calculation that uses fasting glucose and fasting insulin to assess insulin sensitivity. Decreased QUICKI results are associated with a trend towards increasing insulin resistance, cardiovascular risk, metabolic syndrome, and fatty liver.

HOMA2-%S

32.70 %

The HOMA2 (Homeostasis Model Assessment) calculator is a tool used to express the degree of insulin sensitivity and insulin resistance. HOMA2-%S helps estimate the degree of cellular sensitivity to the hormone insulin. A decreasing HOMA2-%S score is an indication of a decrease in insulin sensitivity at the cellular level. This a sign of a trend towards insulin resistance, pre-diabetes, and eventually type 2 diabetes.

Vitamin D (25-OH)

62.00 nmol/L

This vitamin D test measures for levels of 25-OH vitamin D and is a very good way to assess vitamin D status. Decreased vitamin D levels are a sign of Vitamin D deficiency.

Active B12

53.00 pmol/L

Active Vitamin B12, or holotranscobalamin, is a crucial nutrient that plays a significant role in the body. It's involved in making DNA, producing red blood cells, and keeping your nervous system healthy. Measuring the levels of active B12 in your blood helps assess if your body has enough of this essential vitamin for its needs. Low levels of active B12 in the blood can indicate a deficiency, which may lead to various health issues. A lack of sufficient B12 can result in anemia, making you feel tired and weak because your body isn't producing enough red blood cells to carry oxygen efficiently. It can also affect your nervous system, leading to symptoms like numbness and tingling in the hands and feet, balance problems, depression, confusion, and poor memory.

Copper - Serum

14.00 umol/L

Copper is an essential trace mineral involved in multiple functions in the body including energy production, iron transport, neurotransmitter synthesis, antioxidant activity, regulation of gene expression, red and white blood cell maturation, bone strength, brain development, and the metabolism of glucose and cholesterol. Low levels of copper are associated with anemia due to its role in red blood cell maturation in the bone marrow.

Alk Phos

43.00 IU/L

Alkaline phosphatase (ALP) is a group of isoenzymes that originate in the bone, liver, intestines, skin, and placenta. It has a maximal activity at a pH of 9.0-10.0, hence the term alkaline phosphatase. Decreased levels of ALP have been associated with zinc deficiency.

DHEA-S - Male

8.50 umol/L

DHEA is produced primarily from the adrenals and is the most abundant circulating steroid in the human body and influences more than 150 known anabolic (repair) functions throughout the body and brain. It is the precursor for the sex hormones: testosterone, progesterone, and estrogen. Decreased levels are associated with adrenal insufficiency and many common age-related conditions, including diseases of the nervous, cardiovascular, and immune systems such as metabolic syndrome, coronary artery disease, osteoporosis, mood disorders, and sexual dysfunction. Ideally, DHEA levels should be maintained at the level of a healthy 30-year-old to maximize the anti-aging effects

Progesterone - Male

1.00 nmol/L

Progesterone is often considered to be a female hormone but men produce progesterone too. In the body, it's converted into testosterone and serves to oppose and balance estrogen. As men age, their progesterone levels drop, which may cause the testosterone levels to fall.

Albumin : Globulin

1.31 ratio

The albumin/globulin ratio is the ratio between the albumin and total globulin levels. A decreased ratio is associated with liver dysfunction and immune activation from infectious or inflammatory processes.

Folate - Serum

30.20 nmol/L

Folate functions as a coenzyme in the process of methylation. Along with vitamin B12, folate is essential for DNA synthesis. Low folate intake can result in folate deficiency, which can impair methylation, DNA synthesis, and red blood cell production.

Vitamin B12

345.00 pmol/L

Vitamin B12 is an essential nutrient for DNA synthesis and red blood cell maturation and is also necessary for myelin sheath formation and the maintenance of nerves in the body. Decreased serum B12 levels are associated with a deficiency of B12, insufficient B12 intake in the diet, or malabsorption.

T4 - Free

11.80 pmol/L

T-4 is the major hormone secreted by the thyroid gland. T-4 production and secretion from the thyroid gland are stimulated by the pituitary hormone TSH. Deficiencies of zinc, copper, and vitamins A, B2, B3, B6, and C will cause a decrease in the production of T4 by the follicles of the thyroid gland. Free T-4 is the unbound form of T4 in the body. Only about 0.03 – 0.05% of circulating T4 is in the free form. Free T-4 will be decreased in hypothyroidism and is associated with iodine deficiency.

Protein - Total

66.00 g/L

Total serum protein is composed of albumin and total globulin. Conditions that affect albumin and total globulin readings will impact the total protein value. A decreased total protein can be an indication of malnutrition, digestive dysfunction due to HCl need, or liver dysfunction. Malnutrition leads to a decreased total protein level in the serum primarily from lack of available essential amino acids.

Testosterone Free - Male

450.00 pmol/L

Testosterone is the primary sex hormone for men. The free testosterone test measures the testosterone that is unbound to serum proteins such as Sex Hormone Binding Globulin (SHBG) and albumin. Decreased free testosterone levels are associated with a number of dysfunctions including metabolic syndrome, an increased risk of cardiovascular disease, increase in abdominal obesity, decreased libido and erectile dysfunction.

Potassium

3.70 mmol/L

Potassium is one of the main electrolytes in the body. Due to the critical functions of potassium for human metabolism and physiology, it is essential for the body to maintain optimal serum levels even though a small concentration is found outside of the cell. Potassium levels should always be viewed in relation to the other electrolytes. Potassium concentration is greatly influenced by adrenal hormones. Decreased levels are associated with adrenal stress and may also be decreased with high blood pressure.

% Testosterone Bioavailable - Male

48.94 %

This test measures the % of bioavailable testosterone found in the blood. Bioavailable testosterone is the amount of testosterone in the blood that is readily available for biological activity. Decreased levels of % bioavailable testosterone are associated with an increased risk of a number of dysfunctions including blood sugar dysregulation, cardiovascular dysfunction, an increase in abdominal obesity, decreased libido, and erectile dysfunction.

Testosterone Total - Male

19.00 nmol/L

Testosterone is the primary sex hormone for men. The total testosterone test measures both the testosterone that is bound to serum proteins and the unbound form (free testosterone). Decreased total testosterone levels are associated with a number of dysfunctions including metabolic syndrome, an increased risk of cardiovascular disease, increase in abdominal obesity, decreased libido and erectile dysfunction.

Lymphocytes - %

27.78 %

Lymphocytes are a type of white blood cell. Decreased levels are often seen in a chronic viral infection when the body can use up a large number of lymphocytes and oxidative stress. A decreased *Lymphocytes - %* may also indicate the presence of a fatigued immune response, especially with a low Total WBC count.

Testosterone Bioavailable - Male

9.30 nmol/L

Bioavailable testosterone is the amount of testosterone in the blood is readily available for biological activity. Decreased bioavailable testosterone levels are associated with a number of dysfunctions including metabolic syndrome, an increased risk of cardiovascular disease, increase in abdominal obesity, decreased libido and erectile dysfunction.

eGFR

71.00 mL/min/1.73m2

The eGFR is a calculated estimate of the kidney's Glomerular Filtration Rate. It uses 4 variables: age, race, creatinine levels and gender to estimate kidney function. Levels below 90 are an indication of a mild loss of kidney function. Levels below 60 indicate a moderate loss of kidney function and may require a visit to a renal specialist for further evaluation.

Hemoglobin - Male

133.00 g/L

Hemoglobin is the oxygen carrying molecule in red blood cells. Measuring hemoglobin is useful to determine the cause and type of anemia and for evaluating the efficacy of anemia treatment.

Sex Hormone Binding Globulin - Male

35.00 nmol/L

Sex Hormone Binding Globulin (SHBG) is a protein produced primarily in the liver and to some extent the testes and the brain. SHBG acts as a transport molecule for carrying estrogen and testosterone around the body and delivering them to receptors on the cells. Decreased SHBG levels are associated with metabolic syndrome and an increased risk of cardiovascular disease.

Zinc - Serum

11.00 umol/L

Zinc is a trace mineral that participates in a significant number of metabolic functions and is found throughout the body's tissues and fluids. Low levels of serum zinc are associated with zinc deficiency.

Magnesium - Serum

0.80 mmol/L

Magnesium is important for many different enzymatic reactions, including carbohydrate metabolism, protein synthesis, nucleic acid synthesis, and muscular contraction. Magnesium is also needed for energy production and is used by the body in the blood clotting mechanism. A decreased magnesium is a common finding with muscle cramps.

T3 - Free

3.90 pmol/L

T-3 is the most active thyroid hormone and is primarily produced from the conversion of thyroxine (T-4) in the peripheral tissue. Free T3 is the unbound form of T3 measured in the blood. Free T3 represents approximately 8 – 10% of circulating T3 in the blood. Free T-3 levels may be decreased with hypothyroidism and is associated with selenium deficiency.

Albumin

38.00 g/L

Albumin is one of the major blood proteins. Produced primarily in the liver, Albumin plays a major role in water distribution and serves as a transport protein for hormones and various drugs. Albumin levels are affected by digestive dysfunction and a decreased albumin can be an indication of malnutrition, digestive dysfunction due to HCl need (hypochlorhydria), or liver dysfunction. Malnutrition leads to a decreased albumin level in the serum primarily from lack of available essential amino acids. Decreased albumin can also be a strong indicator of oxidative stress and excess free radical activity.

4

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

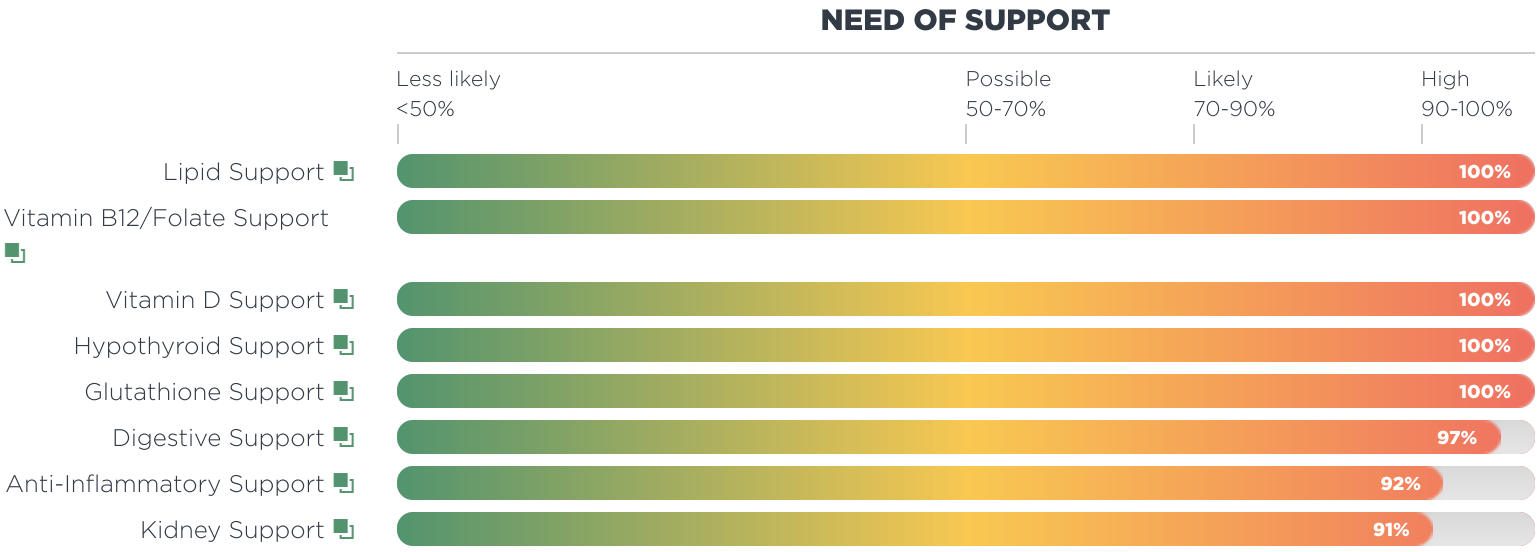
Health Concerns

47 Health Concerns

Health Concerns

The Health Concerns report takes all the information on the Functional Health Report and focuses on the health concerns that need the most support.

Each area of health concern that needs support is included in the section that follows 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 algorithmic analysis and the rationale behind the interpretation.

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 ↑, Cholesterol : HDL ↑, Triglyceride:HDL ↑

VITAMIN B12/FOLATE SUPPORT

The results of your blood test indicate that your vitamin B12/folate levels might be lower than optimal and shows a need for vitamin B12/folate supplementation.

Rationale

Vitamin B12 ↓, Methylmalonic Acid ↑, Active B12 ↓, MCV ↑, Homocysteine ↑, Hemoglobin - Male ↓, MCH ↑, MCHC ↑, RDW ↑, Folate - Serum ↓

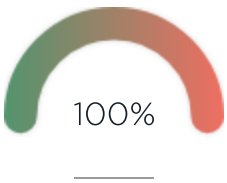
VITAMIN D SUPPORT

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

Rationale

Vitamin D (25-OH) ↓

HYPOTHYROID SUPPORT



The results of your blood test indicate a tendency towards hypothyroidism and a need for thyroid gland support.

Rationale

TSH ↑, Cholesterol - Total ↑, Triglycerides ↑, T4 - Free ↓, T3 - Free ↓

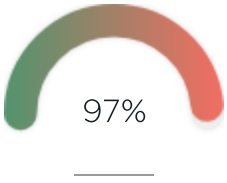
GLUTATHIONE SUPPORT

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

Rationale

GGT ↑

DIGESTIVE SUPPORT

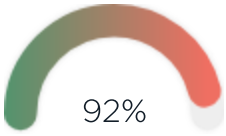


The results of your blood test indicate a tendency towards hypochlorhydria, a condition of low stomach acid, and a need for digestive support.

Rationale

BUN ↑, Protein - Total ↓, Globulin - Total ↑, Albumin ↓, Alk Phos ↓, MCV ↑

ANTI-INFLAMMATORY SUPPORT

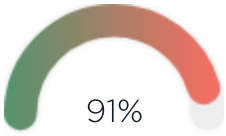


The results of your blood test indicate a tendency towards inflammation and show a need for anti-inflammatory support.

Rationale

Homocysteine ↑, Uric Acid - Male ↑, RDW ↑, Neutrophil : Lymphocyte ↑, ESR - Male ↑, Basophils - % ↑, C-Reactive Protein ↑, Vitamin D (25-OH) ↓, ALT ↑, Albumin ↓, Platelet : Lymphocyte (PLR) ↑

KIDNEY SUPPORT



The results of your blood test indicate a tendency towards renal insufficiency and a need for kidney support.

Rationale

BUN ↑, Creatinine ↑, eGFR ↓, Uric Acid - Male ↑

5

Disclaimer

51 Disclaimer

Disclaimer

This Report contains information for the exclusive use of the named recipient only, and contains confidential, and privileged information. If you are not the named recipient or have not been given permission by the person, you are prohibited from reading or utilizing this report in any way, and you are further notified that any distribution, dissemination, or copying of this Report is strictly prohibited.

All information provided in this Report is provided for educational purposes only, including without limitation the 'optimal ranges' set forth in this Report. Neither this Report, nor any of the information contained in this Report, is intended for, or should be used for the purpose of, medical diagnosis, prevention, or treatment, including self-diagnosis, prevention, or treatment. This Report should not be used as a substitute for professional medical care, and should not be relied upon in diagnosing or treating a medical condition, ailment, or disease.

The 'optimal ranges' set forth in this Report are general reference reccomendations only, and are not intended to be guidelines for any specific individual. The 'optimal ranges' set forth in this Report are for educational purposes only, and are not intended to be, nor should they be construed as, a claim or representation of medical diagnosis or treatment.

Neither this Report, nor any information contained in this Report, should be considered complete, or exhaustive. This report does not contain information on all diseases, ailments, physical conditions or their treatment. This report is based on the lab data provided, which may or may not include all relevant and appropriate measures of your biochemistry.

The absence of a warning for a given drug or supplement or any combination thereof in no way should be construed to indicate that the drug or supplement or any combination thereof is safe, effective, or appropriate for you. Statements made about a supplement, product, or treatment have not been evaluated by the Food and Drug Administration (FDA) U.S. or MHRA U.K. Any mentioned supplement, product, or treatment is not intended to diagnose, treat, cure or prevent any disease. The FDA or MHRA U.K. has not evaluated the information contained in this Report.

You are encouraged to confirm any information obtained from this Report with other sources, and review all information regarding any medical condition or the treatment of such condition with your physician.

NEVER DISREGARD PROFESSIONAL MEDICAL ADVICE, DELAY SEEKING MEDICAL ADVICE OR TREATMENT, OR STOP CURRENT MEDICAL TREATMENT, BECAUSE OF SOMETHING YOU HAVE READ IN THIS REPORT.

Consult your physician or a qualified healthcare practitioner regarding the applicability of any of the information or materials provided in this Report in regards to your symptoms or medical condition. Always consult your physician before beginning a new treatment, diet, exercise, fitness plan, or health plan or program, and before taking any drug, supplement, or any combination thereof; or if you have questions or concerns about your health, a medical condition, or any plan or course of treatment. If you think you have a medical emergency, call 911 or your doctor immediately.