WellnessWits
FUNCTIONAL MEDICINE

Blood Chemistry Analysis

Functional Health Report

Patient Report

Prepared for	Test Patient 35 year old female born Jul 01, 1985
Requested by	Dr. Kike Oduba, MBBS, MPH, CIC WellnessWits Functional Medicine
Test date	Mar 02, 2020

What's Inside?

An introduction to functional blood chemistry analysis and your report.

An in-depth functional system and nutrient evaluation.

A full breakdown of all individual biomarker results, showing distance from optimal, comparative and historical views.

SECTION 1: INTRODUCTION

1 What's Inside?
3 Functional BCA

SECTION 2: ASSESSMENT

5 Functional Body Systems
9 Accessory Systems
11 Nutrient Status
13 Nutrient Deficiencies

SECTION 3: ANALYSIS

17 Blood Test Results
31 Out of Optimal Range

The top areas that need the most attention.

Additional notes and information pertinent to this report.

SECTION 4: HEALTH IMPROVEMENT PLAN

42 Health Improvement

SECTION 5: APPENDIX

46 Disclaimer

1

An introduction to functional blood chemistry anaysis and your report.

Introduction

1 What's Inside?
3 Functional BCA

Functional Blood Chemistry Analysis

Functional Blood Chemistry Analysis can be defined as the process by which complex and comprehensive blood biomarkers are organized, analyzed and interpreted to provide a comprehensive assessment of the state and trends of the main body systems, the supporting body accessory systems, along with the status of nutrients and trends towards and away from clinical dysfunction.

WHY BLOOD TESTING?

Blood has a lot to tell us about your state of health and the blood chemistry and CBC / hematology test is the most commonly ordered medical lab test worldwide. These blood tests are an integral part of Western clinical medicine and are used to aid in the diagnostic decision-making process. Patients understand and are educated that blood testing is the norm for health assessment.

However, many, many people start to feel unwell long before a traditional blood test becomes diagnostic and more often than not, patients like you are told by their physician that "everything on your blood test looks normal."

"NORMAL" IS NOT OPTIMAL

Most patients who feel "unwell" will come out "normal" on a blood test. Clinical experience suggests that these people are by no means "normal" and are a far cry from being functionally optimal. They may not yet have progressed to a known disease state but they are what we call dys-functional, i.e. their physiological systems are no longer functioning properly and they are starting to feel un-well.

The issue is not that the blood test is a poor diagnostic tool, far from it. The issue is that the ranges used on a traditional lab test are based on statistics and not on whether a certain value represents good health or optimal physiological function. The problem is that "normal" reference ranges usually represent "average" populations rather that the optimal level required to maintain good health. Most "normal" ranges are too broad to adequately detect health problems before they become pathology and are not useful for detecting the emergence of dysfunction.

THE FUNCTIONAL APPROACH

The functional approach to chem screen and CBC analysis is oriented around changes in physiology and not pathology. We use ranges that are based on optimal physiology and not the "normal" population. This results in a tighter "Functional Physiological Range", which allows us to evaluate the area within the "Normal" range that indicates that something is not quite right in the physiological systems associated with this biomarker. This gives us the ability to detect changes in your physiological "function". We can identify the factors that obstruct you from achieving optimal physiological, biochemical, and metabolic functioning in your body.

Another thing that separates the Functional Blood Chemistry Analysis from the Traditional approach is we are not simply looking at one individual biomarker at a time in a linear report of the data. Rather, we use trend analysis between the individual biomarkers to establish your otherwise hidden trend towards or away from a functional health optimal.

THE FUNCTIONAL HEALTH REPORT

The Functional Health Report is the result of a detailed algorithmic analysis of your blood test results. Our analytical and interpretive software analyzes the blood test data for its hidden meaning and reveals the subtle, web-like patterns hidden within the numbers that signal the first stages of functional change in your body.

SUMMARY

In closing, Blood testing is no longer simply a part of disease or injury management. It's a vital component of a comprehensive Functional Medicine work up and plays a vital role in uncovering hidden health trends, comprehensive health promotion and disease prevention.

2

An in-depth functional system and nutrient evaluation.

Assessment

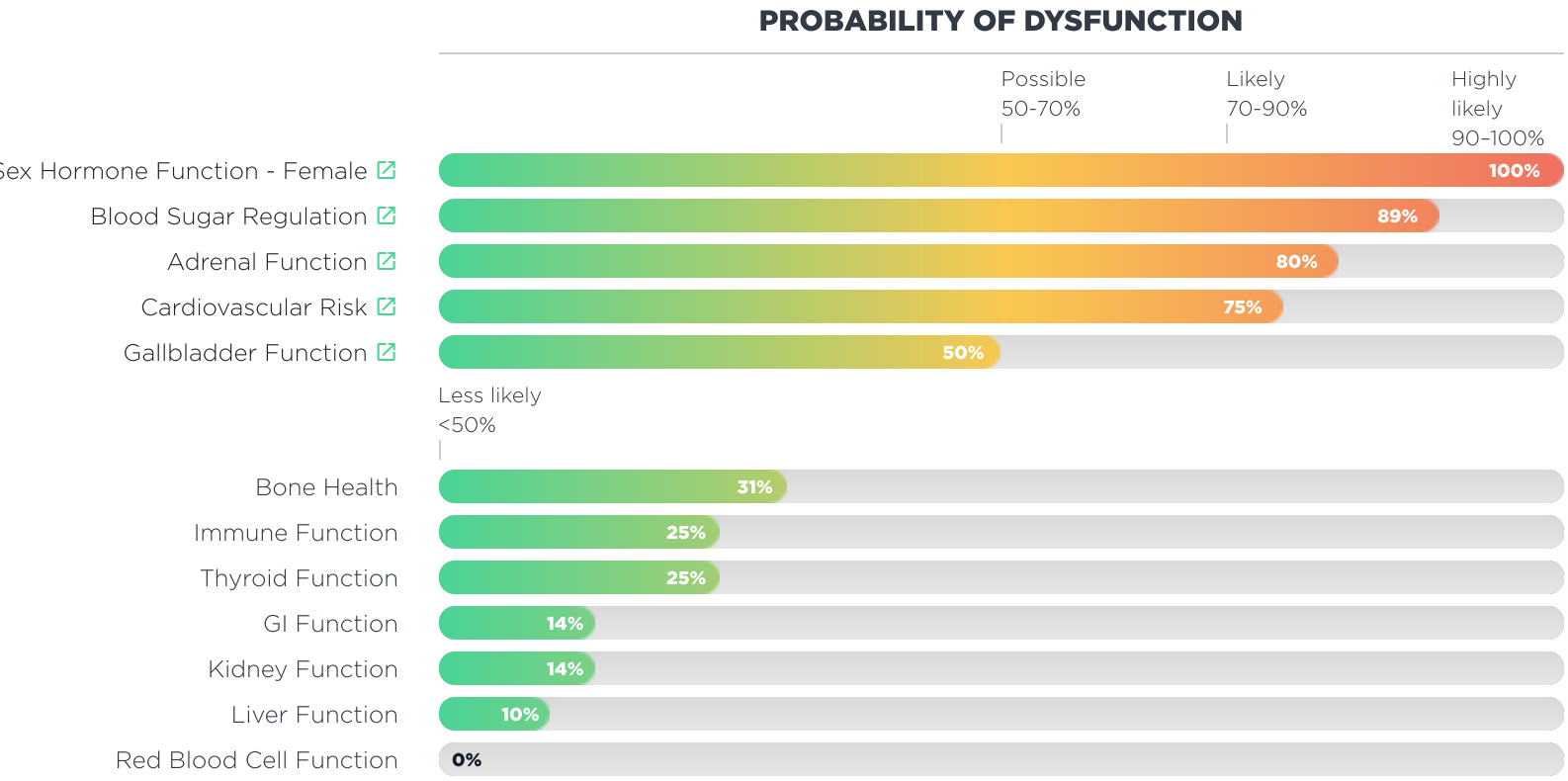
5 Functional Body Systems
9 Accessory Systems
11 Nutrient Status
13 Nutrient Deficiencies

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.

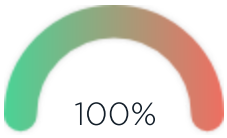
This report gives you an indication of the level of dysfunction that exists in the various physiological systems in your body.

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.

SEX HORMONE FUNCTION - FEMALE

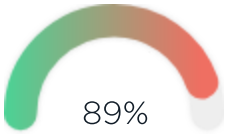
The Female Sex Hormone score helps us assess levels of important hormones in your body: testosterone, DHEA, progesterone, and estradiol. Blood levels of these crucial hormones diminish with age, contributing to age-related dysfunctions such as low libido, blood sugar problems, excess weight, heart disease, 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.

Rationale

Estradiol - Female ↓, Testosterone Total - Female ↓, Testosterone Free - Female ↓, Progesterone - Female ↓, Sex Hormone Binding Globulin - Female ↑

Biomarkers considered

Estradiol - Female, Testosterone Total - Female, Testosterone Free - Female, Progesterone - Female, Sex Hormone Binding Globulin - Female



Dysfunction Likely. 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

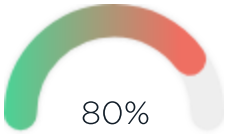
Hemoglobin A1C ↑, Insulin - Fasting ↑, Cholesterol - Total ↑, LDL Cholesterol ↑, DHEA-S - Female ↓, Leptin - Female ↑

Biomarkers considered

Glucose - Fasting, ALT : AST, Hemoglobin A1C, Insulin - Fasting, Cholesterol - Total, Triglycerides, LDL Cholesterol, HDL Cholesterol, DHEA-S - Female, Leptin - Female

Patient result not available - consider running in future tests:

LDH, C-Peptide, Fructosamine



Dysfunction Likely.
Improvement required.

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

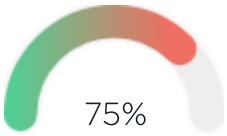
Sodium ↑, Sodium : Potassium ↑, Cholesterol - Total ↑, Triglycerides ↑, DHEA-S - Female ↓, Cortisol - AM ↓

Biomarkers considered

Sodium, Potassium, Sodium : Potassium, Glucose - Fasting, BUN, Chloride, CO2, Cholesterol - Total, Triglycerides, DHEA-S - Female, Cortisol - AM

Patient result not available - consider running in future tests:

Cortisol - PM



Dysfunction Likely.
Improvement required.

CARDIOVASCULAR RISK

The Cardiovascular Risk score looks at 15 biomarkers on a blood test to assess your risk of cardiovascular dysfunction. A high Cardiovascular Risk score indicates that you may be at an increased risk of developing cardiovascular disease. The Cardiovascular Risk 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

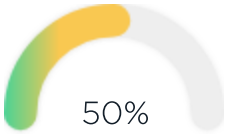
Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑, Homocysteine ↑, Hemoglobin A1C ↑, Testosterone Free - Female ↓, Insulin - Fasting ↑, Vitamin D (25-OH) ↓

Biomarkers considered

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

Patient result not available - consider running in future tests:

LDH, Fibrinogen



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

GALLBLADDER FUNCTION

The Gallbladder Function Index reflects the degree of function in your gallbladder. The gallbladder plays an essential role in helping your body digest the fat in the diet. It does this through the release of a substance called bile. Bile is not only essential for fat digestion but it also helps the body get rid of certain toxins and also excess cholesterol from the body. Factors affecting gallbladder function include the inability of the liver to produce bile (a condition called biliary insufficiency), the progressive thickening of the bile in the gallbladder (a condition called biliary stasis) or the presence of obstructions in the gallbladder itself (a condition called biliary obstruction).

Rationale

Cholesterol - Total ↑, AST : ALT ↑, ALT ↓

Biomarkers considered

GGT, Alk Phos, Cholesterol - Total, AST : ALT, ALT, Bilirubin - Total, Bilirubin - Direct, Triglycerides

Patient result not available - consider running in future tests:

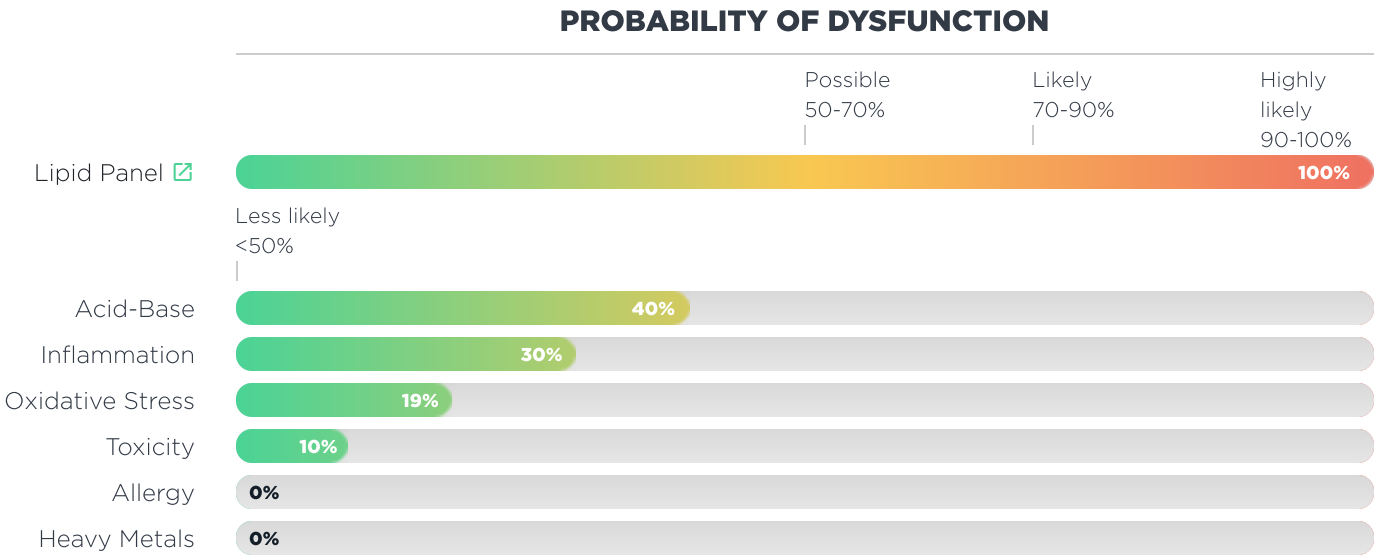
LDH, Gastrin

Accessory Systems

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

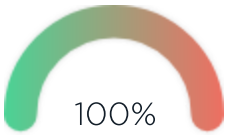
This report gives you an indication of the level of dysfunction that exists in the various physiological systems in your body.

Each 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 ↑

Biomarkers considered

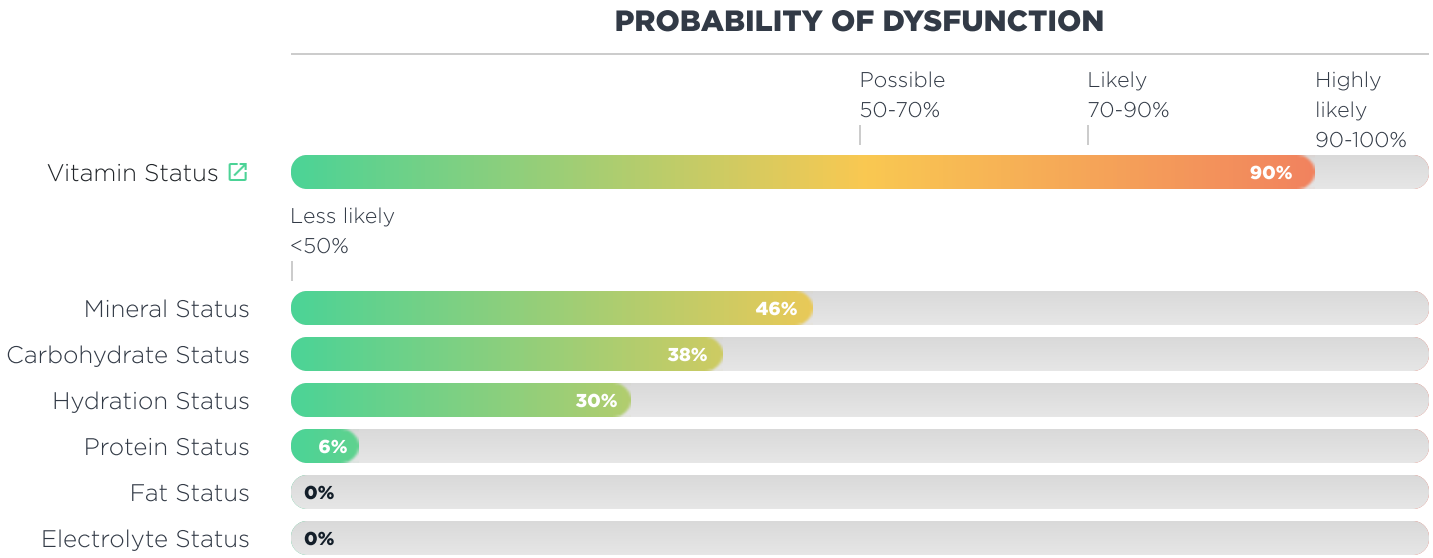
Cholesterol - Total, Triglycerides, LDL Cholesterol, Cholesterol : HDL, Triglyceride:HDL, HDL Cholesterol

Nutrient Status

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

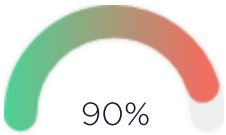
This report gives you an indication of your general nutritional status. The Nutrient Status is influenced by actual dietary intake, digestion, absorption, assimilation, and cellular uptake of the nutrients themselves.

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



Nutrient Status Details

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



Dysfunction 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 ↑, ALT ↓, Homocysteine ↑, Vitamin D (25-OH) ↓, Folate - Serum ↓

Biomarkers considered

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

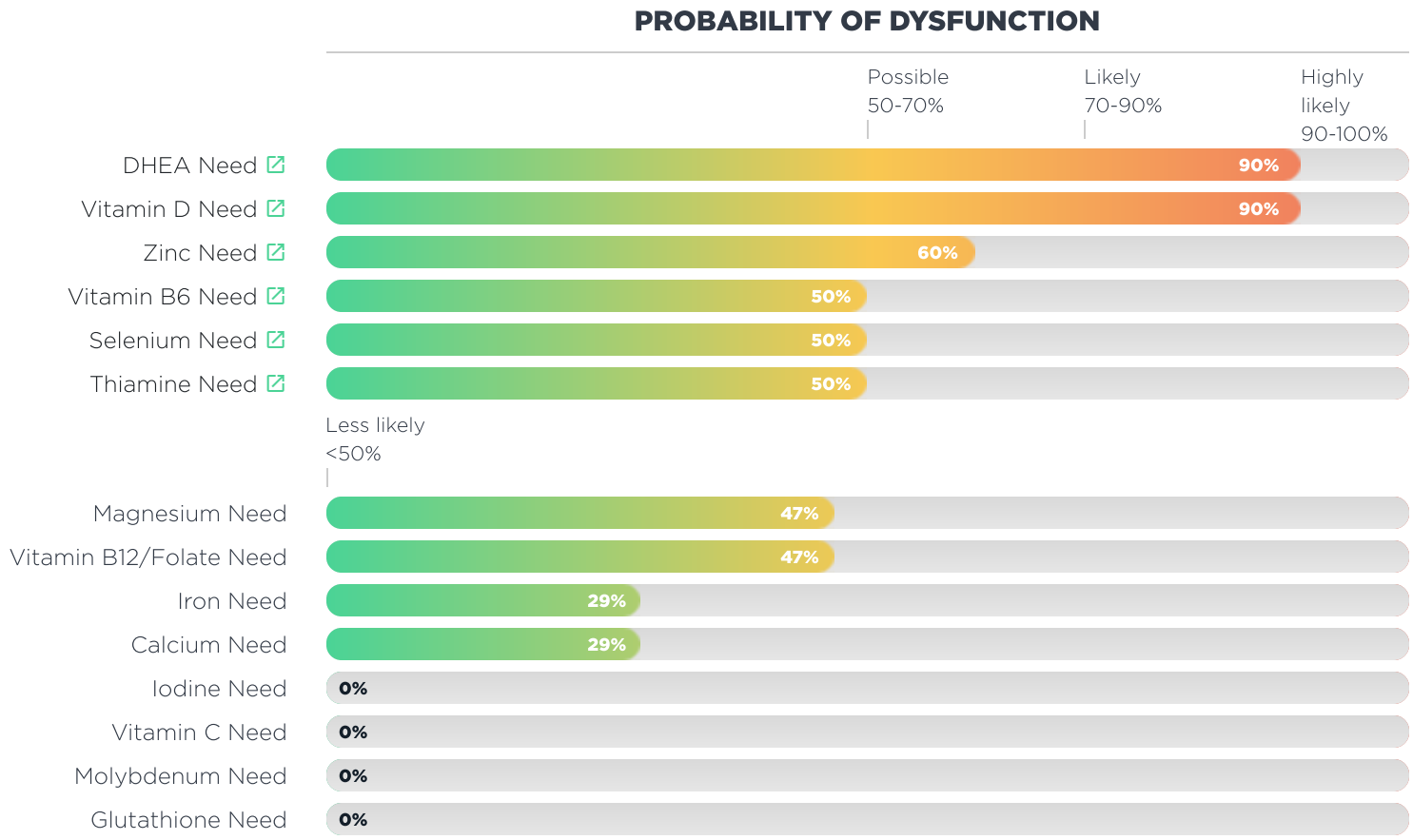
Patient result not available - consider running in future tests:

Methylmalonic Acid

Individual Nutrient Deficiencies

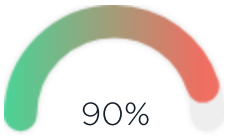
The values represent the degree of deficiency for individual nutrients based on your blood results. The status of an individual nutrient is based on a number of factors such as actual dietary intake, digestion, absorption, assimilation and cellular uptake of the nutrients themselves. All of these factors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



Dysfunction Highly Likely. Much improvement required.

DHEA NEED

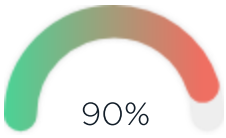
The results of your blood test indicate that your DHEA levels might be lower than optimal.

Rationale

DHEA-S - Female ↓

Biomarkers considered

DHEA-S - Female



Dysfunction Highly Likely. Much improvement required.

VITAMIN D NEED

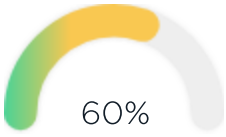
The results of your blood test indicate that your Vitamin D levels might be lower than optimal.

Rationale

Vitamin D (25-OH) ↓

Biomarkers considered

Vitamin D (25-OH)



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

ZINC NEED

The results of your blood test indicate that your Zinc levels might be lower than optimal.

Rationale

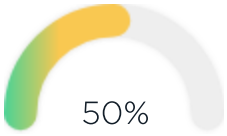
Alk Phos ↓

Biomarkers considered

Alk Phos

Patient result not available - consider running in future tests:

Zinc - Serum



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

VITAMIN B6 NEED

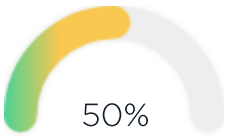
The results of your blood test indicate that your Vitamin B6 levels might be lower than optimal.

Rationale

ALT ↓, Ferritin ↑

Biomarkers considered

AST, ALT, GGT, Hemoglobin - Female, Hematocrit - Female, MCV, MCH, MCHC, Ferritin, Iron - Serum



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

SELENIUM NEED

The results of your blood test indicate that your selenium levels might be lower than optimal.

Rationale

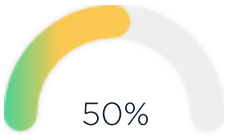
T3 - Free ↓

Biomarkers considered

T3 - Total, T3 - Free

Patient result not available - consider running in future tests:

T3 Uptake



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

THIAMINE NEED

The results of your blood test indicate that your thiamine levels might be lower than optimal.

Rationale

Anion Gap ↑

Biomarkers considered

Anion Gap, CO2, Glucose - Fasting, Hemoglobin - Female, Hematocrit - Female

Patient result not available - consider running in future tests:

LDH

A full breakdown of all individual biomarker results, showing distance from optimal, comparative and historical views.

Analytics

17 Blood Test Results
31 Out of Optimal Range

Blood Test Results

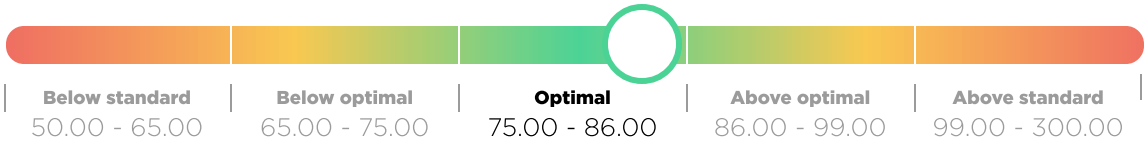
The Blood Test Results Report lists the results of the Chemistry Screen and CBC and shows you whether or not an individual biomarker is outside of the optimal range and/or outside of the clinical lab range. The biomarkers are grouped into their most common categories.

Each biomarker in the Blood Test results report that is above or below the Optimal or Standard Range hyperlinks into our Out of Optimal Range report so you can read a description of the biomarker and some of the reasons why it may be high or low.

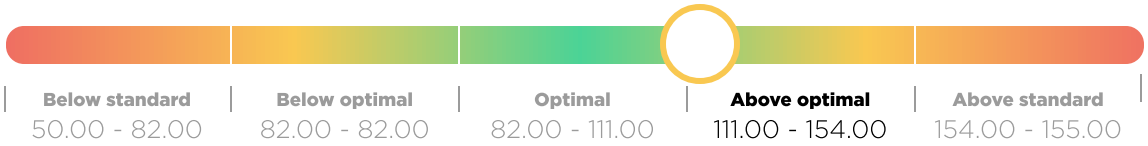
Alarm Low	Below Standard	Below Optimal	Optimal	Above Optimal	Above Standard	Alarm High	Total
1	5	14	44	16	10	3	93

BLOOD GLUCOSE

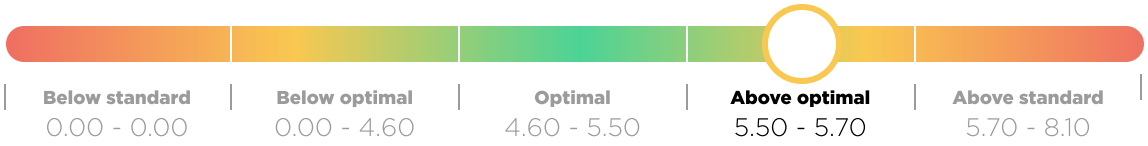
Glucose - Fasting
84.00 mg/dL



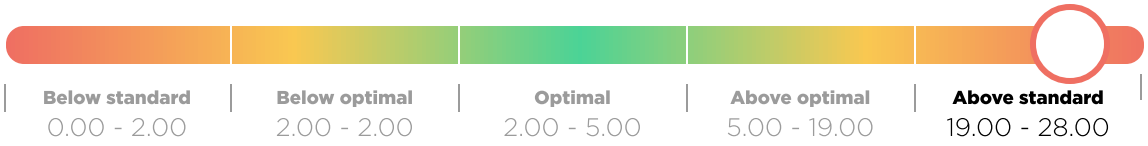
eAG
114.02 mg/dl



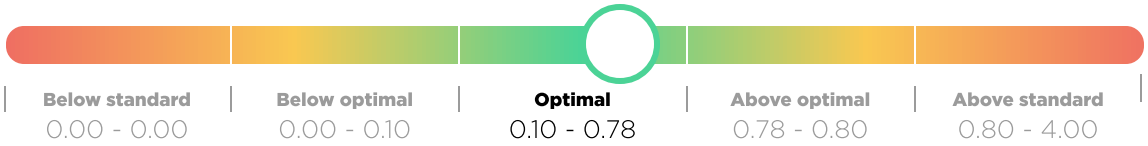
Hemoglobin A1C
5.60 %



Insulin - Fasting
27.00 µIU/ml

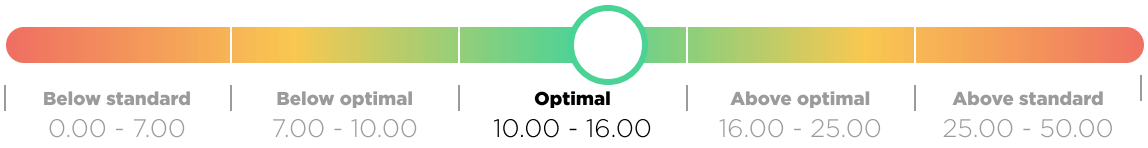


ALT : AST
0.60 Ratio

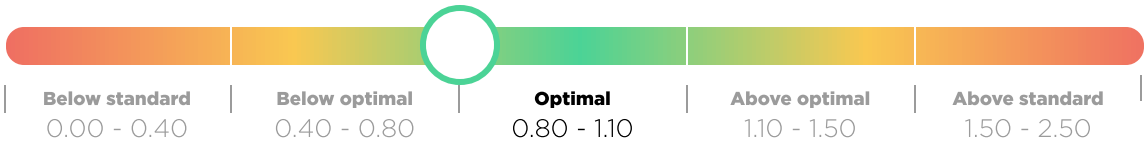


RENAL

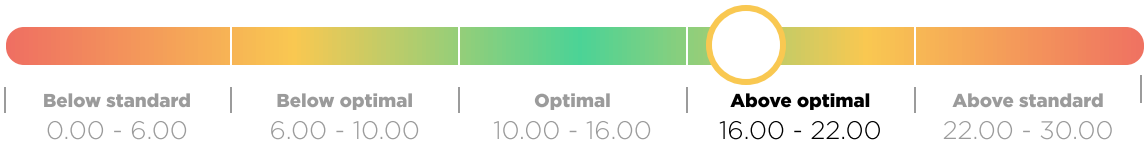
BUN
14.00 mg/dL



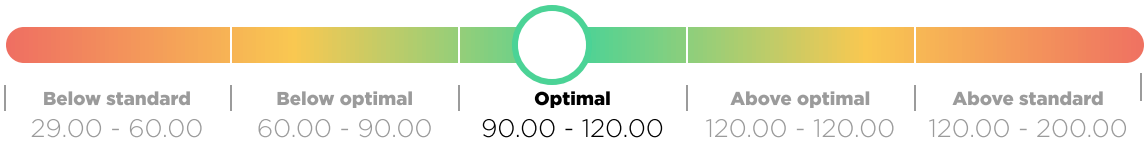
Creatinine
0.80 mg/dL



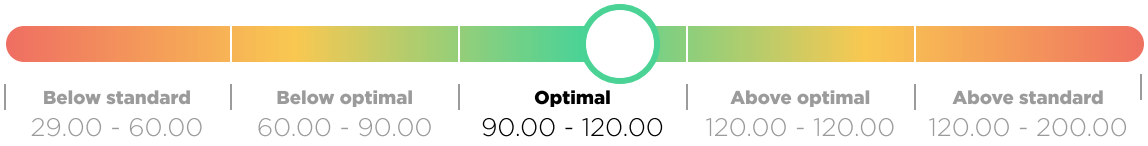
BUN : Creatinine
17.50 Ratio



eGFR Non-Afr. American
103.00 mL/min/1.73m2

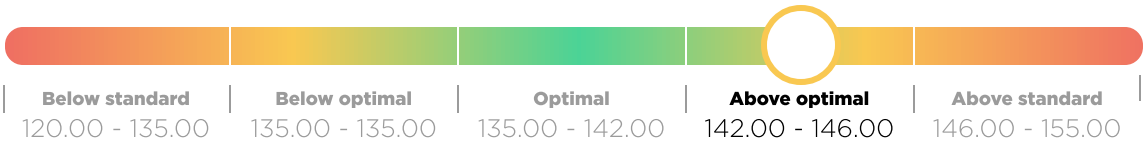


eGFR African American
111.00 mL/min/1.73m2



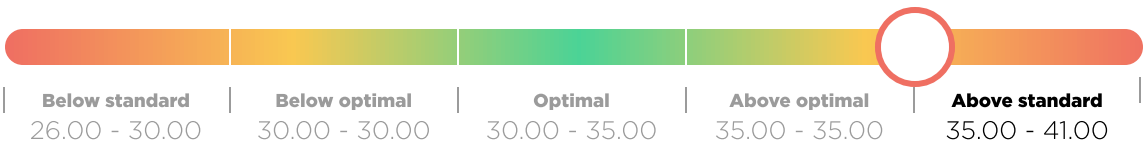
ELECTROLYTES

Sodium
144.00 mEq/L

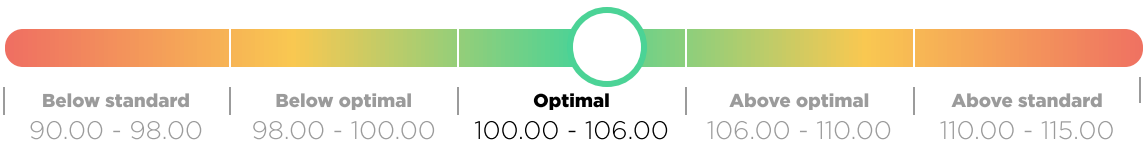


Potassium
4.10 mEq/L

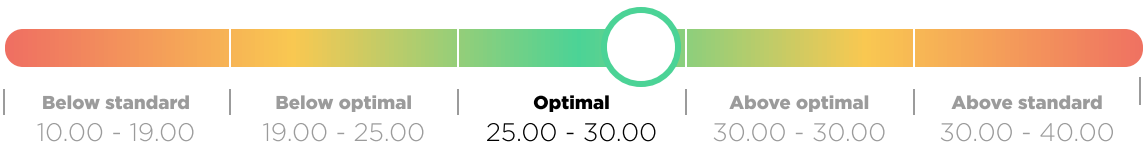
Sodium : Potassium
35.12 ratio



Chloride
104.00 mEq/L

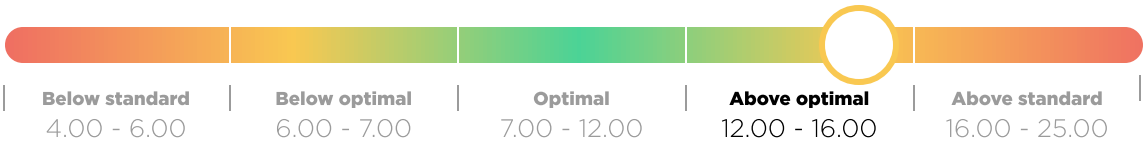


CO2
29.00 mEq/L

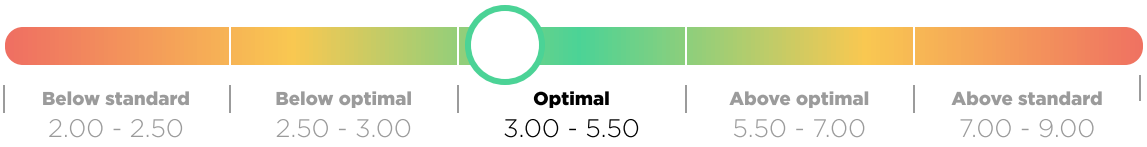


METABOLIC

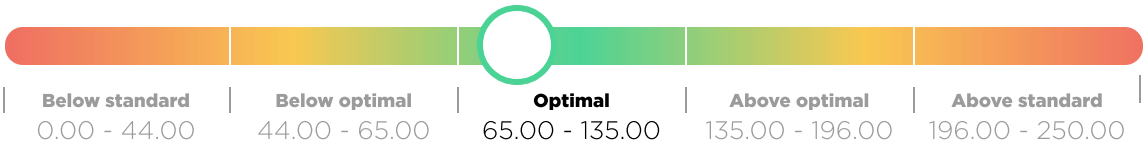
Anion Gap
15.10 mEq/L



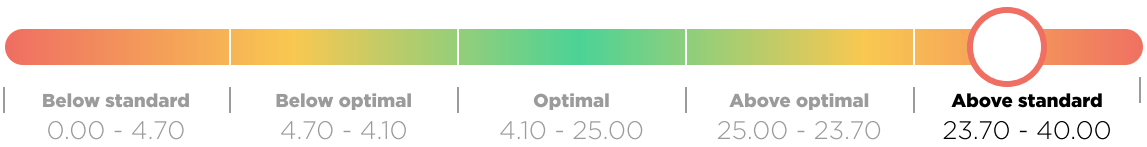
Uric Acid - Female
3.60 mg/dL



Creatine Kinase
85.00 u/l

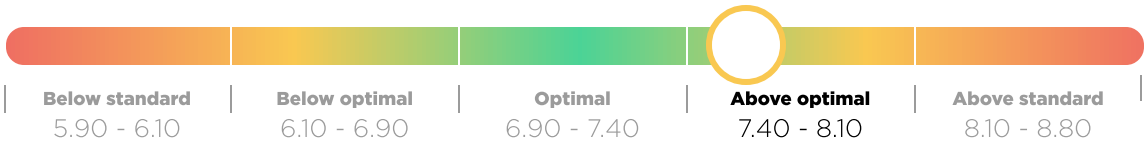


Leptin - Female
30.60 ng/ml

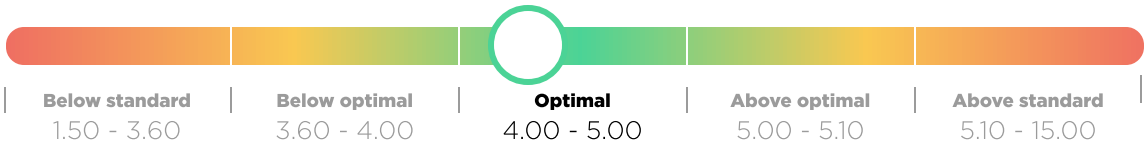


PROTEINS

Protein - Total
7.60 g/dL

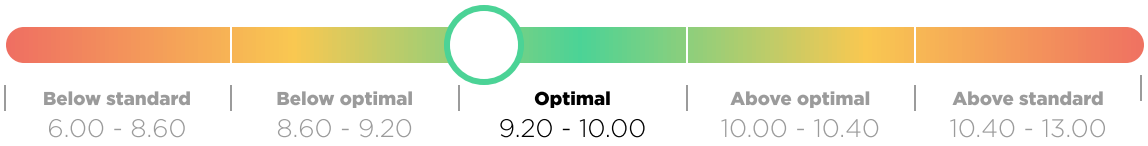


Albumin
4.30 g/dL

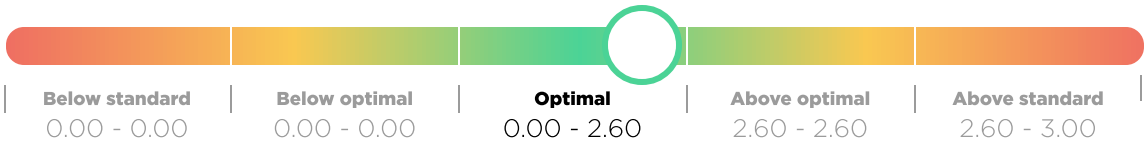


MINERALS

Calcium
9.30 mg/dL

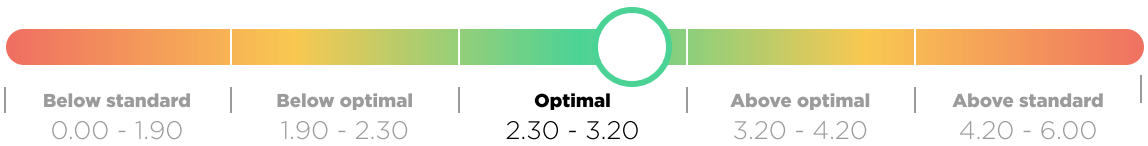


Calcium : Albumin
2.16 ratio

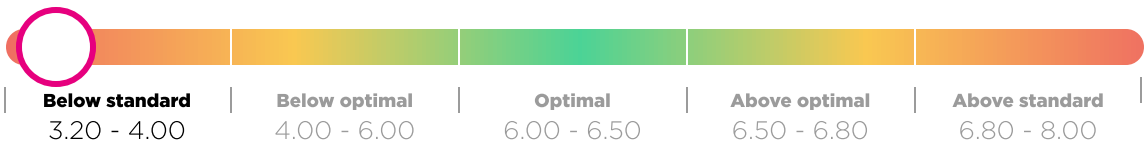


Phosphorus
3.10 mg/dL

Calcium : Phosphorus
3.00 ratio

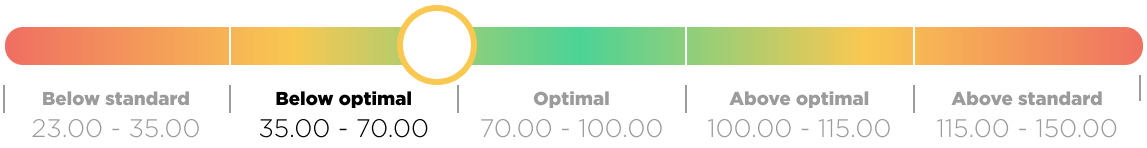


Magnesium - RBC
2.10 mg/dl

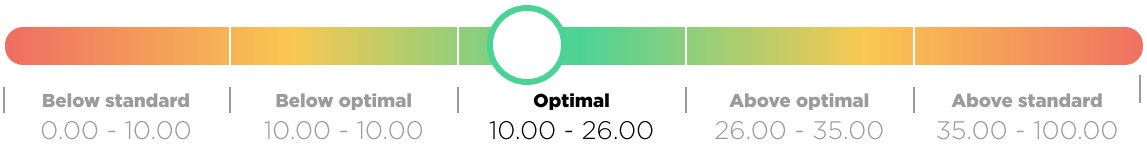


LIVER AND GB

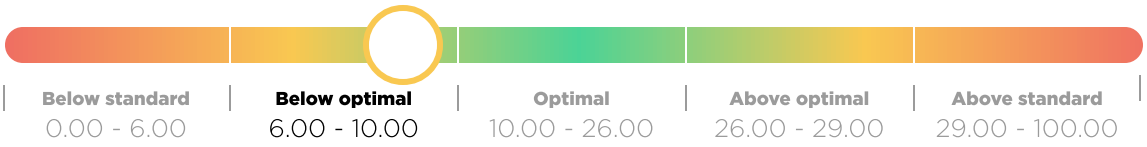
Alk Phos
67.00 IU/L



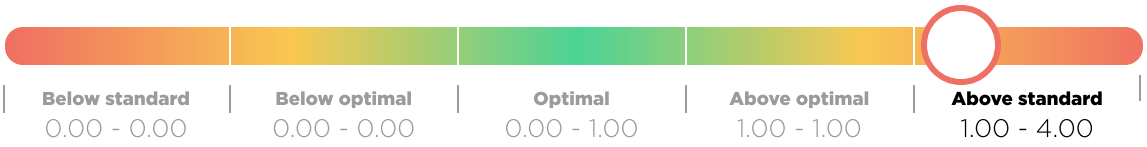
AST
15.00 IU/L



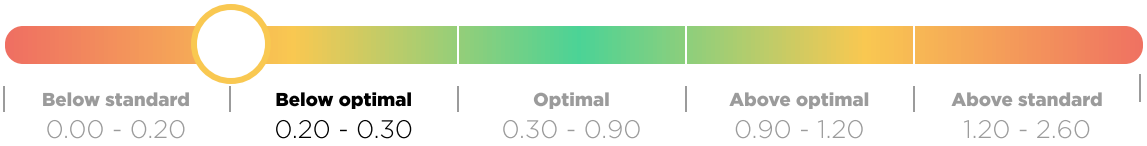
ALT
9.00 IU/L



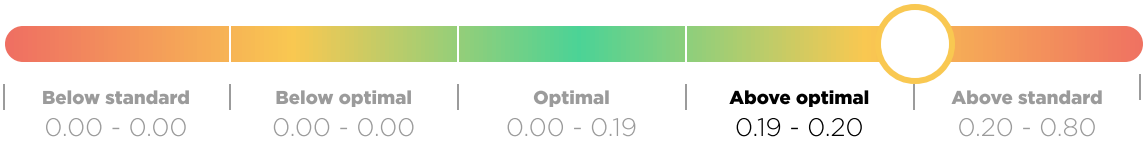
AST : ALT
1.67 Ratio



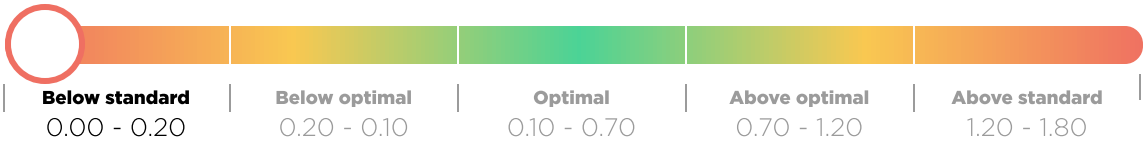
Bilirubin - Total
0.20 mg/dL



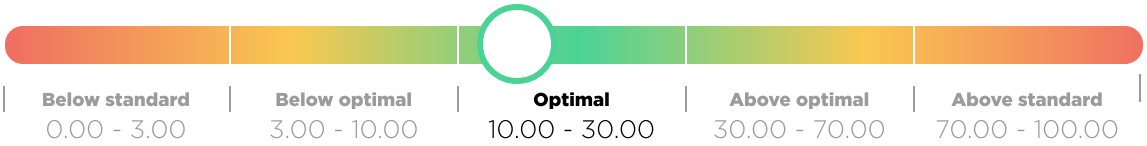
Bilirubin - Direct
0.20 mg/dL



Bilirubin - Indirect
0.00 mg/dL

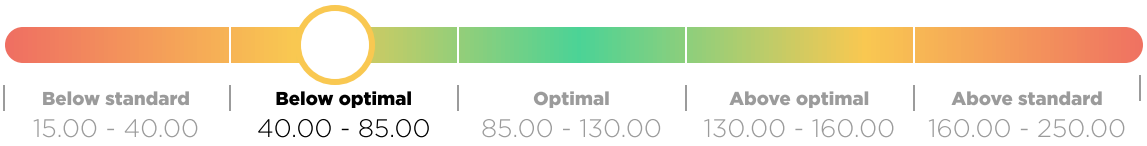


GGT
15.00 IU/L

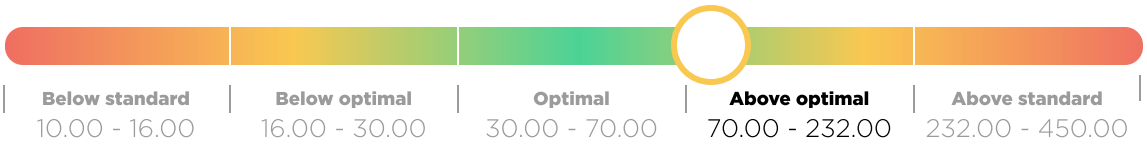


IRON MARKERS

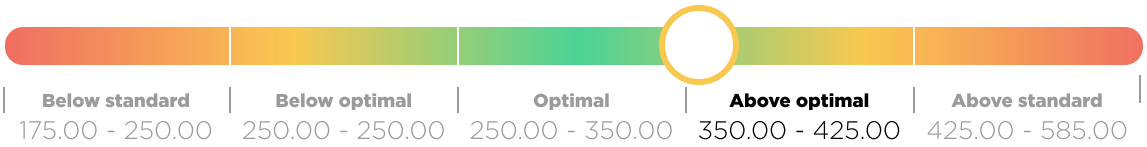
Iron - Serum
61.00 µg/dL



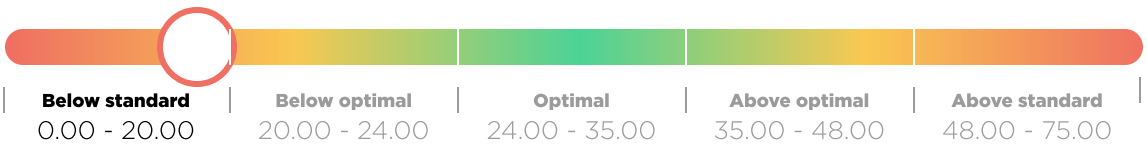
Ferritin
94.00 ng/mL



TIBC
354.00 µg/dL

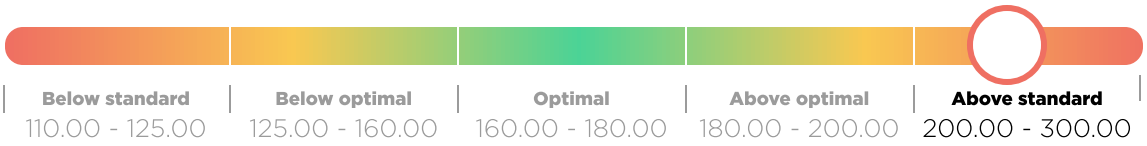


% Transferrin saturation
17.00 %

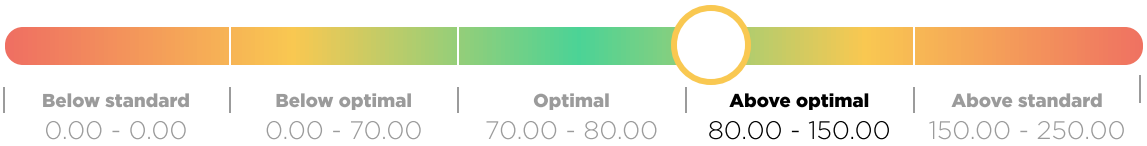


LIPIDS

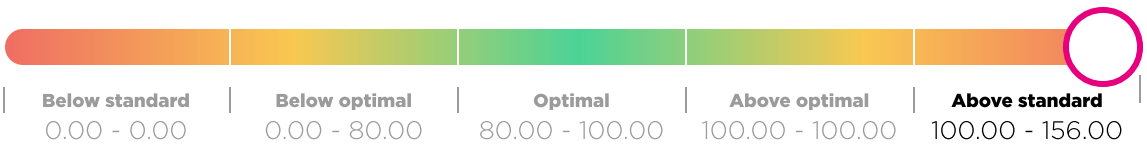
Cholesterol - Total
242.00 mg/dL



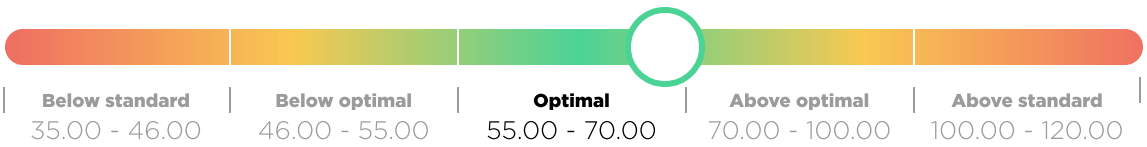
Triglycerides
88.00 mg/dL



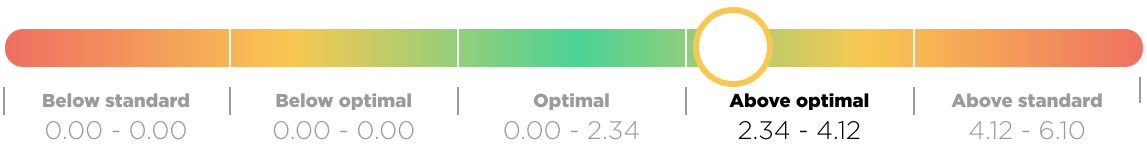
LDL Cholesterol
192.00 mg/dL ⚠



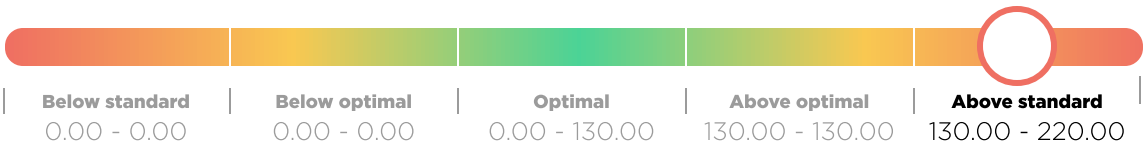
HDL Cholesterol
69.00 mg/dL



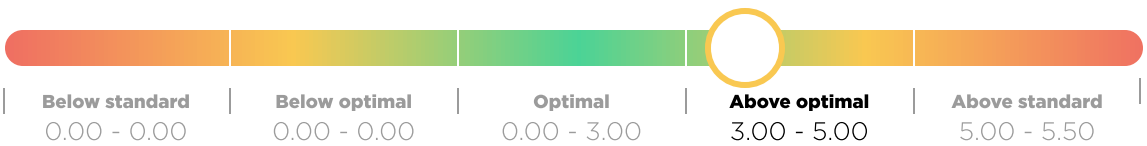
LDL : HDL - Female
2.78 Ratio



Non-HDL Cholesterol
173.00 mg/dl

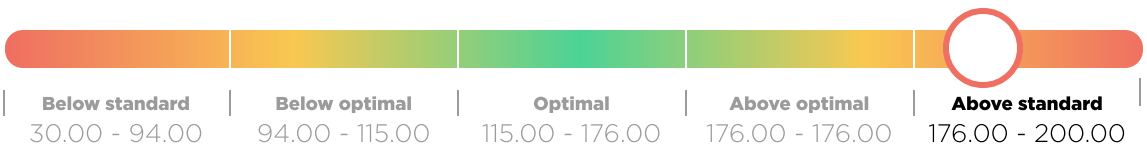


Cholesterol : HDL
3.50 Ratio

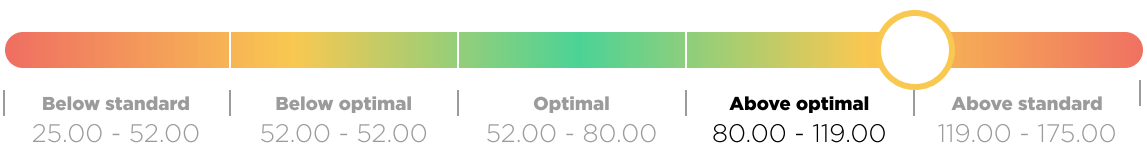


Triglyceride:HDL
1.27 ratio

Apolipoprotein A-1
184.00 mg/dl

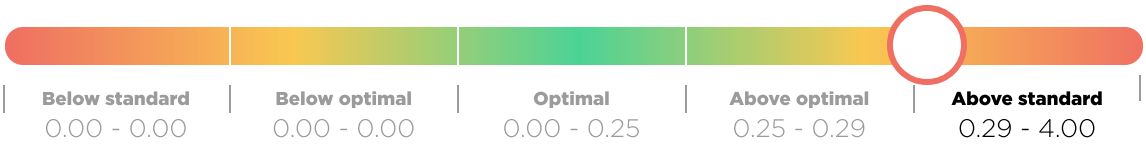


Apolipoprotein B
119.00 mg/dl

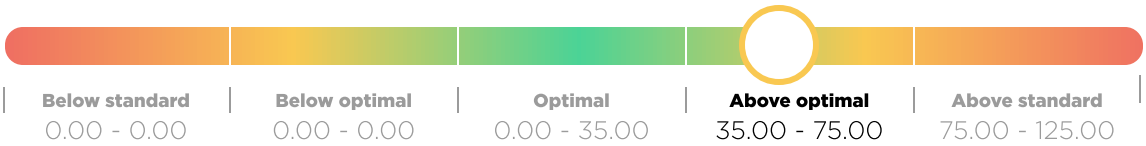


LIPIDS (CONTINUED)

Apo B : Apo A-1
0.65 Ratio

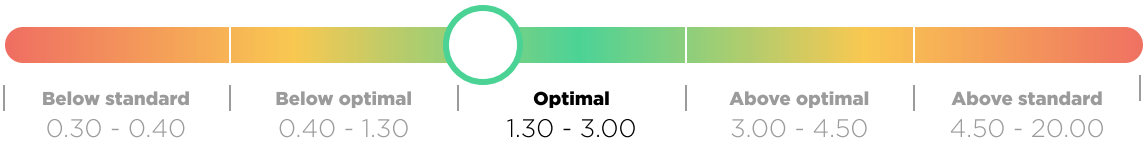


Lipoprotein (a)
51.00 nmol/L

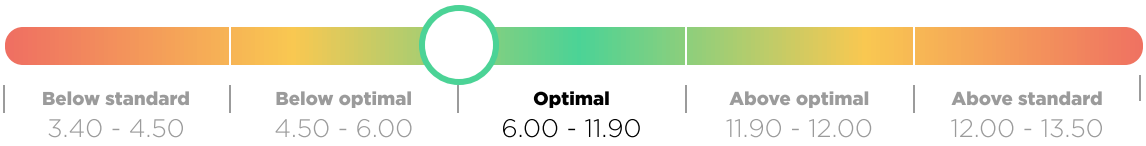


THYROID

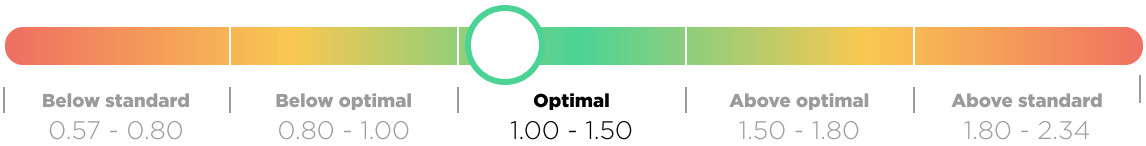
TSH
1.55 µU/mL



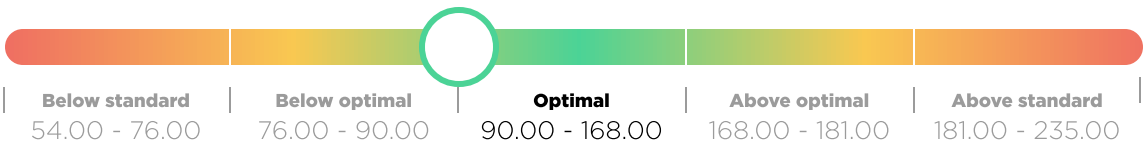
T4 - Total
6.10 µg/dL



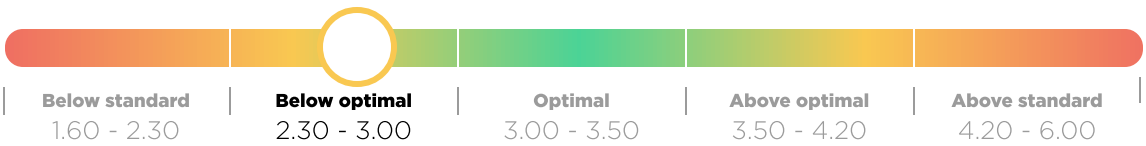
T4 - Free
1.10 ng/dL



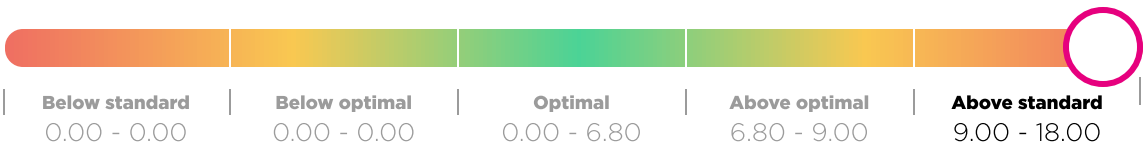
T3 - Total
92.00 ng/dL



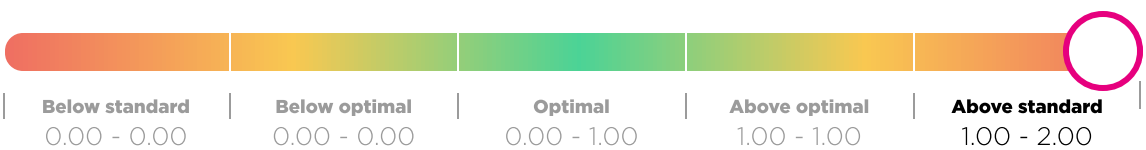
T3 - Free
2.70 pg/ml



Thyroid Peroxidase (TPO) Abs
600.00 IU/ml ⚠



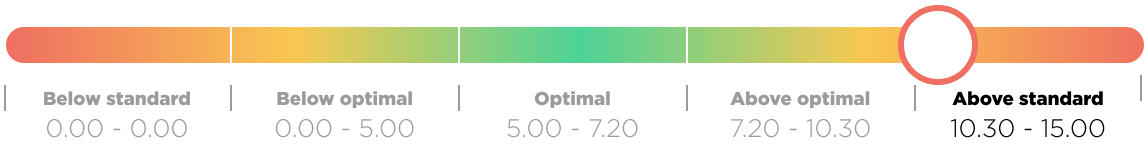
Thyroglobulin Abs
38.60 IU/ml ⚠



INFLAMMATION

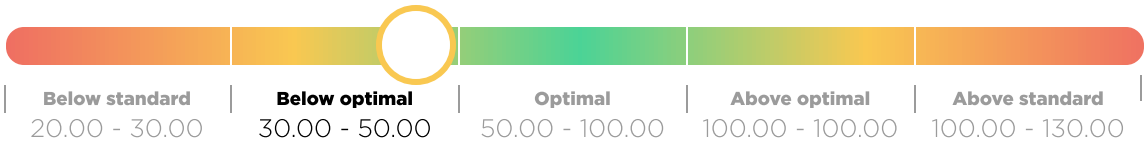
Hs CRP - Female
0.50 mg/L

Homocysteine
11.00 µmol/L

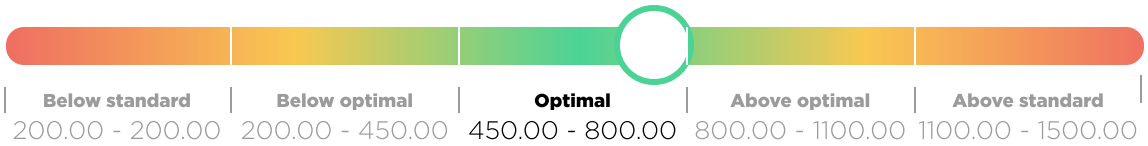


VITAMINS

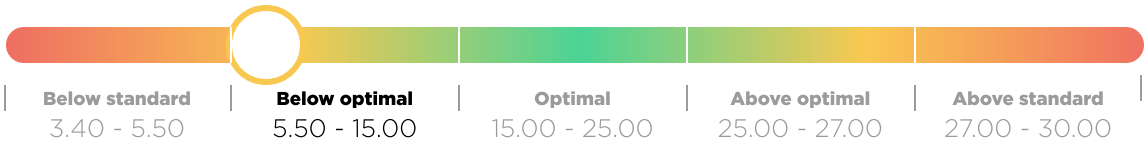
Vitamin D (25-OH)
46.00 ng/ml



Vitamin B12
750.00 pg/ml

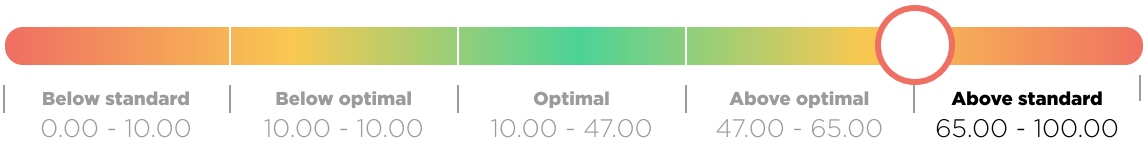


Folate - Serum
7.20 ng/ml

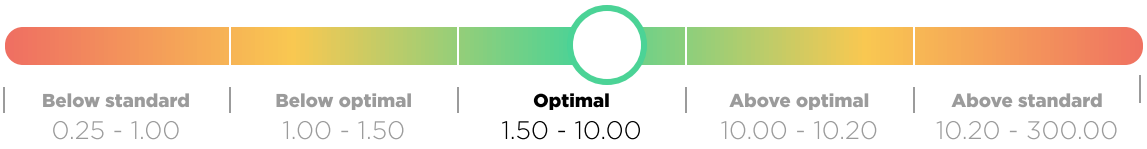


HORMONES

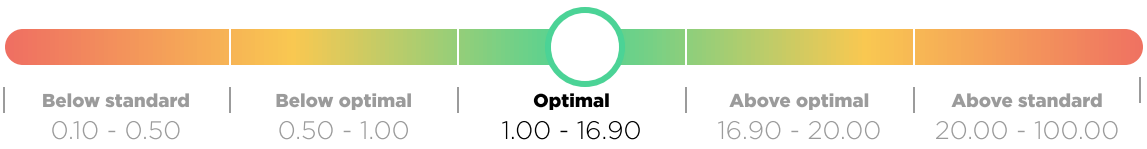
Parathyroid Hormone - PTH
66.40 pg/ml



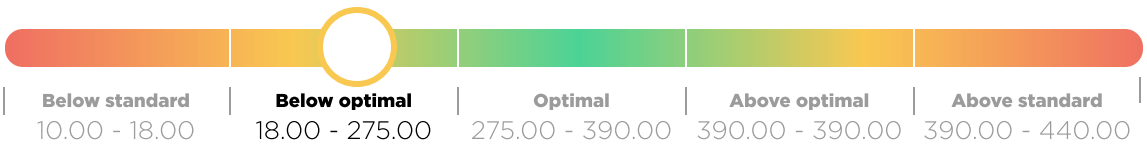
FSH - Female
7.40 mIU/ml



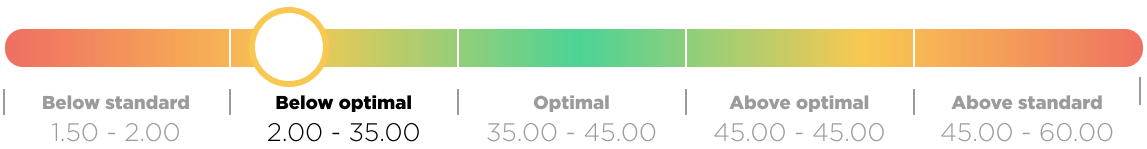
LH - Female
10.10 mIU/ml



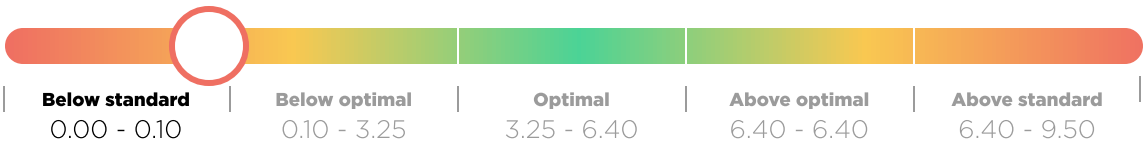
DHEA-S - Female
167.00 µg/dl



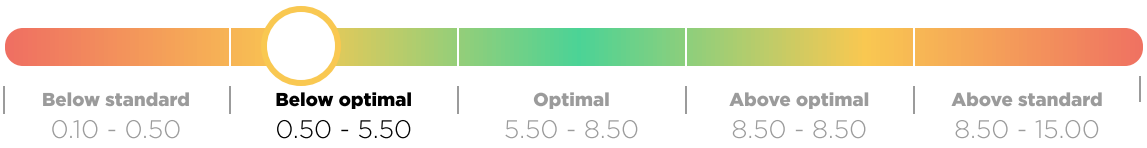
Testosterone Total - Female
11.00 ng/dl



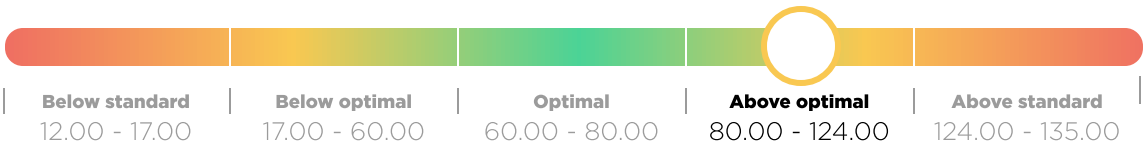
Testosterone Free - Female
0.09 pg/ml



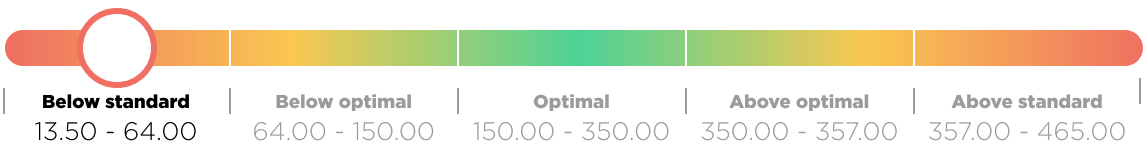
Testosterone Bioavailable - Female
2.06 ng/dl



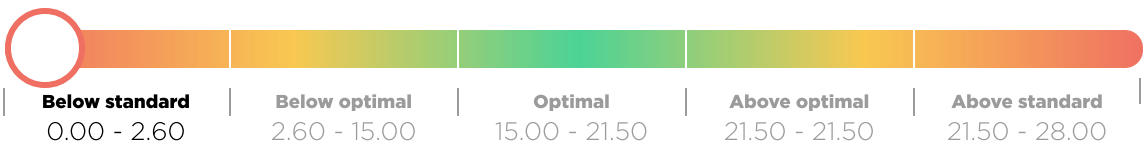
Sex Hormone Binding Globulin - Female
102.00 nmol/L



Estradiol - Female
39.00 pg/ml

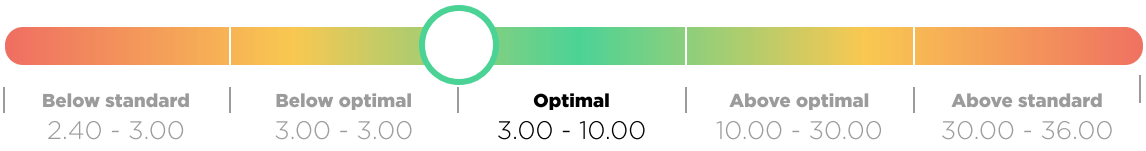


Progesterone - Female
0.10 ng/ml

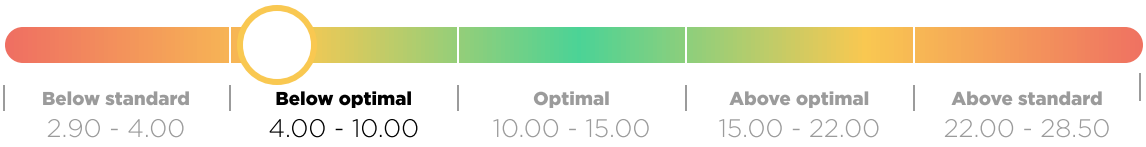


HORMONES (CONTINUED)

Prolactin - Female
3.27 ng/ml

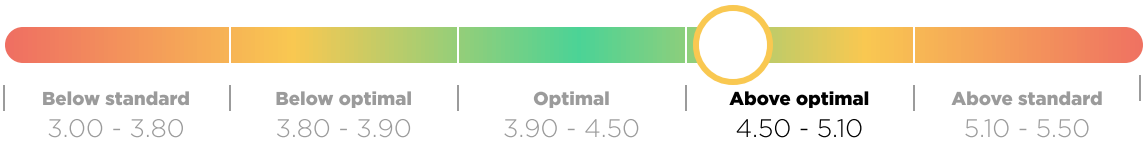


Cortisol - AM
5.20 µg/dL

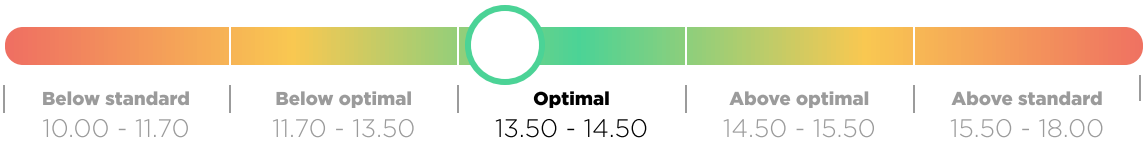


CBC/HEMATOLOGY

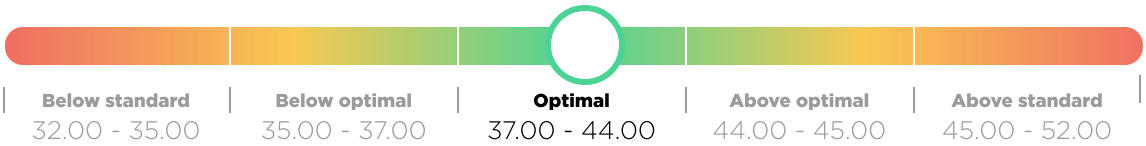
RBC - Female
4.64 m/cumm



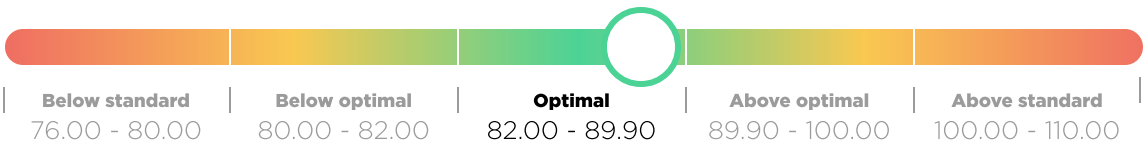
Hemoglobin - Female
13.70 g/dl



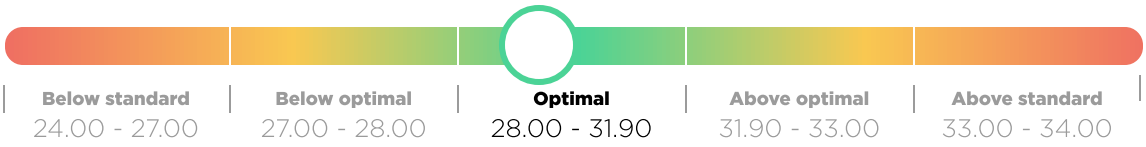
Hematocrit - Female
41.00 %



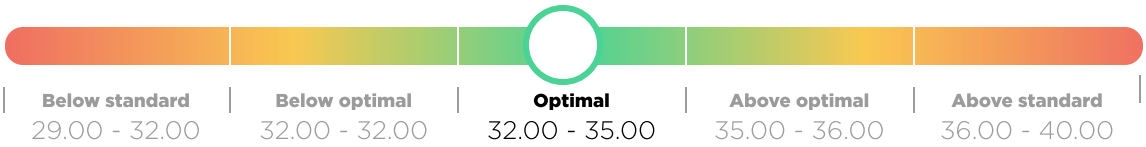
MCV
88.40 fL



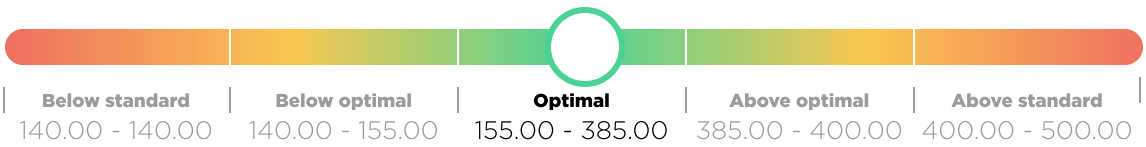
MCH
29.50 pg



MCHC
33.40 g/dL

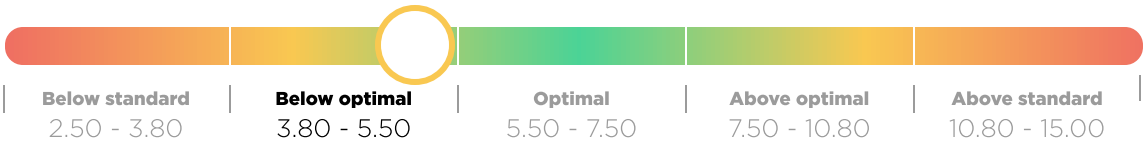


Platelets
283.00 k/cumm

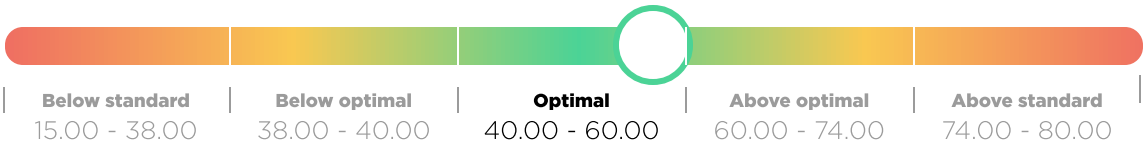


WHITE BLOOD CELLS

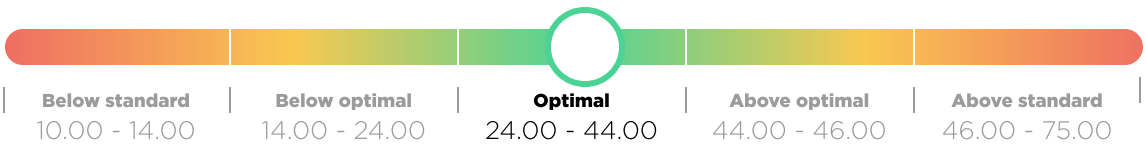
Total WBCs
5.16 k/cumm



Neutrophils - %
57.17 %

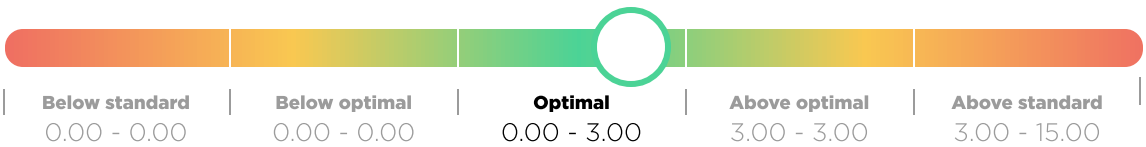


Lymphocytes - %
35.27 %

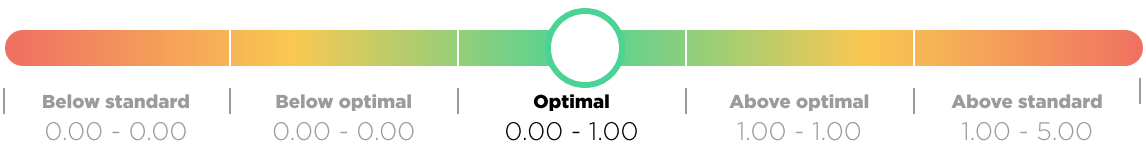


Monocytes - %
4.65 %

Eosinophils - %
2.33 %

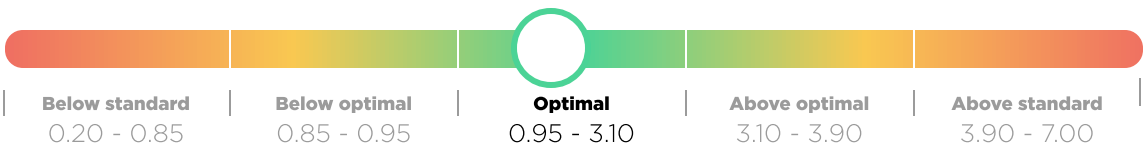


Basophils - %
0.58 %

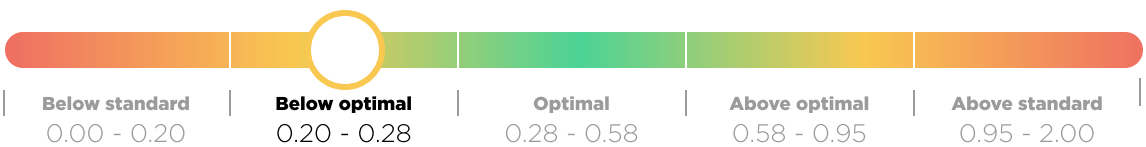


Neutrophils - Absolute
2.95 k/cumm

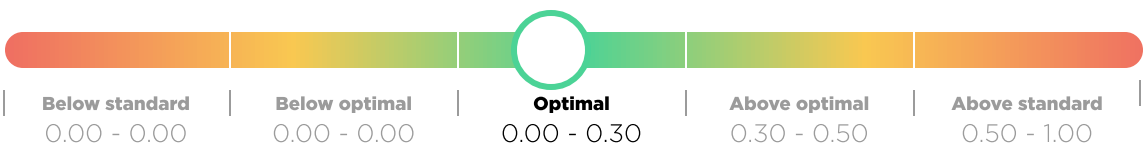
Lymphocytes - Absolute
1.82 k/cumm



Monocytes - Absolute
0.24 k/cumm



Eosinophils - Absolute
0.12 k/cumm



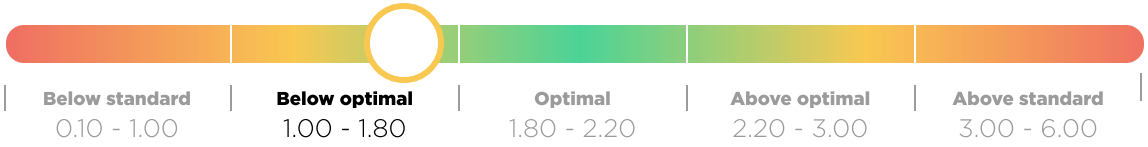
WHITE BLOOD CELLS (CONTINUED)

Basophils - Absolute

0.03 k/cumm

Neutrophil : Lymphocyte

1.62 Ratio



Out of Optimal Range

The following report shows all of the biomarkers that are out of the optimal reference 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 optimal range

Alarm Low	Below Standard	Below Optimal	Optimal	Above Optimal	Above Standard	Alarm High	Total
1	5	14	44	16	10	3	93

Above Optimal

600.00
IU/ml

THYROID PEROXIDASE (TPO) ABS

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.

38.60
IU/ml

THYROGLOBULIN ABS

Thyroglobulin is a protein produced by the follicular cells of the thyroid gland to produce Thyroxine (T4) and Triiodothyronine (T3). Thyroglobulin Antibodies are immune cells that attack the thyroglobulin in the thyroid. Elevated Thyroglobulin antibodies are found in patients with Hashimoto's thyroditis and Grave's disease.

27.00
µIU/ml

INSULIN - FASTING

Insulin is the hormone released 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.

192.00
mg/dL

LDL CHOLESTEROL

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.

242.00
mg/dL

CHOLESTEROL - TOTAL

Cholesterol is a steroid found in every cell of the body and in the plasma. It is an essential component in the structure of the cell membrane where it controls membrane fluidity. It provides the structural backbone for every steroid hormone in the body, which includes adrenal and sex hormones and vitamin D. The myelin sheaths of nerve fibers are derived from cholesterol and the bile salts that emulsify fats are composed of cholesterol. Cholesterol is made in the body by the liver and other organs and from dietary sources. The liver, the intestines, and the skin produce between 60-80% of the body's cholesterol. The remainder comes from the diet. Increased cholesterol is just one of many independent risk factors for cardiovascular disease. It is also associated with metabolic syndrome, hypothyroidism, biliary stasis, and fatty liver.

11.00
µmol/L

HOMOCYSTEINE

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.

0.65
Ratio

APO B : APO A-1

Research indicates that evaluating the ratio of ApoB to Apo A-1 is a better tool for assessing coronary artery disease than evaluating traditional lipid biomarkers such as total cholesterol, LDL, HDL, triglycerides, or lipid ratios including total cholesterol/HDL-C, LDL-C/HDL-C, and Triglyceride/HDL-C. An increasing ApoB to Apo A-1 ratio represents an increasing trend towards cardiovascular risk due to a relative increase in atherogenic ApoB or a decrease in protective Apo A-1.

119.00
mg/dl

APOLIPOPROTEIN B

Apolipoprotein B (also called Apolipoprotein B-100) is a protein constituent of lipoproteins such as VLDL and LDL. Increased levels of Apo B are associated with an increased risk of cardiovascular disease.

102.00
nmol/L

SEX HORMONE BINDING GLOBULIN - FEMALE

Sex Hormone Binding Globulin (SHBG) is a protein produced primarily in the liver and to some extent the testes, uterus, brain, and placenta. SHBG acts as a transport molecule for carrying estrogen and testosterone around the body and delivering them to receptors on the cells. Increased SHBG levels are associated with a decreased availability of testosterone in women. SHBG levels may also be increased with hormone replacement therapy and undernourishment.

88.00
mg/dL

TRIGLYCERIDES

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

1.67
Ratio

AST : ALT

The AST:ALT ratio, also known as the De Ritis ratio, provides a tool for assessing and monitoring liver function and the progression and the severity of liver disease. An increasing AST:ALT ratio above 1 is associated with a trend towards progressive impairment of liver function

15.10
mEq/L

ANION GAP

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.

94.00
ng/mL

FERRITIN

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.

66.40
pg/ml

PARATHYROID HORMONE - PTH

Parathyroid Hormone or PTH is a peptide hormone released by the parathyroid glands that acts to raise blood calcium levels. High levels of PTH are associated with hyperparathyroidism and hypercalcemia, elevated serum calcium levels.

51.00
nmol/L

LIPOPROTEIN (A)

Lipoprotein (a) or Lp(a) is a small dense lipoprotein that carries cholesterol in the blood. Increased blood levels of Lp(a) may be a strong indicator of early cardiovascular disease.

7.60
g/dL

PROTEIN - TOTAL

Total serum protein is composed of albumin and total globulin. Conditions that affect albumin and total globulin readings will impact the total protein value. An increased total protein is most often due to dehydration.

173.00
mg/dl

NON-HDL CHOLESTEROL

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

144.00
mEq/L

SODIUM

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.

30.60
ng/ml

LEPTIN - FEMALE

Leptin is a hormone produced by adipose (fat) tissue. Ongoing research indicates that leptin plays a role in many physiological processes in the body including immunity, bone formation, blood cell formation and blood sugar regulation. Increasing leptin levels are associated with increasing body fat levels.

17.50
Ratio

BUN : CREATININE

The BUN/Creatinine is a ratio between the BUN and Creatinine levels. An increased level is associated with renal dysfunction.

4.64
m/cumm

RBC - FEMALE

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.

2.78
Ratio

LDL : HDL - FEMALE

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.

3.50
Ratio

CHOLESTEROL : HDL

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%.

184.00
mg/dl

APOLIPOPROTEIN A-1

Apolipoprotein A-1 is the major component of HDL Cholesterol. Evaluation of Apo A-1 levels can help determine cardiovascular risk in those with reduced levels of HDL, increased cholesterol and increased triglycerides. Elevated levels of Apolipoprotein A1 are predictive of a lowered incidence of cardiovascular disease.

5.60
%

HEMOGLOBIN A1C

The Hemoglobin A1C test measures the amount of glucose that combines with hemoglobin to form glycohemoglobin during the normal lifespan of a red blood cell, which is about 120 days. The amount of glycohemoglobin formed is in direct proportion to the amount of glucose present in the bloodstream during the 120-day red blood cell lifespan. In the presence of high blood glucose levels (hyperglycemia) the amount of hemoglobin that is glycosylated to form glycohemoglobin increases and the hemoglobin A1C level will be high. 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.

114.02
mg/dl

EAG

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.

0.20
mg/dL

BILIRUBIN - DIRECT

Direct or conjugated bilirubin is the form of bilirubin that has been made water soluble in the liver so it can be excreted in the bile. An increase in direct or conjugated bilirubin may be associated with a dysfunction or blockage in the liver, gallbladder, or biliary tree.

354.00
µg/dL

TIBC

Total Iron Binding Capacity is an approximate estimation of the serum transferrin level. Transferrin is the protein that carries most of the iron in the blood. Elevated levels of TIBC are associated with iron deficiency anemia.

35.12
ratio

SODIUM : POTASSIUM

The Sodium:Potassium ratio is determined from the serum sodium and serum potassium levels. Both of these elements are under the influence of the adrenal glands. An increased Sodium:Potassium ratio is associated with acute stress.

Below Optimal

2.10
mg/dl

MAGNESIUM - RBC

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 RBC magnesium is a sign of magnesium deficiency and is a common finding with muscle cramps.

0.10
ng/ml

PROGESTERONE - FEMALE

Progesterone is a steroid hormone mainly formed in the cells of the corpus luteum and during pregnancy in the placenta. The ODX range for progesterone is set for the Luteal Phase of the menstrual cycle. Low serum progesterone may be due to a natural low point in progesterone output based on the day of your cycle that the blood test was run or conditions such as Short Luteal Phase Syndrome.

0.09
pg/ml

TESTOSTERONE FREE - FEMALE

The free testosterone test measures the testosterone that is unbound to serum proteins such as Sex Hormone Binding Globulin. In women, low free testosterone levels have been linked to an increased risk for the following: osteoporosis, decreased lean body mass and decreased libido.

11.00
ng/dl

TESTOSTERONE TOTAL - FEMALE

The total testosterone test measures both the testosterone that is bound to serum proteins and the unbound form (free testosterone). In women, low total testosterone levels have been linked to an increased risk for the following: osteoporosis, decreased lean body mass and decreased libido.

2.06
ng/dl

TESTOSTERONE BIOAVAILABLE - FEMALE

Bioavailable testosterone is the amount of testosterone in the blood is readily available for biological activity. In women, low total testosterone levels have been linked to an increased risk for the following: osteoporosis, decreased lean body mass and decreased libido.

5.20
µg/dL

CORTISOL - AM

The serum cortisol test is used to identify dysfunction in the adrenal gland. Decreased levels are associated with adrenal hypofunction or Addison's Disease, a disease in which the adrenal glands do not produce enough cortisol.

167.00
µg/dl

DHEA-S - FEMALE

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 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.

17.00
%

% TRANSFERRIN SATURATION

The % transferrin saturation index is a calculated value that tells how much serum iron is bound to the iron-carrying protein transferrin. A % transferrin saturation value of 15% means that 15% of iron-binding sites of transferrin is being occupied by iron. It is a sensitive screening test for iron deficiency anemia if it is below the optimal range.

39.00
pg/ml

ESTRADIOL - FEMALE

Estradiol (E2) is the most commonly measured estrogens, the others being estrone (E1) and estriol (E3). The serum estradiol level is not specific to any phase of the menstrual cycle. It is a general assessment of estradiol. Low levels of estradiol can be a risk factor for osteoporosis and bone fracture. Estradiol may improve the quality of life in menopausal women.

7.20
ng/ml

FOLATE - SERUM

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 deficienc, which can impair methylation, DNA synthesis and red blood cell production.

2.70
pg/ml

T3 - FREE

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.

61.00
µg/dL

IRON - SERUM

Serum iron reflects iron that is bound to serum proteins such as transferrin. Serum iron levels will begin to fall somewhere between the depletion of the iron stores and the development of anemia. Decreased iron levels are associated with iron deficiency anemia, hypochlorhydria and internal bleeding. The degree of iron deficiency is best appreciated with ferritin, TIBC and % transferrin saturation levels.

1.62
Ratio

NEUTROPHIL : LYMPHOCYTE

The neutrophil-lymphocyte ratio (NLR) reflects important components of the cell-mediated inflammatory response, i.e. neutrophils and lymphocytes. Decreased levels are an indicator of a trend towards a chronic viral infection.

5.16
k/cumm

TOTAL WBCS

The total White Blood Cell (WBC) count measures the sum of all the WBCs in the peripheral blood. Decreased total White Blood Cell Levels are associated with chronic bacterial or viral infections, immune insufficiency, and may be seen in people eating a raw food diet.

0.20
mg/dL

BILIRUBIN - TOTAL

The total bilirubin is composed of two forms of bilirubin: Indirect or unconjugated bilirubin, which circulates in the blood on its way to the liver and direct or conjugated bilirubin, which is the form of bilirubin made water-soluble before it is excreted in the bile. A decreased bilirubin has been associated with a trend towards oxidative stress.

0.00
mg/dL

BILIRUBIN - INDIRECT

Bilirubin is formed from the breakdown of red blood cells. Indirect or unconjugated bilirubin is the protein (albumin) bound form of bilirubin that circulates in the blood on its way to the liver prior to being eliminated from the body in the bile. Elevated levels of indirect or unconjugated bilirubin are usually associated with increased red blood cell destruction.

0.24
k/cumm

MONOCYTES - ABSOLUTE

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.

67.00
IU/L

ALK PHOS

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.

46.00
ng/ml

VITAMIN D (25-OH)

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.

9.00
IU/L

ALT

ALT is an enzyme present in high concentrations in the liver and to a lesser extent skeletal muscle, the heart, and kidney. ALT levels may be decreased in vitamin B6 deficiency and early stages of fatty liver.

4

The Health Improvement Plan takes all the information on this report and focuses on the top areas that need the most attention.

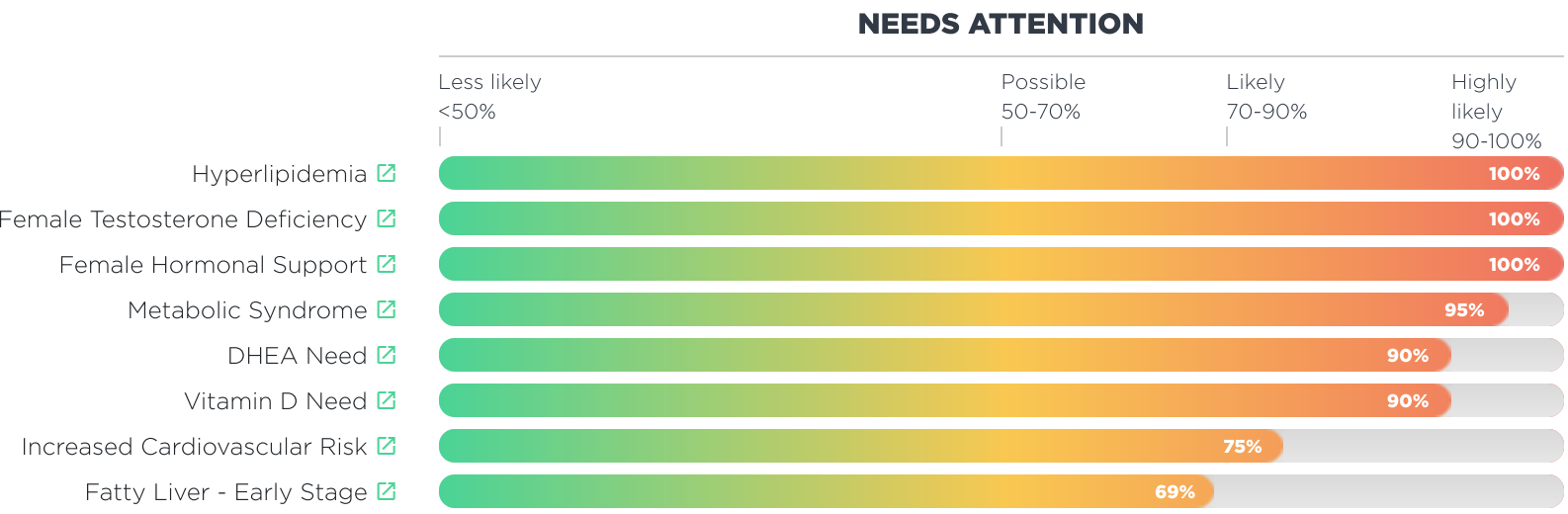
Health Improvement Plan

42 Health Improvement

Health Improvement

The Health Improvement Plan takes all the information on this report and focuses on the top areas that need the most attention.

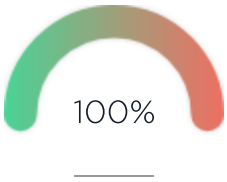
Each area of Health Improvement is included in the section that follows so you can read a detailed description and individual explanation of the results shown in this report.



Health Improvement Details

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

HYPERLIPIDEMIA

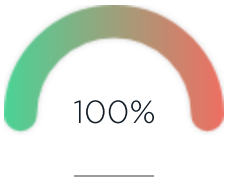


The results of your blood test indicate that you have higher than optimal levels of cholesterol and fat in your blood (a condition called hyperlipidemia), which is associated with an increased risk of cardiovascular disease. There is a need for cardiovascular support, especially support to help lower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

Rationale

Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑

FEMALE TESTOSTERONE DEFICIENCY

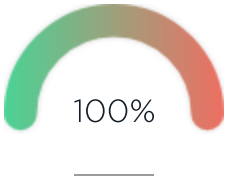


The results of your blood test indicate a trend towards testosterone deficiency and a need for testosterone metabolism support.

Rationale

Testosterone Free - Female ↓, Testosterone Total - Female ↓

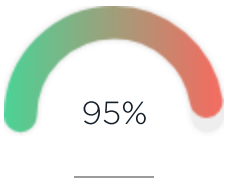
FEMALE HORMONAL SUPPORT



Rationale

Estradiol - Female ↓, Testosterone Total - Female ↓, Testosterone Free - Female ↓, Progesterone - Female ↓, Sex Hormone Binding Globulin - Female ↑

METABOLIC SYNDROME

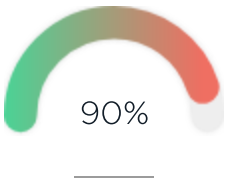


The results of your blood test indicate a tendency towards metabolic syndrome and a need for blood sugar support.

Rationale

Triglycerides ↑, Hemoglobin A1C ↑, Insulin - Fasting ↑, Cholesterol - Total ↑, LDL Cholesterol ↑, DHEA-S - Female ↓, Leptin - Female ↑

DHEA NEED

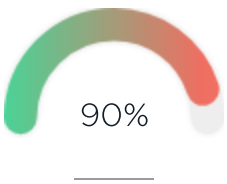


The results of your blood test indicate that your DHEA levels might be lower than optimal and shows a need for DHEA supplementation.

Rationale

DHEA-S - Female ↓

VITAMIN D NEED

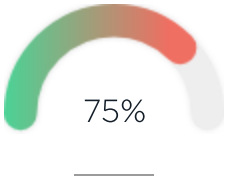


The results of your blood test indicate that your vitamin D levels might be lower than optimal and shows a need for vitamin D supplementation.

Rationale

Vitamin D (25-OH) ↓

INCREASED CARDIOVASCULAR RISK

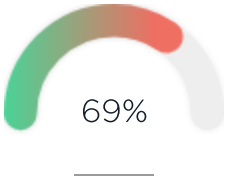


The results of your blood test indicate a higher than optimal cardiovascular risk and show a need for cardiovascular support.

Rationale

Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑, Homocysteine ↑, Hemoglobin A1C ↑, Testosterone Free - Female ↓, Insulin - Fasting ↑, Vitamin D (25-OH) ↓

FATTY LIVER - EARLY STAGE



The results of your blood test indicate a tendency towards the early development of fatty liver and a need for liver support.

Rationale

ALT ↓, Cholesterol - Total ↑, Triglycerides ↑, LDL Cholesterol ↑

5

Appendix

46 Disclaimer

Disclaimer

This Report contains information for the exclusive use of the above named recipient only, and contains confidential, and privileged information. If you are not the above 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) and any mentioned supplement, product or treatment is not intended to diagnose, treat, cure or prevent any disease. The information contained in this Report has not been evaluated by the FDA.

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.

HOMA2-IR is automatically calculated using the HOMA 2 Calculator © Oxford University 2004.