
Blood Chemistry Analysis Functional Health Report



Practitioner Report

Prepared for Jackson Grey
35 year old male born Jan 28, 1984

Requested by Miss Sheera Davis
Emotions Understood

Test date Aug 16, 2019



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.

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- 3 Practitioner's Notes
- 4 Functional BCA
- 5 Practitioner Report

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An introduction to functional blood chemistry analysis and your report.

Introduction

- 1 What's Inside?
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Miss Sheera Davis's Report

This report highlights the notes made about the results of this blood test.

REPORT

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 our 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, our patients 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 than 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 patients with changes in physiological "function". We can identify the factors that obstruct the patient from achieving optimal physiological, biochemical, and metabolic functioning in their 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 a client's 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 the 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.

Practitioner Report

Your Practitioner Report is the result of a detailed and proprietary algorithmic analysis of your patient's complex and comprehensive blood biomarkers.

MISS SHEERA DAVIS

Other Practitioner

THE FUNCTIONAL HEALTH REPORT

The Functional Health Report uniquely organises and creates an interpretation providing a comprehensive insight and assessment into the state of previously hidden health trends of the main body systems, its supporting body accessory systems, along with reporting on the status of key nutrients and trends to and from clinical dysfunction.

The 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 the body.

ASSESSMENT

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

and Accessory Reports show the level of dysfunction that exists in the various physiological and supporting accessory systems in the body.

The Nutrient Systems report gives you an indication of your client's general nutritional status as well as the degree of deficiency for individual nutrients.

The Assessment section also includes the Practitioner Only "Clinical Dysfunctions Report", which lists the individual dysfunctions and conditions themselves that may be causing the changes seen in the Body and Accessory Systems reports.

ANALYSIS

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

The Blood Test Results Report lists the results of the patient's blood test results and shows you if an individual biomarker is outside of the optimal range and/or outside of the clinical lab range.

The Blood Test Results Comparative Report compares results of the patient's latest and previous Chemistry Screen and Hematology test and gives you a sense of whether or not there has been an improvement on the individual biomarker level.

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.

A Blood Test Score report is made showing which markers exhibit the largest shifts away from an optimal norm either higher or lower.

HEALTH IMPROVEMENT PLAN

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

Based on the results of the analysis of this blood test, there may be a "Recommended Further Testing" report, which indicates areas that may require further investigation.

APPENDIX

The appendix may contain the "What to Look For" report, which contains detailed descriptions and interpretation explanations of each biomarker that is out of optimal giving you even more information on dysfunctions associated with each biomarker.



An in-depth functional system and nutrient evaluation.

Assessment

- 7 Functional Body Systems
- 10 Accessory Systems
- 12 Macronutrient Status
- 14 Nutrient Deficiencies
- 16 Clinical Dysfunctions

Functional Body Systems

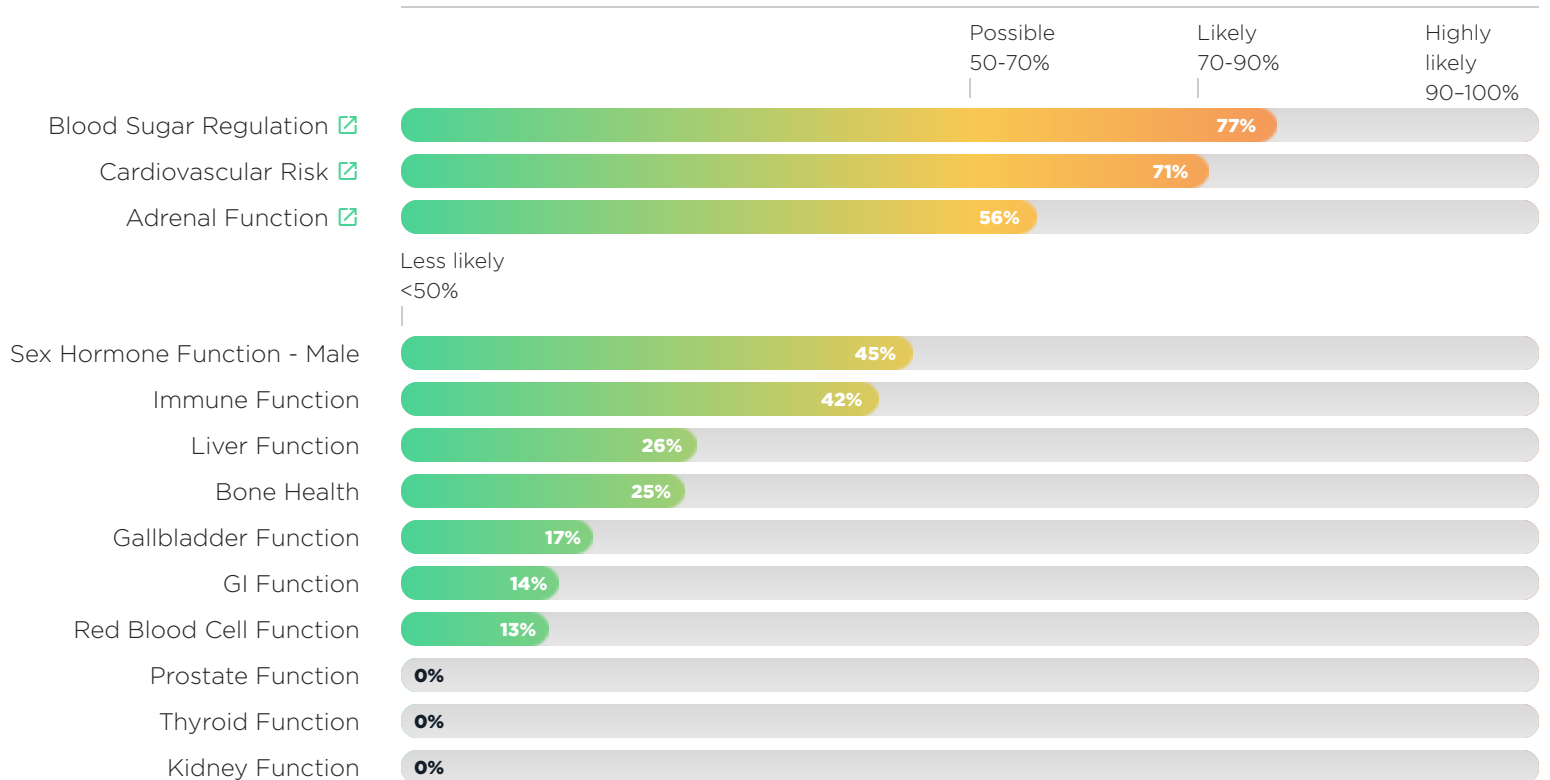
The Functional Body System results represent an algorithmic analysis of this blood test. These results have been converted into your client's individual Functional Body Systems Report based on our latest research.

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

Please use this report in conjunction with the "Practitioner's Only Clinical Dysfunctions Report" to identify which dysfunctions and conditions are causing changes in the Functional Body Systems.

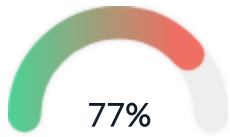
Each Body System that has a probability of dysfunction above 50% is included in the section that follows so you can read a highly detailed description and individual explanation of the results shown in this report.

PROBABILITY OF DYSFUNCTION



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.



77%

Dysfunction Likely.
Improvement required

BLOOD SUGAR REGULATION [🔗](#)

The Blood Sugar Regulation score allows us to assess the functional health of your patient's blood sugar regulation. A high Blood Sugar Regulation score indicates that there is dysfunction in this patient's blood sugar regulation. Blood sugar dysregulation is affected by genetics, diet, lifestyle, nutrition, and environment. Please refer to the "Clinical Dysfunctions" report to get a sense of the probability of dysfunction in these "conditions": **Hypoglycemia**, **Metabolic Syndrome** and **Insulin Resistance**. Long-standing Blood Sugar Dysregulation, if left unassessed or treated, may lead to hyperinsulinemia, and type 2 Diabetes.

Rationale

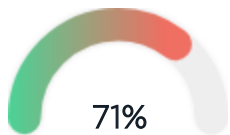
LDH ↓, Hemoglobin A1C ↓, Triglycerides ↑, HDL Cholesterol ↓

Biomarkers considered

Glucose - Fasting, LDH, Hemoglobin A1C, Cholesterol - Total, Triglycerides, LDL Cholesterol, HDL Cholesterol

Patient result not available - consider running in future tests:

Insulin - Fasting, DHEA-S - Male, C-Peptide, Fructosamine, Leptin - Male



71%

Dysfunction Likely.
Improvement required

CARDIOVASCULAR RISK [🔗](#)

The Cardiovascular Risk score is based on the measurement of 15 biomarkers in a blood test that indicates an increased risk of this patient developing cardiovascular disease (heart attack, coronary artery disease, and stroke). A high Cardiovascular Risk score indicates that your patient may have an increased risk of cardiovascular disease, **Atherosclerosis**, **Endothelial Dysfunction**, and **Inflammation**.

Rationale

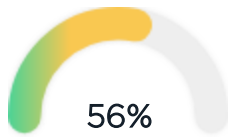
Triglyceride:HDL ↑, Triglycerides ↑, HDL Cholesterol ↓, Ferritin ↑, Testosterone Total - Male ↓, Vitamin D (25-OH) ↓, Testosterone Free - Male ↓

Biomarkers considered

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

Patient result not available - consider running in future tests:

Hs CRP - Male, Estradiol - Male, Testosterone Free - Male, LABCORP, Insulin - Fasting



56%

Dysfunction Possible.

There may be improvement needed in certain areas.

ADRENAL FUNCTION [🔗](#)

The Adrenal Function score allows us to assess the functional health of your patient's adrenal glands. A high Adrenal Function score indicates that there is dysfunction within your patient's adrenal system and further assessment is needed to find out what the dysfunction is. Please refer to the "Clinical Dysfunctions" report to get a sense of the probability of dysfunction in these "conditions": **Adrenal Stress** and **Adrenal Insufficiency**.

Rationale

Potassium ↓,
Sodium:Potassium ↑,
Triglycerides ↑

Biomarkers considered

Sodium, Potassium,
Sodium:Potassium, Glucose -
Fasting, BUN, Chloride, CO₂,
Cholesterol - Total, Triglycerides

Patient result not available - consider running in future tests:

DHEA-S - Male, Cortisol - AM,
Cortisol - PM

Accessory Systems

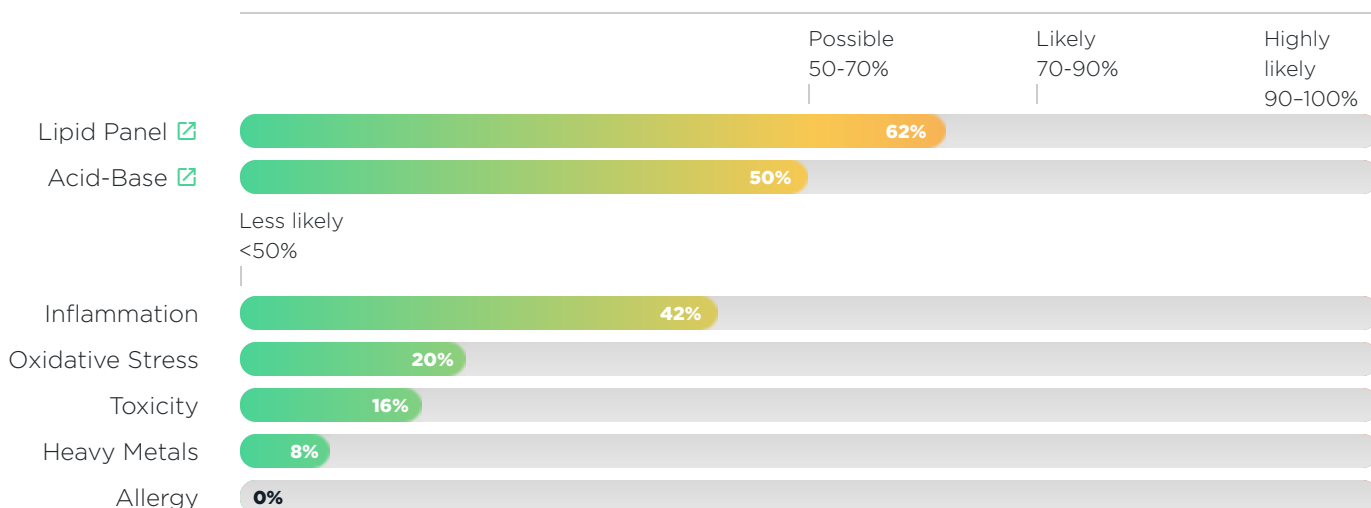
The Accessory System results represent an algorithmic analysis of this blood test. These results have been converted into your client’s individual Accessory Systems Report based on our latest research.

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

Please use this report in conjunction with the “Practitioner’s Only Clinical Dysfunctions Report” to identify which dysfunctions and conditions are causing changes in the Accessory Systems.

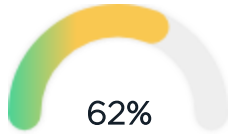
Each Accessory System that has a probability of dysfunction above 50% is included in the section that follows so you can read a highly detailed description and individual explanation of the results shown in this report.

PROBABILITY OF DYSFUNCTION



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.



62%

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

LIPID PANEL [🔗](#)

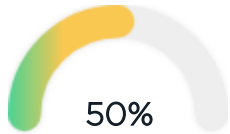
A high Lipid Panel score indicates that there is a strong clinical indication of hyperlipidemia, which has been shown to indicate a potential risk of developing atherosclerotic coronary artery disease. Although hyperlipidemia is a cause, it's important to look at many other risks for this disease including smoking, blood sugar dysregulation, hypertension, elevated homocysteine and other diet and lifestyle considerations.

Rationale

Triglycerides ↑,
Triglyceride:HDL ↑, HDL
Cholesterol ↓

Biomarkers considered

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



50%

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

ACID-BASE [🔗](#)

A high Acid-Base score indicates a functional imbalance in the body's pH system. Consider metabolic acidosis or metabolic alkalosis as a cause of this imbalance.

Rationale

Anion Gap ↑, Potassium ↓

Biomarkers considered

Anion Gap, Potassium, Chloride,
CO₂, Calcium

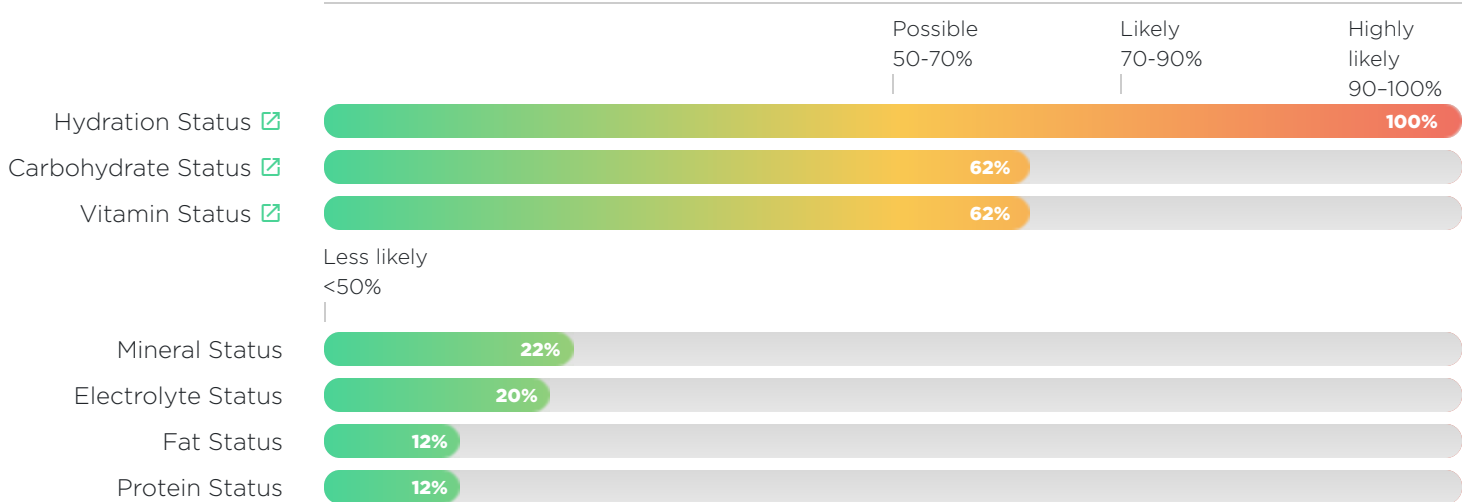
Macronutrient Status

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

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

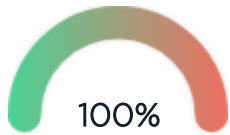
Each Macronutrient that has a probability of dysfunction above 50% is included in the section that follows so you can read a highly detailed description and individual explanation of the results shown in this report.

PROBABILITY OF DYSFUNCTION



Macronutrient Status Details

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



100%

Dysfunction Highly Likely.
Much improvement
required.

HYDRATION STATUS [🔗](#)

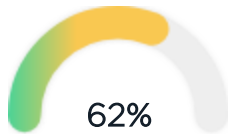
The Hydration Status score gives us a good indication of how well hydrated your patient was at the time their blood was drawn. Dehydration is a very common problem and often shows up on a standard blood chemistry and CBC test. Insufficient water intake and/or excessive use of diuretics such as over the counter and prescription drugs, botanical medicines, caffeine etc. are the most common causes of dehydration and may be a cause of an increased Hydration Status score. An increased albumin is a sign of dehydration along with an increased Urea, Sodium, Potassium, RBC count, Hemoglobin, and Hematocrit.

Rationale

Albumin ↑, Protein - Total ↑, RBC - Male ↑

Biomarkers considered

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



62%

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

CARBOHYDRATE STATUS [🔗](#)

The Carbohydrate Status score gives us an assessment of how your patient's body handles their dietary intake of carbohydrates, especially refined carbohydrates, and sugars. A diet high in refined carbohydrates and sugars will deplete phosphorus stores and other important co-factors for carbohydrate metabolism. It may also increase serum glucose and serum triglyceride levels. Follow up a high Carbohydrate Status score with a thorough assessment of blood sugar regulation and also an investigation into this patient's dietary consumption of sugars and refined carbohydrates.

Rationale

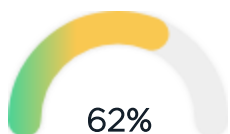
LDH ↓, Triglycerides ↑, HDL Cholesterol ↓

Biomarkers considered

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

Patient result not available - consider running in future tests:

Phosphorus



62%

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

VITAMIN STATUS [🔗](#)

The Vitamin Status score gives us a general indication of the balance of certain vitamins in the body based on the results of this blood test. A high Vitamin Status score indicates a level of deficiency or need in one or more of the vitamins reflected in this score, which includes vitamin B12, vitamin B6, folate, thiamin, vitamin D and vitamin C. Please use the information in the Nutrient Deficiencies report to identify which vitamin or vitamins may be in need.

Rationale

Anion Gap ↑, Vitamin D (25-OH) ↓

Biomarkers considered

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

Patient result not available - consider running in future tests:

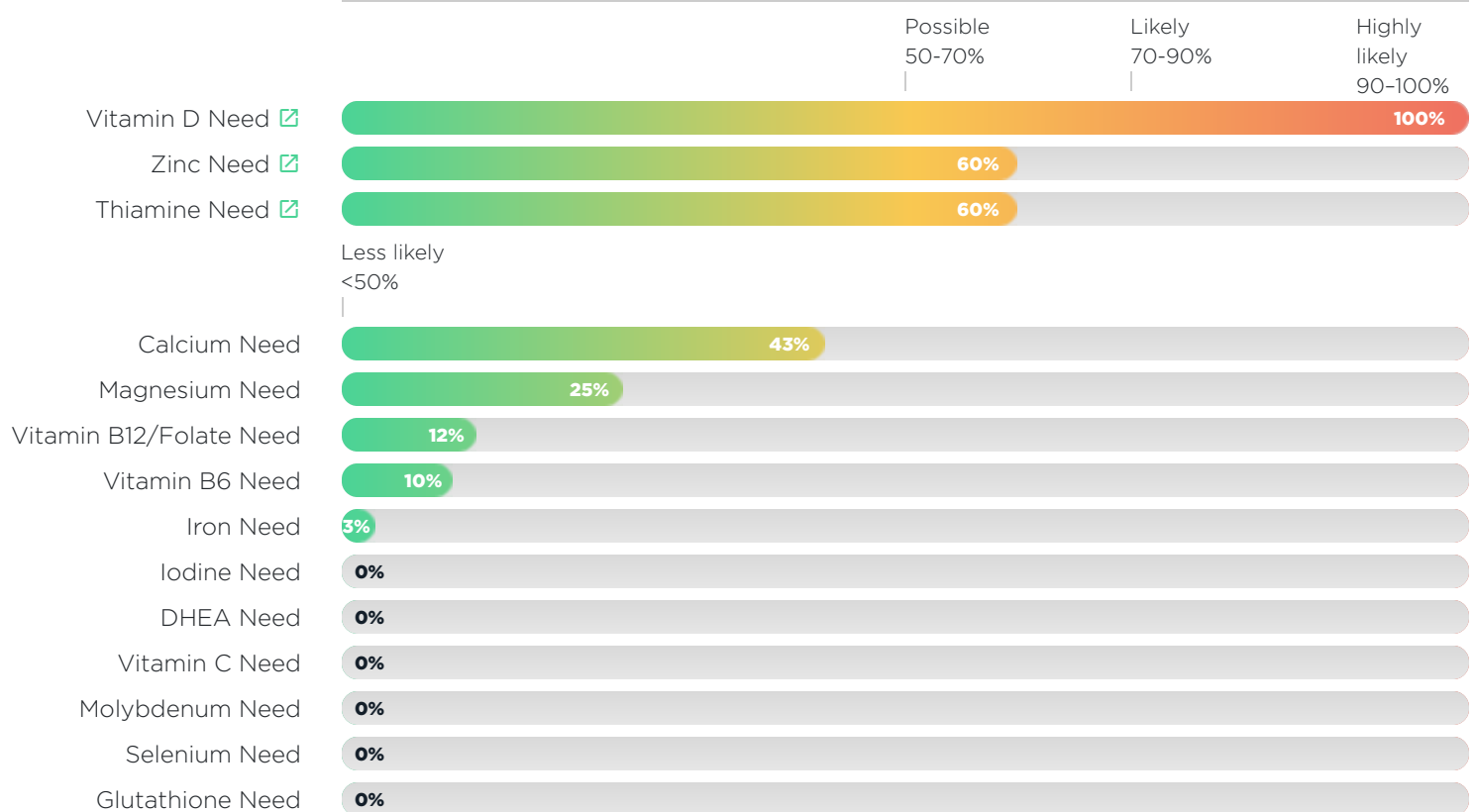
Folate - Serum, Vitamin B12, Methylmalonic Acid

Individual Nutrient Deficiencies

The values represent the degree of deficiency for individual nutrients based on your client's 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 must be taken into consideration before determining whether or not your client actually needs an individual nutrient.

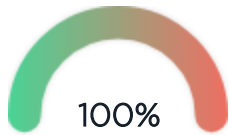
Each individual Nutrient Deficiency that has a probability of dysfunction above 50% is included in the section that follows so you can read a highly detailed description and individual explanation of the results shown in this report.

PROBABILITY OF DYSFUNCTION



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.



100%

Dysfunction Highly Likely.
Much improvement
required.

VITAMIN D NEED [🔗](#)

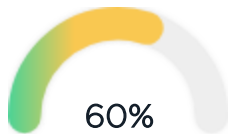
The results of this blood test indicate that this patient's **Vitamin D** levels might be lower than optimal.

Rationale

Vitamin D (25-OH) ↓

Biomarkers considered

Vitamin D (25-OH)



60%

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

ZINC NEED [🔗](#)

Consider a zinc need if the **Serum Zinc** levels are decreased along with a decreased **Alk phos**.

Rationale

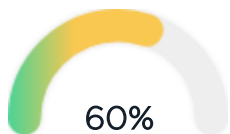
Alk Phos ↓

Biomarkers considered

Alk Phos

Patient result not available - consider running in future tests:

Zinc - Serum



60%

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

THIAMINE NEED [🔗](#)

Consider Thiamine deficiency with an **increased anion gap** along with a **decreased CO₂**. **Hemoglobin** and **hematocrit** levels may be normal or decreased. Due to thiamine's role in glycolysis, **LDH** levels may be decreased and **glucose** levels may be normal to increased.

Rationale

Anion Gap ↑ , LDH ↓

Biomarkers considered

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

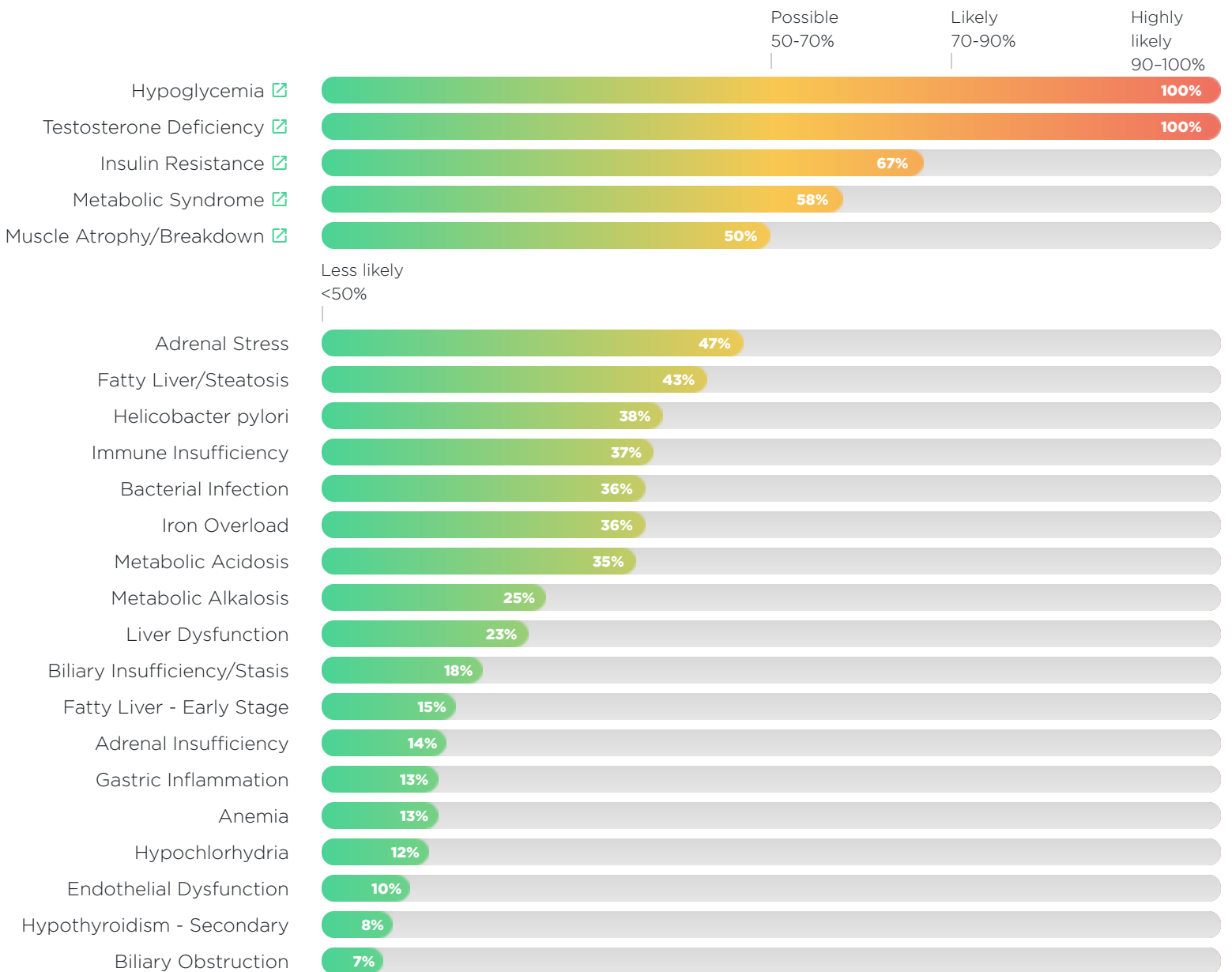
Clinical Dysfunctions

Advanced practitioner only report

The Clinical Dysfunctions Report shows a list of likely Health Concerns that your client may be suffering from based on an analysis of their Chemistry Screen and CBC results.

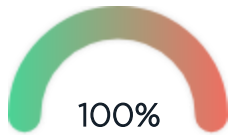
Each Clinical Dysfunction that has a probability of dysfunction above 50% is included in the section that follows so you can read a highly detailed description and individual explanation of the results shown in this report.

HEALTH CONCERNS



Clinical Dysfunctions Details

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



100%

Dysfunction Highly Likely.
Much improvement
required.

HYPOGLYCEMIA [🔗](#)

Consider hypoglycemia with a decreased fasting **blood glucose** along with a decreased **LDH**. Additional elements that may be out of range with hypoglycemia include a decreased **Hemoglobin A1C** and an increased **SGPT/ALT** level.

Rationale

LDH ↓, Hemoglobin A1C ↓

Biomarkers considered

Glucose - Fasting, LDH, Hemoglobin A1C



100%

Dysfunction Highly Likely.
Much improvement
required.

TESTOSTERONE DEFICIENCY [🔗](#)

Consider a functional testosterone deficiency with a decreased **total testosterone** and a decreased **free testosterone**.

Rationale

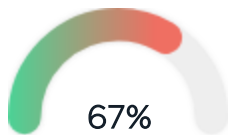
Testosterone Total - Male ↓, Testosterone Free - Male ↓

Biomarkers considered

Testosterone Total - Male, Testosterone Free - Male

Patient result not available - consider running in future tests:

Testosterone Free - Male
LABCORP



67%

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

INSULIN RESISTANCE [🔗](#)

Insulin resistance is the condition in which people lose sensitivity to the hormone insulin. As the cells become resistant to insulin, levels of insulin and blood glucose will rise. Consider insulin resistance with an increased **fasting insulin** and an increased **fasting blood glucose**, an increased **Hemoglobin A1C**, an increased **triglyceride** and an increased **Triglyceride/HDL ratio**. You may also see an increased **total cholesterol**, an increased **C-Peptide**, a decreased **HDL** and a decreased **phosphorous**.

Rationale

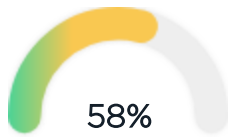
Triglycerides ↑, Triglyceride:HDL ↑

Biomarkers considered

Triglycerides, Triglyceride:HDL, Glucose - Fasting, Hemoglobin A1C, Cholesterol - Total

Patient result not available - consider running in future tests:

C-Peptide, Insulin - Fasting, Leptin - Male



58%

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

METABOLIC SYNDROME [🔗](#)

Consider metabolic syndrome with an increased **triglyceride**, an increased **total cholesterol**, an increased **LDL cholesterol**, a decreased **HDL**, an increased fasting **blood glucose** and an increased **hemoglobin A1C**. Additional elements that may be out of range with metabolic syndrome include an increased fasting **insulin**, an increased **uric acid** and decreased **DHEA**.

Rationale

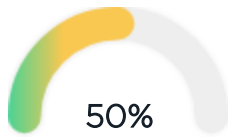
Triglycerides **↑**, HDL Cholesterol **↓**

Biomarkers considered

Glucose - Fasting, Triglycerides, Hemoglobin A1C, Cholesterol - Total, LDL Cholesterol, HDL Cholesterol

Patient result not available - consider running in future tests:

Insulin - Fasting, Uric Acid - Male, DHEA-S - Male, Leptin - Male, Sex Hormone Binding Globulin - Male



50%

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

MUSCLE ATROPHY/BREAKDOWN [🔗](#)

Consider muscle atrophy or muscle breakdown with a decreased serum **creatinine** along with an increased **SGPT/ALT** and **SGOT/AST**.

Rationale

Creatinine **↓**, Creatine Kinase **↑**

Biomarkers considered

Creatinine, AST, ALT, Creatine Kinase



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

Analytics

- 20 Blood Test Results
- 31 Blood Test Results Comp.
- 34 Blood Test Score
- 36 Blood Test History
- 39 Out of Optimal Range

Blood Glucose
Minerals
Inflammation

Renal
Liver and GB
Vitamins

Electrolytes
Iron Markers
Hormones

Metabolic
Lipids
CBC/Hematology

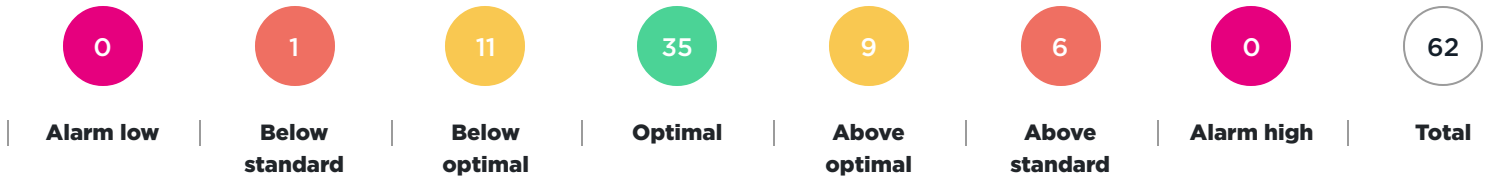
Proteins
Thyroid
White Blood Cells

Blood Test Results

The Blood Test Results Report lists the results of the client’s 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.

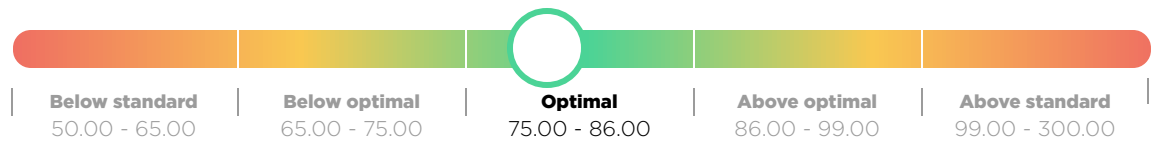
Each biomarker in the Blood Test results report that is above or below the Optimal or Standard Range hyperlinks into our Out of Optimal Range report so you can read a description of the biomarker and some of the reasons why it may be high or low.

Total number of biomarkers by optimal range

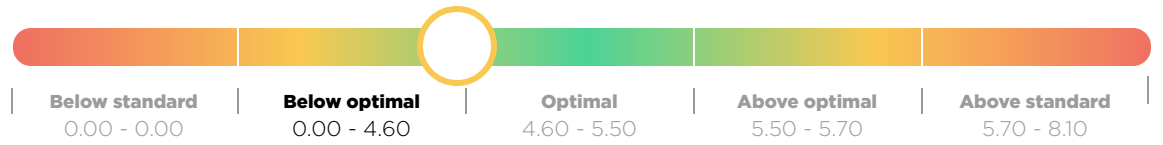


BLOOD GLUCOSE

Glucose - Fasting
79.00 mg/dL

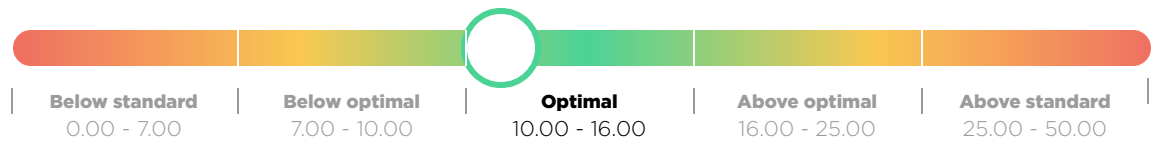


Hemoglobin A1C
4.50 %

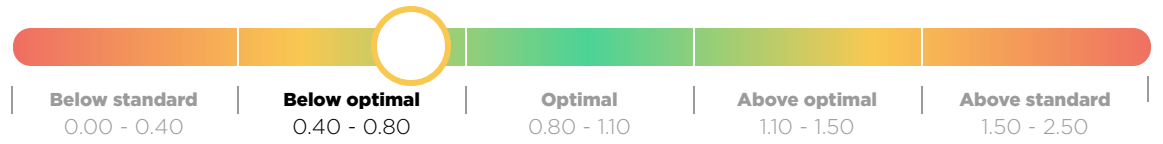


RENAL

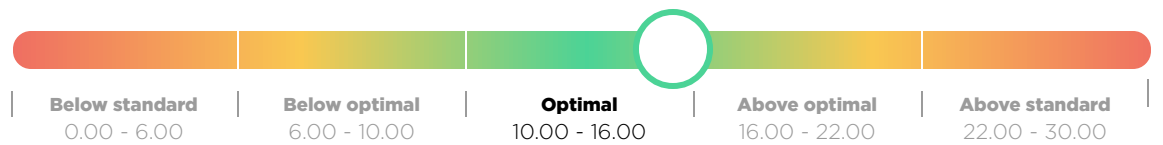
BUN
11.00 mg/dL



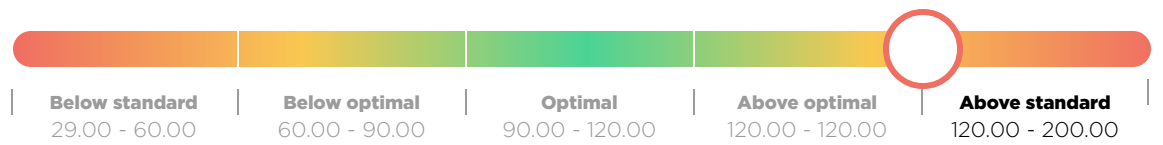
Creatinine
0.71 mg/dL



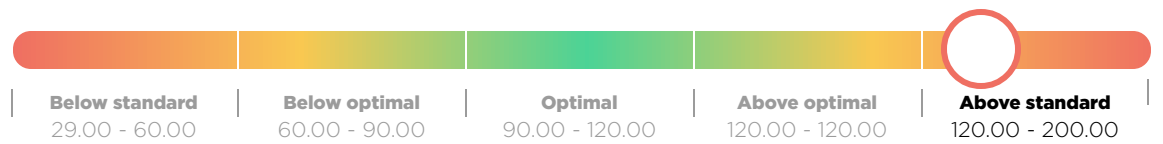
BUN:Creatinine
15.49 Ratio



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

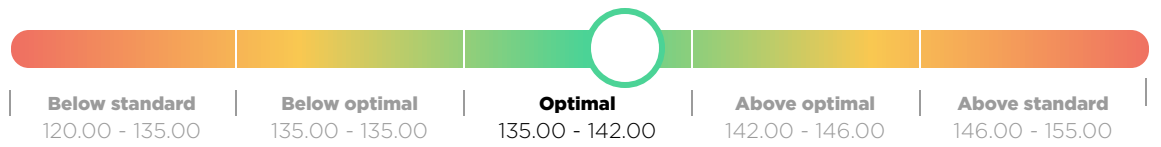


eGFR African American
140.00 mL/min/1.73m²

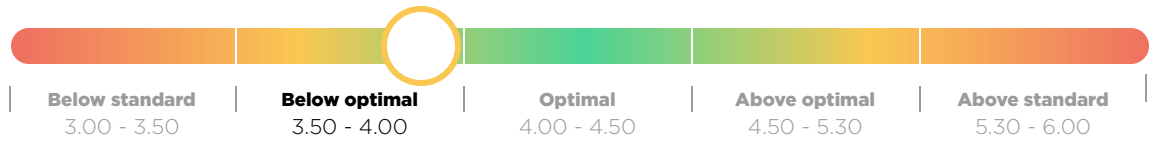


ELECTROLYTES

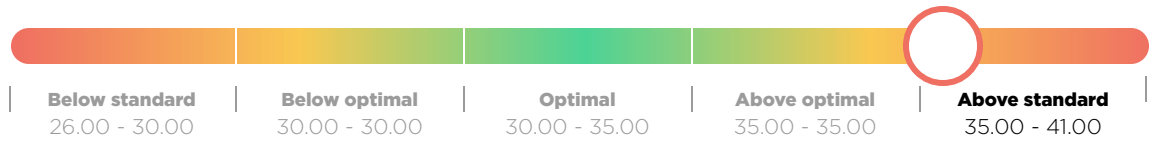
Sodium
140.00 mEq/L



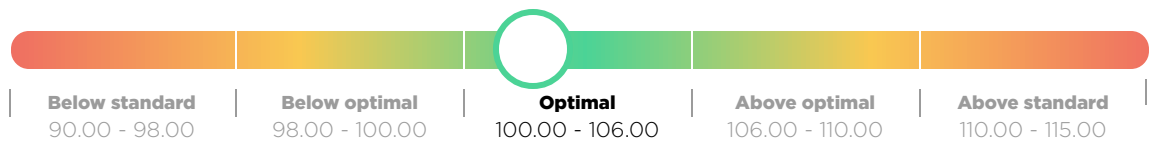
Potassium
3.90 mEq/L



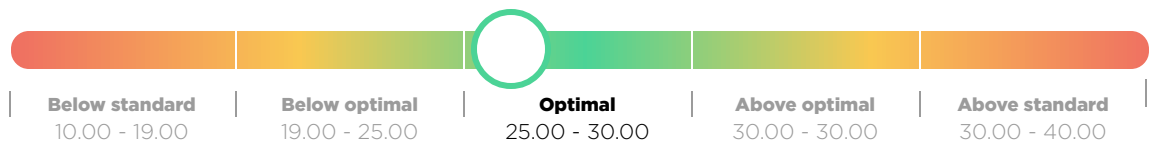
Sodium:Potassium
35.89 ratio



Chloride
102.00 mEq/L

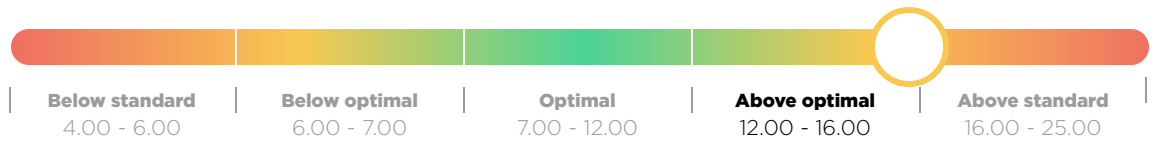


CO2
26.00 mEq/L

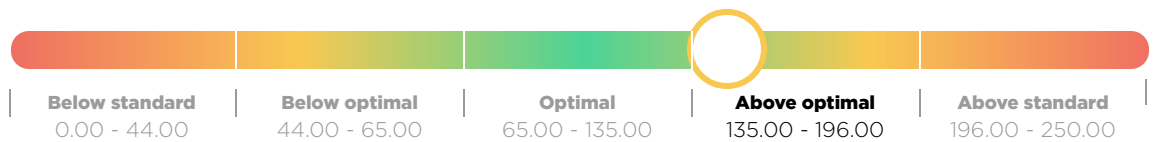


METABOLIC

Anion Gap
15.90 mEq/L



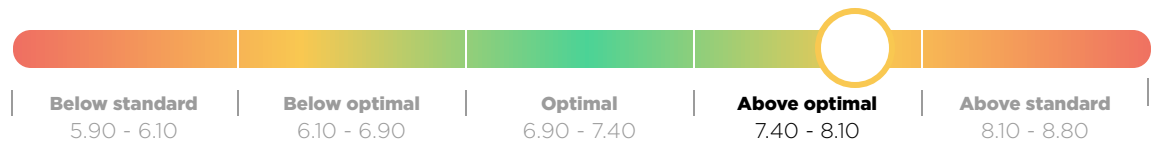
Creatine Kinase
146.00 u/l



PROTEINS

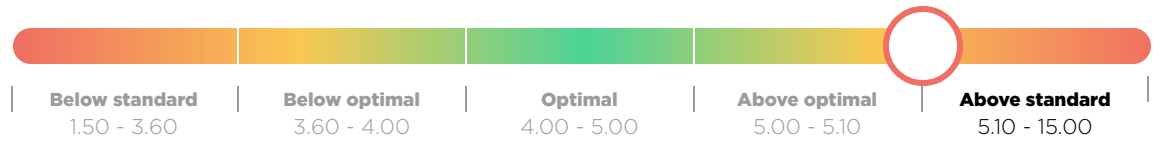
Protein - Total [🔗](#)

7.90 g/dL



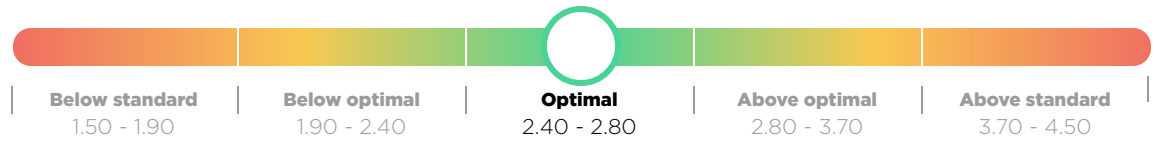
Albumin [🔗](#)

5.30 g/dL



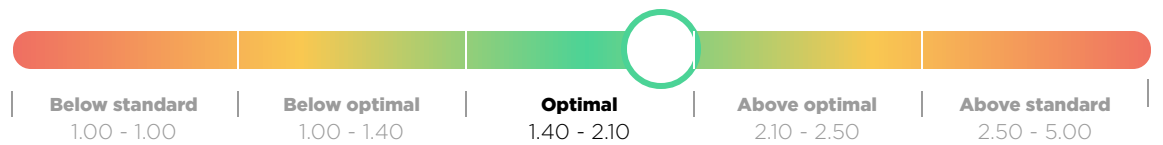
Globulin - Total

2.60 g/dL



Albumin:Globulin

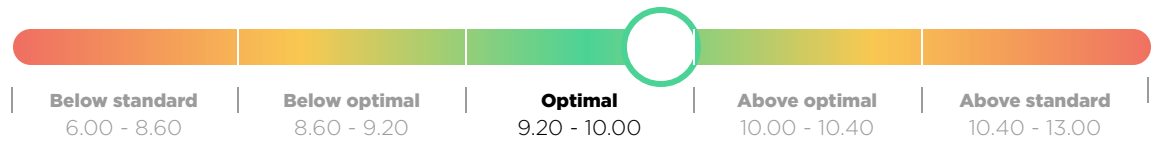
2.00 ratio



MINERALS

Calcium

9.90 mg/dL




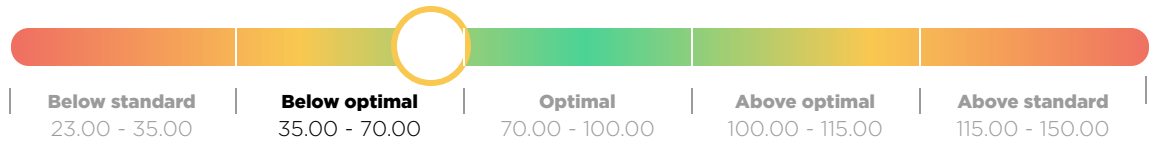
Calcium:Albumin

1.86 ratio

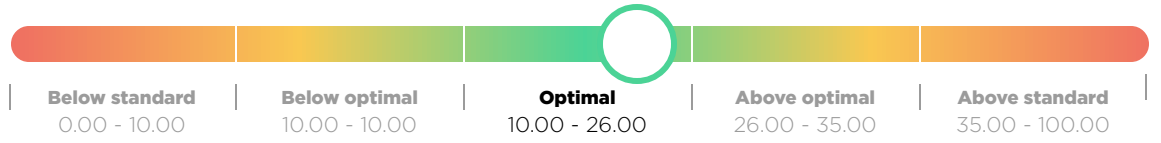


LIVER AND GB

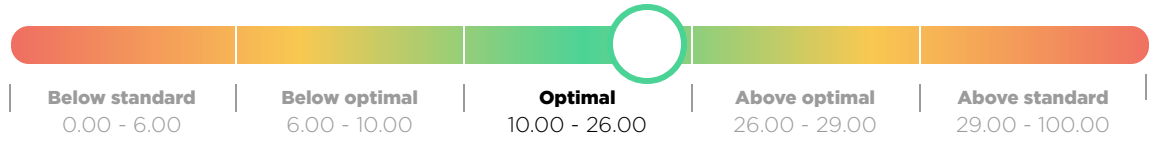
Alk Phos 
66.00 IU/L




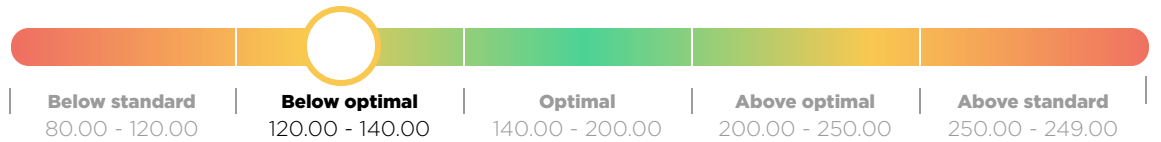
AST
22.00 IU/L




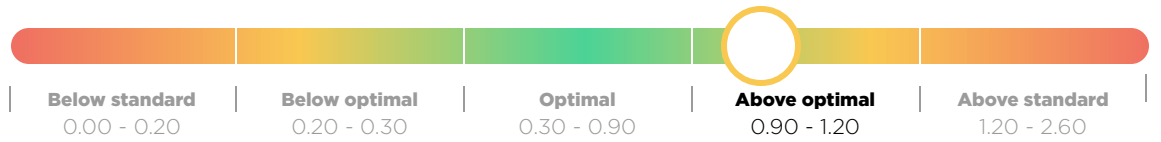
ALT
23.00 IU/L



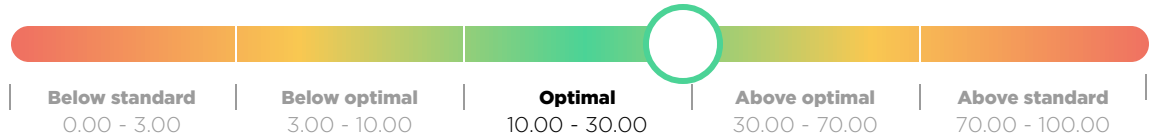
LDH 
129.00 IU/L




Bilirubin - Total 
1.00 mg/dL

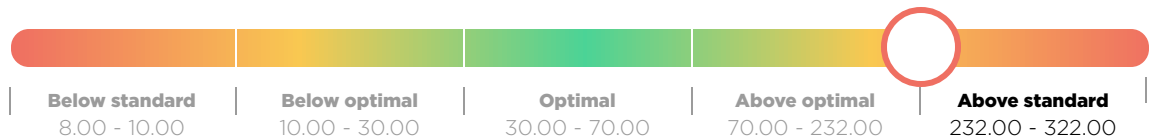


GGT
29.00 IU/L



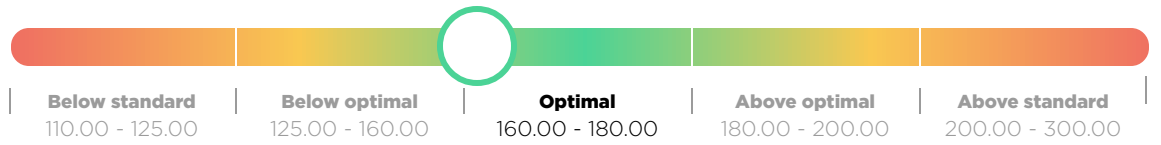
IRON MARKERS

Ferritin 
233.00 ng/mL

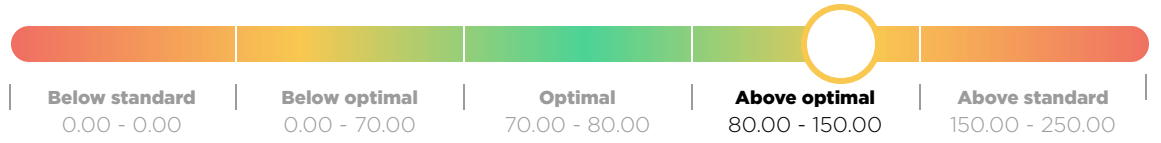


LIPIDS

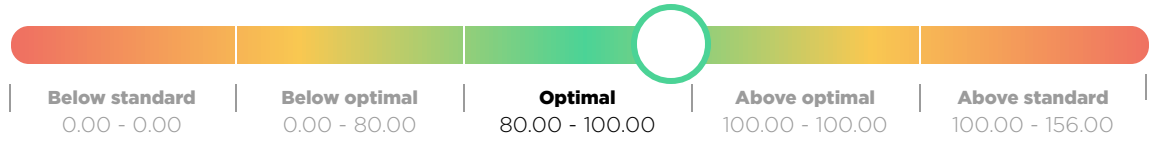
Cholesterol - Total
161.00 mg/dL



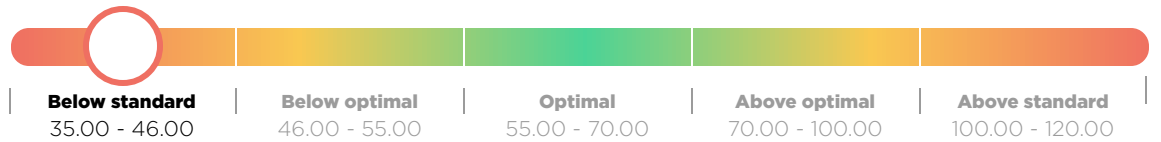
Triglycerides
127.00 mg/dL



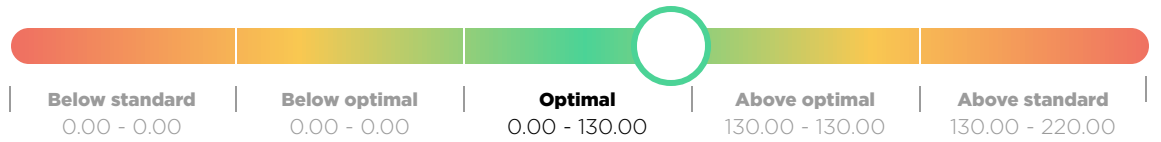
LDL Cholesterol
98.00 mg/dL



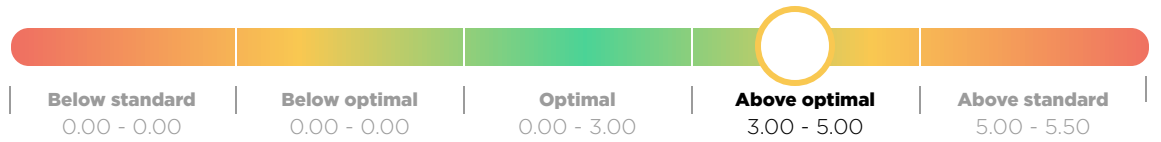
HDL Cholesterol
41.00 mg/dL



Non-HDL Cholesterol
120.00 mg/dl



Cholesterol:HDL
3.92 Ratio

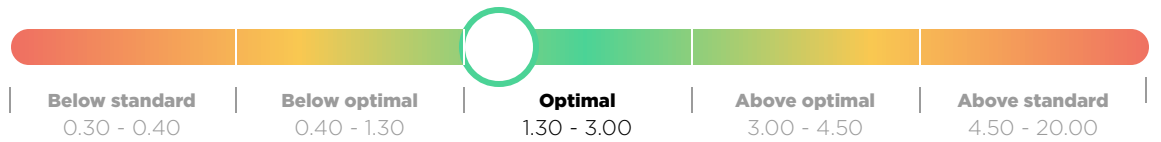


Triglyceride:HDL
3.09 ratio

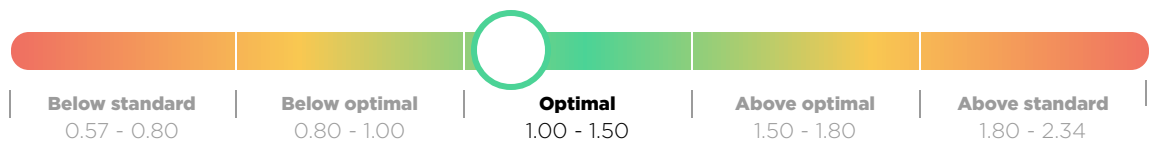


THYROID

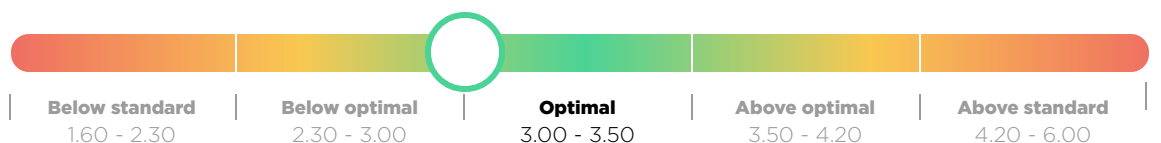
TSH
1.57 μ U/mL



T4 - Free
1.10 ng/dL

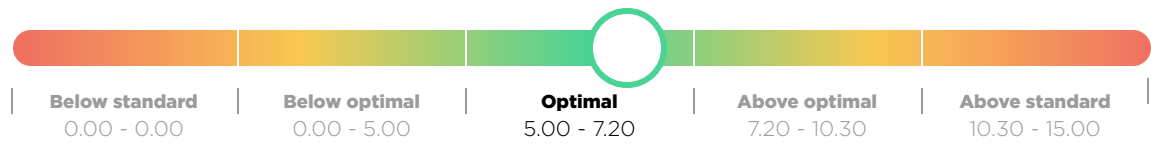


T3 - Free
3.00 pg/ml

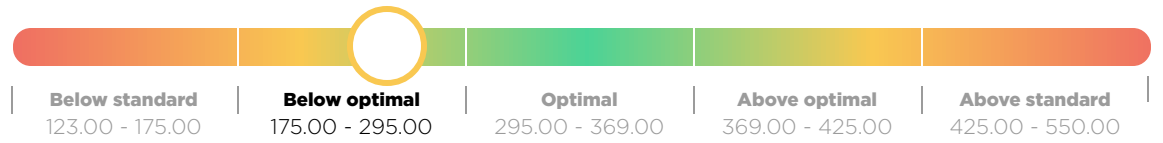


INFLAMMATION

Homocysteine
6.60 $\mu\text{mol/L}$

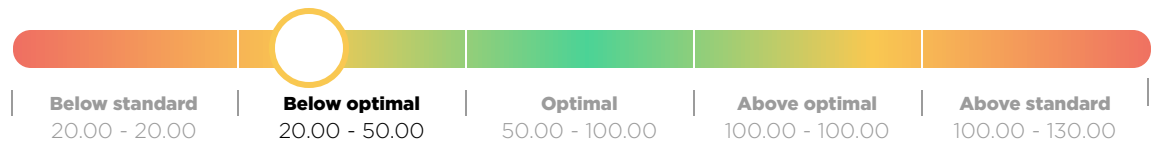


Fibrinogen
255.00 mg/dl



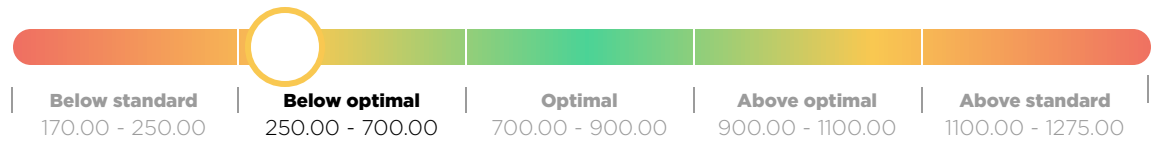
VITAMINS

Vitamin D (25-OH)
29.00 ng/ml

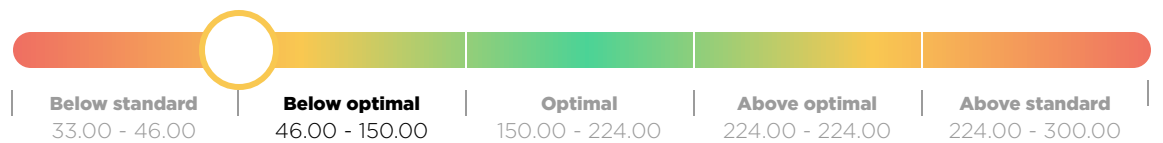


HORMONES

Testosterone Total - Male
351.00 ng/dl



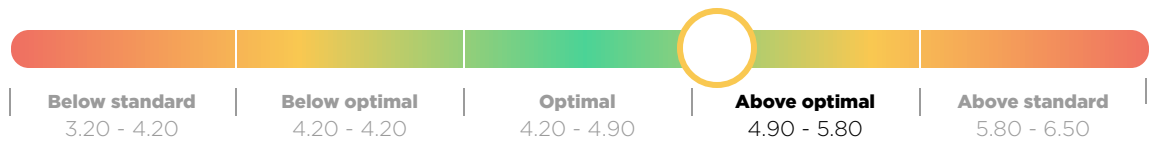
Testosterone Free - Male
46.00 pg/ml



CBC/HEMATOLOGY

RBC - Male ✔

4.99 m/cumm



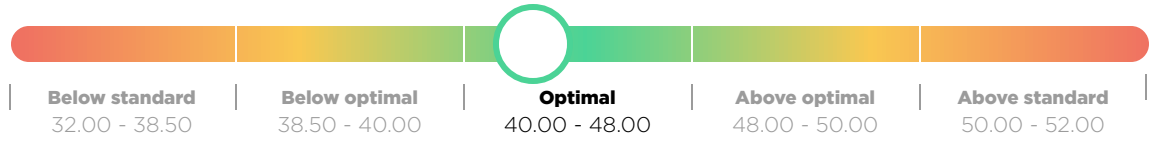
Hemoglobin - Male

14.60 g/dl



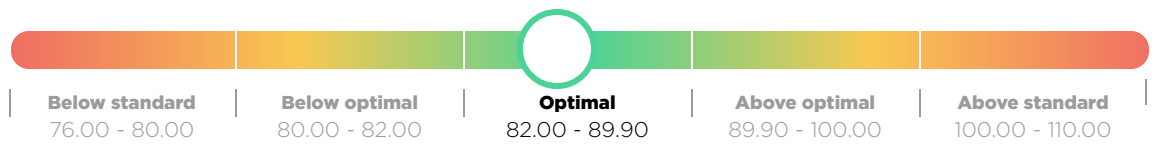
Hematocrit - Male

42.50 %



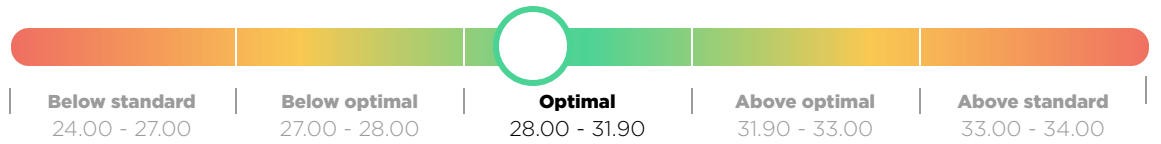
MCV

85.20 fL



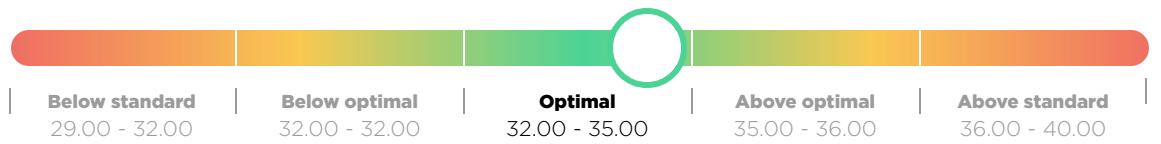
MCH

29.30 pg



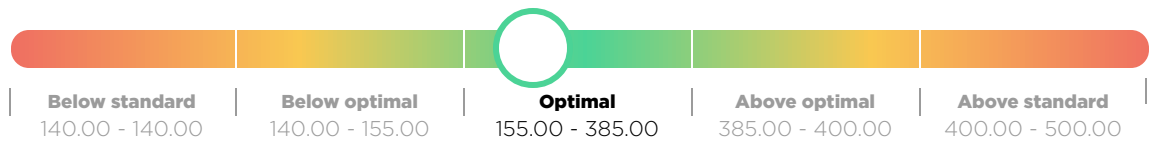
MCHC

34.40 g/dL



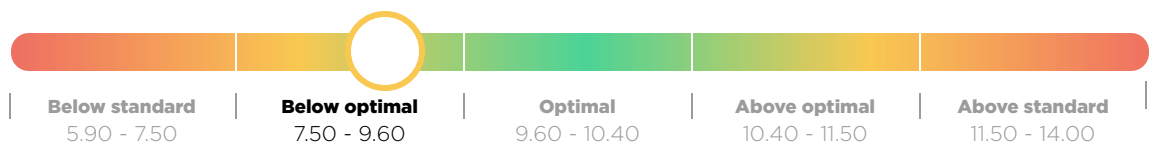
Platelets

230.00 k/cumm



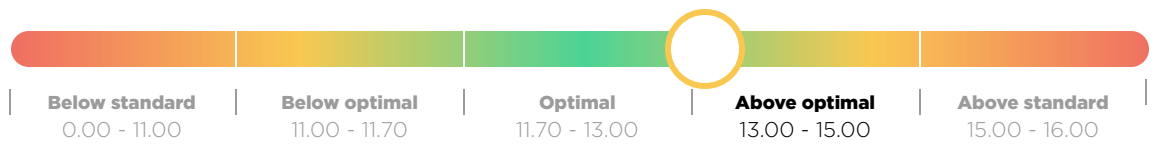
MPV ✔

8.90 fL




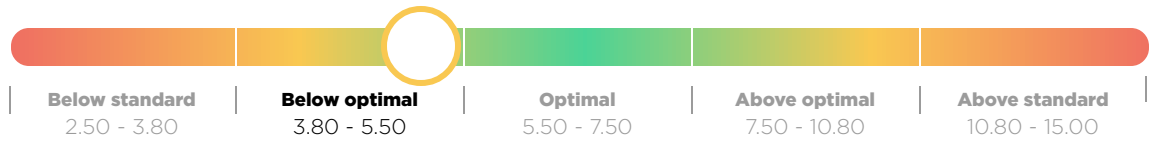
RDW ✔


13.10 %

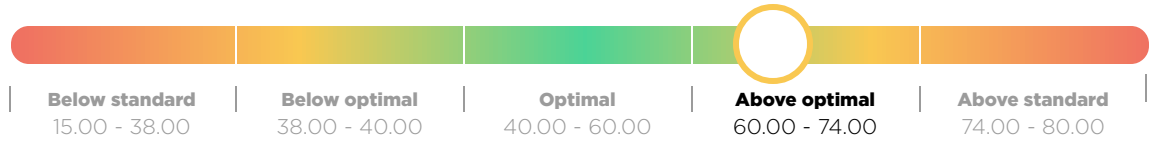


WHITE BLOOD CELLS

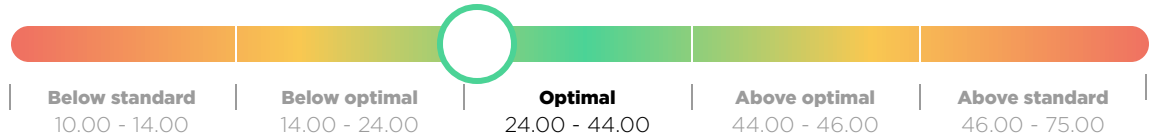
Total WBCs 
5.20 k/cumm



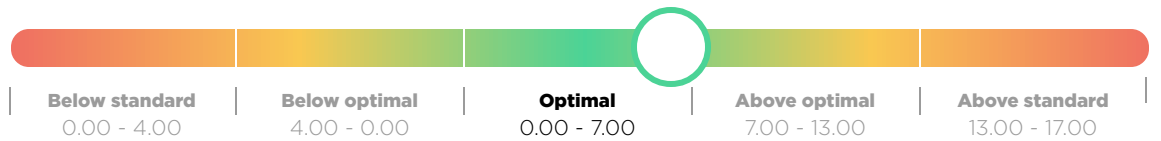
Neutrophils - % 
65.40 %



Lymphocytes - %
25.40 %



Monocytes - %
6.50 %



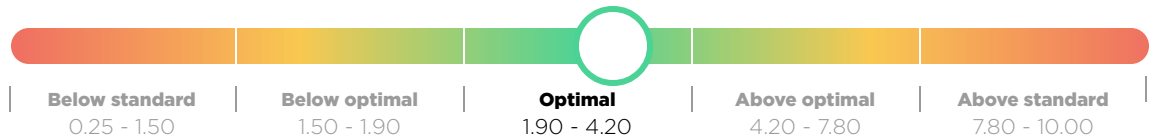
Eosinophils - %
2.10 %



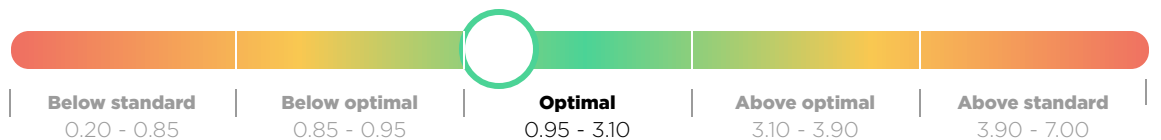
Basophils - %
0.60 %



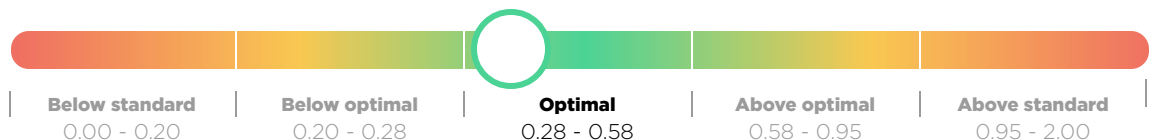
Neutrophils - Absolute
3.40 k/cumm



Lymphocytes - Absolute
1.32 k/cumm



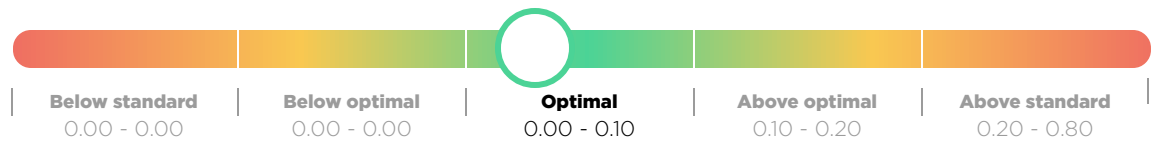
Monocytes - Absolute
0.34 k/cumm



Eosinophils - Absolute
0.11 k/cumm



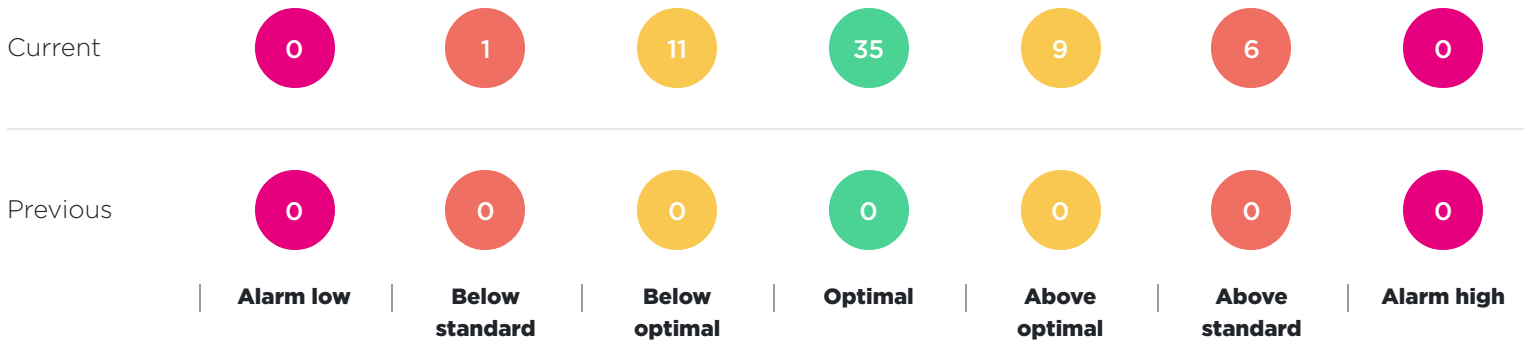
Basophils - Absolute
0.03 k/cumm



Blood Test Results Comparative

The Blood Test Results Comparative Report lists the results of the client's latest and previous 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.

Comparative total number of biomarkers by optimal range



Comparative Report

continued

Biomarker	Current Aug 16 2019	Optimal range	Standard range	Units
Glucose - Fasting 🔗	79.00	75.00 - 86.00	65.00 - 99.00	mg/dL
Hemoglobin A1C 🔗	4.50	4.60 - 5.50	0.00 - 5.70	%
BUN 🔗	11.00	10.00 - 16.00	7.00 - 25.00	mg/dL
Creatinine 🔗	0.71	0.80 - 1.10	0.40 - 1.50	mg/dL
BUN:Creatinine 🔗	15.49	10.00 - 16.00	6.00 - 22.00	Ratio
eGFR Non-Afr. American 🔗	121.00	90.00 - 120.00	60.00 - 120.00	mL/min/1.73m2
eGFR African American 🔗	140.00	90.00 - 120.00	60.00 - 120.00	mL/min/1.73m2
Sodium 🔗	140.00	135.00 - 142.00	135.00 - 146.00	mEq/L
Potassium 🔗	3.90	4.00 - 4.50	3.50 - 5.30	mEq/L
Sodium:Potassium 🔗	35.89	30.00 - 35.00	30.00 - 35.00	ratio
Chloride 🔗	102.00	100.00 - 106.00	98.00 - 110.00	mEq/L
CO2 🔗	26.00	25.00 - 30.00	19.00 - 30.00	mEq/L
Anion Gap 🔗	15.90	7.00 - 12.00	6.00 - 16.00	mEq/L
Protein - Total 🔗	7.90	6.90 - 7.40	6.10 - 8.10	g/dL
Albumin 🔗	5.30	4.00 - 5.00	3.60 - 5.10	g/dL
Globulin - Total 🔗	2.60	2.40 - 2.80	1.90 - 3.70	g/dL
Albumin:Globulin 🔗	2.00	1.40 - 2.10	1.00 - 2.50	ratio
Calcium 🔗	9.90	9.20 - 10.00	8.60 - 10.40	mg/dL
Calcium:Albumin 🔗	1.86	0.00 - 2.60	0.00 - 2.60	ratio
Alk Phos 🔗	66.00	70.00 - 100.00	35.00 - 115.00	IU/L
AST 🔗	22.00	10.00 - 26.00	10.00 - 35.00	IU/L
ALT 🔗	23.00	10.00 - 26.00	6.00 - 29.00	IU/L
LDH 🔗	129.00	140.00 - 200.00	120.00 - 250.00	IU/L
Bilirubin - Total 🔗	1.00	0.30 - 0.90	0.20 - 1.20	mg/dL
GGT 🔗	29.00	10.00 - 30.00	3.00 - 70.00	IU/L
Ferritin 🔗	233.00	30.00 - 70.00	10.00 - 232.00	ng/mL
Cholesterol - Total 🔗	161.00	160.00 - 180.00	125.00 - 200.00	mg/dL
Triglycerides 🔗	127.00	70.00 - 80.00	0.00 - 150.00	mg/dL
LDL Cholesterol 🔗	98.00	80.00 - 100.00	0.00 - 100.00	mg/dL
HDL Cholesterol 🔗	41.00	55.00 - 70.00	46.00 - 100.00	mg/dL
Non-HDL Cholesterol 🔗	120.00	0.00 - 130.00	0.00 - 130.00	mg/dl
Cholesterol:HDL 🔗	3.92	0.00 - 3.00	0.00 - 5.00	Ratio
Triglyceride:HDL 🔗	3.09	0.00 - 2.00	0.00 - 2.00	ratio
TSH 🔗	1.57	1.30 - 3.00	0.40 - 4.50	μU/mL
T4 - Free 🔗	1.10	1.00 - 1.50	0.80 - 1.80	ng/dL
T3 - Free 🔗	3.00	3.00 - 3.50	2.30 - 4.20	pg/ml
Homocysteine 🔗	6.60	5.00 - 7.20	0.00 - 10.30	μmol/L
Fibrinogen 🔗	255.00	295.00 - 369.00	175.00 - 425.00	mg/dl
Vitamin D (25-OH) 🔗	29.00	50.00 - 100.00	20.00 - 100.00	ng/ml
Testosterone Total - Male 🔗	351.00	700.00 - 900.00	250.00 - 1100.00	ng/dl
Testosterone Free - Male 🔗	46.00	150.00 - 224.00	46.00 - 224.00	pg/ml

Biomarker	Current Aug 16 2019	Optimal range	Standard range	Units
Total WBCs 🔗	5.20	5.50 - 7.50	3.80 - 10.80	k/cumm
RBC - Male 🔗	4.99	4.20 - 4.90	4.20 - 5.80	m/cumm
Hemoglobin - Male 🔗	14.60	14.00 - 15.00	13.20 - 17.10	g/dl
Hematocrit - Male 🔗	42.50	40.00 - 48.00	38.50 - 50.00	%
MCV 🔗	85.20	82.00 - 89.90	80.00 - 100.00	fL
MCH 🔗	29.30	28.00 - 31.90	27.00 - 33.00	pg
MCHC 🔗	34.40	32.00 - 35.00	32.00 - 36.00	g/dL
Platelets 🔗	230.00	155.00 - 385.00	140.00 - 400.00	k/cumm
MPV 🔗	8.90	9.60 - 10.40	7.50 - 11.50	fL
RDW 🔗	13.10	11.70 - 13.00	11.00 - 15.00	%
Neutrophils - % 🔗	65.40	40.00 - 60.00	38.00 - 74.00	%
Lymphocytes - % 🔗	25.40	24.00 - 44.00	14.00 - 46.00	%
Monocytes - % 🔗	6.50	0.00 - 7.00	4.00 - 13.00	%
Eosinophils - % 🔗	2.10	0.00 - 3.00	0.00 - 3.00	%
Basophils - % 🔗	0.60	0.00 - 1.00	0.00 - 1.00	%
Neutrophils - Absolute 🔗	3.40	1.90 - 4.20	1.50 - 7.80	k/cumm
Lymphocytes - Absolute 🔗	1.32	0.95 - 3.10	0.85 - 3.90	k/cumm
Monocytes - Absolute 🔗	0.34	0.28 - 0.58	0.20 - 0.95	k/cumm
Eosinophils - Absolute 🔗	0.11	0.00 - 0.30	0.00 - 0.50	k/cumm
Basophils - Absolute 🔗	0.03	0.00 - 0.10	0.00 - 0.20	k/cumm
Creatine Kinase 🔗	146.00	65.00 - 135.00	44.00 - 196.00	u/l

Blood Test Score Report

This report shows the biomarkers on the blood test that are farthest from optimal expressed as a %. The biomarkers that appear closest to the top and the bottom are those biomarkers that are farthest from optimal and should be carefully reviewed.

Biomarker	Lab result	Optimal range		% deviation	Optimal range	
		Low	High		Low	High
Triglycerides	127.00	70.00	80.00	520		
Ferritin	233.00	30.00	70.00	458		
Protein - Total	7.90	6.90	7.40	150		
Anion Gap	15.90	7.00	12.00	128		
eGFR African American	140.00	90.00	120.00	117		
Triglyceride:HDL	3.09	0.00	2.00	104		
Cholesterol:HDL	3.92	0.00	3.00	81		
Albumin	5.30	4.00	5.00	80		
Neutrophils - %	65.40	40.00	60.00	77		
Sodium:Potassium	35.89	30.00	35.00	68		
Bilirubin - Total	1.00	0.30	0.90	67		
Creatine Kinase	146.00	65.00	135.00	66		
RBC - Male	4.99	4.20	4.90	63		
RDW	13.10	11.70	13.00	58		
eGFR Non-Afr. American	121.00	90.00	120.00	53		
GGT	29.00	10.00	30.00	45		
Monocytes - %	6.50	0.00	7.00	43		
Non-HDL Cholesterol	120.00	0.00	130.00	42		
BUN:Creatinine	15.49	10.00	16.00	42		
LDL Cholesterol	98.00	80.00	100.00	40		
Calcium	9.90	9.20	10.00	38		
Albumin:Globulin	2.00	1.40	2.10	36		
ALT	23.00	10.00	26.00	31		
MCHC	34.40	32.00	35.00	30		
AST	22.00	10.00	26.00	25		
Homocysteine	6.60	5.00	7.20	23		
Calcium:Albumin	1.86	0.00	2.60	22		
Sodium	140.00	135.00	142.00	21		
Eosinophils - %	2.10	0.00	3.00	20		
Neutrophils - Absolute	3.40	1.90	4.20	15		
Basophils - %	0.60	0.00	1.00	10		
Hemoglobin - Male	14.60	14.00	15.00	10		
Globulin - Total	2.60	2.40	2.80	0		

Biomarker	Lab result	Optimal range		% deviation	Optimal range	
		Low	High		Low	High
MCV	85.20	82.00	89.90	-9		
Eosinophils - Absolute	0.11	0.00	0.30	-13		
Glucose - Fasting	79.00	75.00	86.00	-14		
Chloride	102.00	100.00	106.00	-17		
MCH	29.30	28.00	31.90	-17		
Platelets	230.00	155.00	385.00	-17		
Hematocrit - Male	42.50	40.00	48.00	-19		
Basophils - Absolute	0.03	0.00	0.10	-20		
Monocytes - Absolute	0.34	0.28	0.58	-30		
T4 - Free	1.10	1.00	1.50	-30		
CO2	26.00	25.00	30.00	-30		
Lymphocytes - Absolute	1.32	0.95	3.10	-33		
BUN	11.00	10.00	16.00	-33		
TSH	1.57	1.30	3.00	-34		
Lymphocytes - %	25.40	24.00	44.00	-43		
Cholesterol - Total	161.00	160.00	180.00	-45		
T3 - Free	3.00	3.00	3.50	-50		
Hemoglobin A1C	4.50	4.60	5.50	-61		
Alk Phos	66.00	70.00	100.00	-63		
Total WBCs	5.20	5.50	7.50	-65		
LDH	129.00	140.00	200.00	-68		
Potassium	3.90	4.00	4.50	-70		
Creatinine	0.71	0.80	1.10	-80		
Vitamin D (25-OH)	29.00	50.00	100.00	-92		
Fibrinogen	255.00	295.00	369.00	-104		
MPV	8.90	9.60	10.40	-138		
HDL Cholesterol	41.00	55.00	70.00	-143		
Testosterone Free - Male	46.00	150.00	224.00	-191		
Testosterone Total - Male	351.00	700.00	900.00	-224		

Blood Test History

The Blood Test History Report lists the results of your client’s Chemistry Screen and CBC tests side by side with the latest test listed on the right hand side. This report allows you to compare results over time and see where improvement has been made and allows you to track progress.

Key

- Optimal
- Above / Below optimal
- Above / Below standard
- Alarm high / Alarm low

Biomarker	Latest 1 Test Result Aug 16 2019
Glucose - Fasting 🔗	79.00
Hemoglobin A1C 🔗	4.50
BUN 🔗	11.00
Creatinine 🔗	0.71
BUN:Creatinine 🔗	15.49
eGFR Non-Afr. American 🔗	121.00
eGFR African American 🔗	140.00
Sodium 🔗	140.00
Potassium 🔗	3.90
Chloride 🔗	102.00
CO2 🔗	26.00
Sodium:Potassium 🔗	35.89
Anion Gap 🔗	15.90
Creatine Kinase 🔗	146.00
Protein - Total 🔗	7.90
Albumin 🔗	5.30
Globulin - Total 🔗	2.60
Albumin:Globulin 🔗	2.00
Calcium 🔗	9.90

Biomarker	Latest 1 Test Result Aug 16 2019
Calcium:Albumin 🔗	1.86
Alk Phos 🔗	66.00
AST 🔗	22.00
ALT 🔗	23.00
GGT 🔗	29.00
LDH 🔗	129.00
Bilirubin - Total 🔗	1.00
Ferritin 🔗	233.00
Cholesterol - Total 🔗	161.00
Triglycerides 🔗	127.00
LDL Cholesterol 🔗	98.00
HDL Cholesterol 🔗	41.00
Non-HDL Cholesterol 🔗	120.00
Cholesterol:HDL 🔗	3.92
Triglyceride:HDL 🔗	3.09
TSH 🔗	1.57
T4 - Free 🔗	1.10
T3 - Free 🔗	3.00
Homocysteine 🔗	6.60
Fibrinogen 🔗	255.00
Vitamin D (25-OH) 🔗	29.00
Testosterone Total - Male 🔗	351.00
Testosterone Free - Male 🔗	46.00
RBC - Male 🔗	4.99
Hemoglobin - Male 🔗	14.60
Hematocrit - Male 🔗	42.50
MCV 🔗	85.20

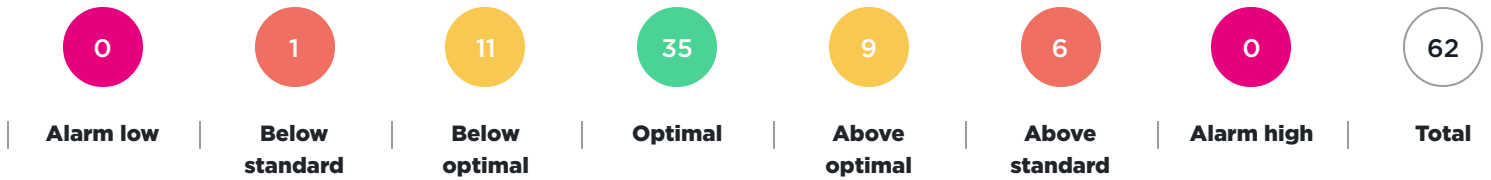
Biomarker	Latest 1 Test Result Aug 16 2019
MCH ↗	29.30
MCHC ↗	34.40
RDW ↗	13.10
Platelets ↗	230.00
MPV ↗	8.90
Total WBCs ↗	5.20
Neutrophils - % ↗	65.40
Lymphocytes - % ↗	25.40
Monocytes - % ↗	6.50
Eosinophils - % ↗	2.10
Basophils - % ↗	0.60
Neutrophils - Absolute ↗	3.40
Lymphocytes - Absolute ↗	1.32
Monocytes - Absolute ↗	0.34
Eosinophils - Absolute ↗	0.11
Basophils - Absolute ↗	0.03

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 see a more detailed view of the blood test result itself.

Total number of biomarkers by optimal range



Above Optimal

127.00
mg/dL

TRIGLYCERIDES [↗](#)

Serum triglycerides are composed of fatty acid molecules that enter the blood stream 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

233.00
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.

7.90
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.

15.90
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.

140.00
mL/min/1.73m²

EGFR AFRICAN AMERICAN [↗](#)

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.

3.09
ratio

TRIGLYCERIDE:HDL [↗](#)

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.



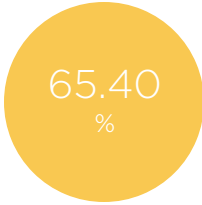
CHOLESTEROL:HDL [↗](#)

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%.



ALBUMIN [↗](#)

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. Increased albumin is a strong indicator of dehydration.



NEUTROPHILS - % [↗](#)

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 - % tells us the % distribution of neutrophils in the total white blood cell count. Levels will be increased in bacterial infections.



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.



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. An increase in total bilirubin is associated with dysfunction or blockage in the liver, gallbladder, or biliary tree, or red blood cell hemolysis.



CREATINE KINASE [↗](#)

Creatine Kinase (CPK) is a group of enzymes found in skeletal muscle, the brain, and heart muscle. Damage to one or more of these tissues will liberate CPK into the serum thus raising serum levels. Increased levels of CPK are associated with muscle damage or breakdown, damage to the heart muscle as in an acute MI, heavy exercise and brain damage or inflammation.

4.99
m/cumm

RBC - MALE [↗](#)

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.

13.10
%

RDW [↗](#)

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 B12 deficiency, folic acid, and iron anemia, it is increased most frequently with vitamin B12 deficiency anemia.

121.00
mL/min/1.73m²

EGFR NON-AFR. AMERICAN [↗](#)

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.

Below Optimal

351.00
ng/dl

TESTOSTERONE TOTAL - MALE



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.

46.00
pg/ml

TESTOSTERONE FREE - MALE



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.

41.00
mg/dL

HDL CHOLESTEROL



HDL functions to transport cholesterol from the peripheral tissues and vessel walls to the liver for processing and metabolism into bile salts. It is known as “good cholesterol” because it is thought that this process of bringing cholesterol from the peripheral tissue to the liver is protective against atherosclerosis. Decreased HDL is considered atherogenic (tending towards the formation of fatty plaques in the artery).

8.90
fL

MPV



MPV or Mean Platelet Volume is a calculated measurement of the relative size of platelets in the blood. Low MPV levels are seen with a decreased platelet count (thrombocytopenia) caused by an impaired production of platelets.

255.00
mg/dl

FIBRINOGEN



Fibrinogen is one of the principle blood clotting proteins. It is produced in the liver and liver disease and dysfunction can cause a decrease in the level of circulating fibrinogen.

29.00
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.

0.71
mg/dL

CREATININE

Creatinine is produced primarily from the contraction of muscle and is removed by the kidneys. Decreased levels are associated with muscle loss.

3.90
mEq/L

POTASSIUM

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.

129.00
IU/L

LDH

LDH represents a group of enzymes that are involved in carbohydrate metabolism. Decreased levels of LDH often correspond to hypoglycemia (especially reactive hypoglycemia), pancreatic function, and glucose metabolism.

5.20
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, an immune insufficiency and may be seen in people eating a raw food diet.



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.



HEMOGLOBIN A1C [↗](#)

The Hemoglobin A1C test measure 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 blood stream 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.



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

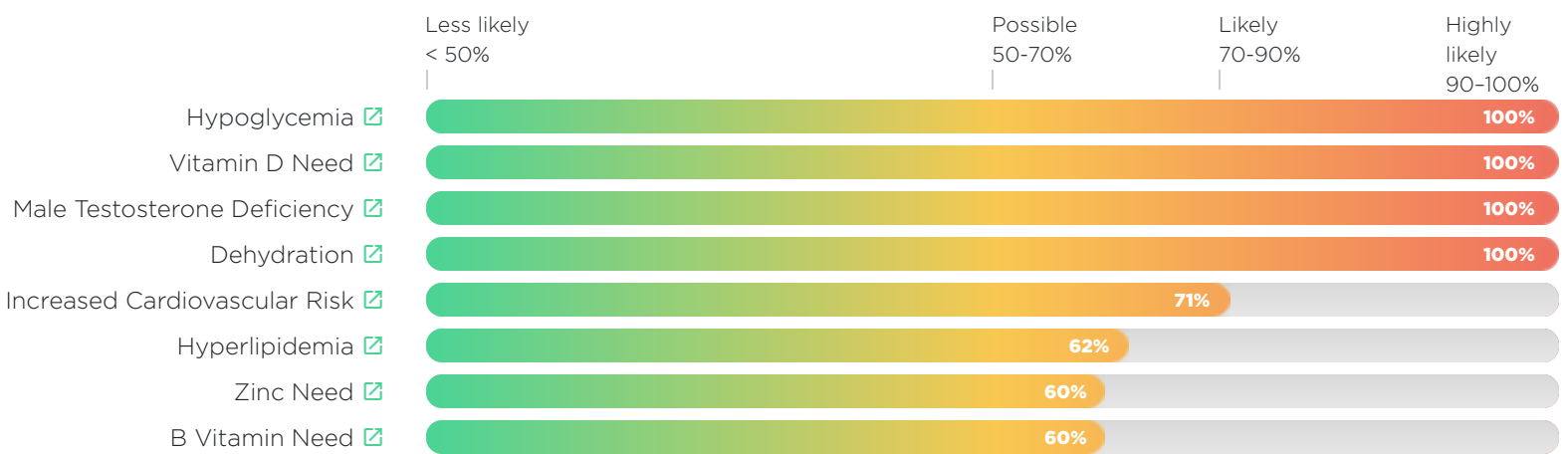
- 47 Health Improvement
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Health Improvement

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.

NEEDS ATTENTION

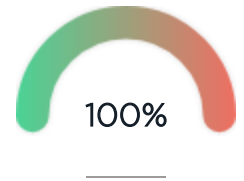


Health Improvement Details

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.

HYPOGLYCEMIA

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



Rationale

LDH ↓, Hemoglobin A1C ↓



Product Name

K13 Proglyco-SP

Dosage and Directions

Take 1 capsule 3 times a day, or as directed by your healthcare professional.

Details

Proglyco-SP supports sugar metabolism and a healthy glycemic response with an evidence-based array of vitamins, targeted minerals (including chromium and manganese), four key bovine glandulars (pituitary, adrenal, pancreas, liver), and complementary amino acids.*



Product Name

K08 Super EFA Complex

Dosage and Directions

Take 1 tablespoon once a day with a meal, or as directed by your healthcare professional. Shake well before use.

Details

Super EFA Complex offers targeted immune system support in a one-of-a-kind formula, containing a combined 615 mg of ALA and GLA per serving.*



Product Name

KR15 AdrenaStim

Dosage and Directions

Apply one pump topically in the morning and at noon, or as directed by your healthcare professional. Pump may require multiple presses upon first use. Seal pump with plastic plug after each use. Use within 120 days of opening.

Details

AdrenaStim (KR-15) is a topical cream formulated with a number of herbal ingredients, such as licorice root, fresh plant bud extracts, flower essences, giant sequoia extract, and Avena sativa, as well as amino acids that promote optimal adrenal gland function and health.*



Product Name

K02 Adaptocrine

Dosage and Directions

Take 1 capsule 2 times a day, or as directed by your healthcare professional.

Details

Adaptocrine supports the body when under stress or feeling energetically spent. This product is designed to support both physical and mental functionality through the use of carefully selected phytonutrients and plant enzymes.*

VITAMIN D NEED [↗](#)

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



Rationale

Vitamin D (25-OH) [↓](#)



Product Name

K35 Ultra-D Complex

Dosage and Directions

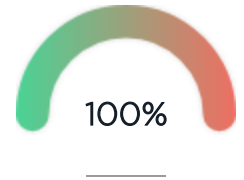
Take 1 teaspoon once a day with a meal, or as directed by your healthcare professional. Shake well before use.

Details

Ultra-D Complex (K35) offers high-potency vitamin D (cholecalciferol) with its key cofactors in a base of cod liver oil, which is a natural source of vitamin D, vitamin A, EPA, and DHA.

MALE TESTOSTERONE DEFICIENCY [↗](#)

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



Rationale

Testosterone Total - Male [↓](#), Testosterone Free - Male [↓](#)



Product Name

KR17 Testanex

Dosage and Directions

Apply one pump topically two times a day, or as directed by your healthcare professional. Pump may require multiple presses upon first use. Seal pump with plastic plug after each use. Use within 120 days of opening.

Details

Testanex cream includes chrysin, complemented by a variety of specially selected extracts, herbs, and vitamins, designed to support healthy prostate function.*



Product Name

K03 Opticrine

Dosage and Directions

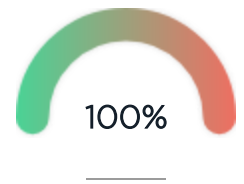
Take 1 capsule once a day, or as directed by your healthcare professional.

Details

Opticrine is intended to support sexual performance, the reproductive system, the related endocrine system, and vitality.*

DEHYDRATION [🔗](#)

The results of this blood test indicate that this patient may be dealing with dehydration, which is a very common problem. Insufficient water intake and/or excessive use of diuretics such as over the counter and prescription drugs, botanical medicines, caffeine etc. are the most common cause of dehydration.



Rationale

Albumin [↑](#), Protein - Total [↑](#), RBC - Male [↑](#)



Product Name

Water

Dosage and Directions

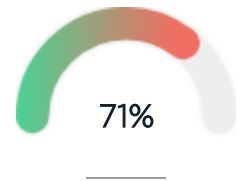
Drink at least eight 8-ounce glasses of pure or filtered water a day

Details

Water is the single most important nutrient for optimal biochemistry and functioning. Pure or filtered water is the best choice to ensure proper hydration without the risk of unnecessary contaminants.

INCREASED CARDIOVASCULAR RISK [🔗](#)

The results of this blood test indicate a higher than optimal cardiovascular risk for this patient and shows a need for cardiovascular support.



Rationale

Triglyceride:HDL [↑](#), Triglycerides [↑](#), HDL Cholesterol [↓](#), Ferritin [↑](#), Testosterone Total - Male [↓](#), Vitamin D (25-OH) [↓](#), Testosterone Free - Male [↓](#)

**Product Name**

K14 Methyl-SP

Dosage and Directions

Take 2 capsules 2-3 times a day, or as directed by your healthcare professional.

Details

Methyl-SP supports methylation and homocysteine metabolism in the biliary system with a combination of targeted nutrients and cofactors such as trimethylglycine and MSM .*

**Product Name**

K07 OmegaCo3

Dosage and Directions

Take 1 tablespoon once a day with a meal, or as directed by your healthcare professional. Shake well before use.

Details

OmegaCo3 is intended to support the brain and the immune system with a unique formula that includes 950 mg of omega-3 and omega-6 fatty acids (DHA 350 mg, EPA 500 mg, GLA 100 mg) per serving.*

**Product Name**

K27 Cholestar-RF

Dosage and Directions

Take 1 capsule 2 times a day, or as directed by your healthcare professional.

Details

Cholestar-RF can help maintain cholesterol levels already in the normal range.* This product's key ingredients include inositol hexanicotinate and garlic extract. It also offers a high amount of chromium (50 mcg/serving).

**Product Name**

K01 Glysen

Dosage and Directions

Take 2 capsules once a day with a meal, or as directed by your healthcare professional.

Details

Glysen is intended to support sugar metabolism and its peripheral utilization, as well as help buffer the glycemic response.* It also helps maintain blood sugar levels already within the normal range.*

**Product Name**

K25 Fibromin

Dosage and Directions

Take 1 capsule 2 times a day, or as directed by your healthcare professional.

Details

Fibromin helps support the colon, sugar metabolism, and lipid metabolism by providing a spectrum of insoluble fibers.*

**Product Name**

KR23 Super Oxicell

Dosage and Directions

Apply one pump topically in the morning, afternoon, and evening, or as directed by your healthcare professional. Pump may require multiple presses upon first use. Seal pump with plastic plug after each use. Use

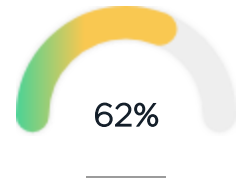
Details

Super OxiCell (KR-23) is a high potency glutathione and superoxide dismutase antioxidant cream that provides optimal cellular protection from harmful free radicals.*

within 120 days of opening.

HYPERLIPIDEMIA [📄](#)

The results of this blood test indicate a tendency towards hyperlipidemia, which has been shown to increase the risk of developing atherosclerotic coronary artery disease. There is a need for cardiovascular support, especially support to help lower excessive blood fats.



Rationale

Triglycerides [↑](#), Triglyceride:HDL [↑](#), HDL Cholesterol [↓](#)



Product Name

K07 OmegaCo3

Dosage and Directions

Take 1 tablespoon once a day with a meal, or as directed by your healthcare professional. Shake well before use.

Details

OmegaCo3 is intended to support the brain and the immune system with a unique formula that includes 950 mg of omega-3 and omega-6 fatty acids (DHA 350 mg, EPA 500 mg, GLA 100 mg) per serving.*

This product has already been recommended earlier in this report. Please do not increase the dosage.



Product Name

K27 Cholestar-RF

Dosage and Directions

Take 1 capsule 2 times a day, or as directed by your healthcare professional.

Details

Cholestar-RF can help maintain cholesterol levels already in the normal range.* This product's key ingredients include inositol hexanicotinate and garlic extract. It also offers a high amount of chromium (50 mcg/serving).

This product has already been recommended earlier in this report. Please do not increase the dosage.



Product Name

K25 Fibromin

Dosage and Directions

Take 1 capsule 2 times a day, or as directed by your healthcare professional.

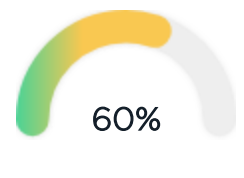
Details

Fibromin helps support the colon, sugar metabolism, and lipid metabolism by providing a spectrum of insoluble fibers.*

This product has already been recommended earlier in this report. Please do not increase the dosage.

ZINC NEED [📄](#)

The results of this blood test indicate that this patient's zinc levels might be lower than optimal and shows a need for zinc supplementation.



Rationale

Alk Phos [↓](#)



Product Name

Z03 Zinc-Zyme

Dosage and Directions

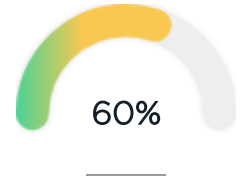
Take 1 capsule 2 times a day with meals, or as directed by your healthcare professional.

Details

Zinc-Zyme supports the immune system and proper enzymatic function by providing high-potency zinc.*

B VITAMIN NEED

The results of this blood test indicate that this patient's B vitamin levels might be lower than optimal and shows a need for B complex supplementation.



Rationale

Anion Gap , LDH



Product Name

Z24 Super B-Zyme

Dosage and Directions

Take 1-2 capsules 2 times a day with meals, or as directed by your healthcare professional.

Details








Super B-Zyme is a well-balanced vitamin B formula that offers a unique combination of enzymes, nutrients, herbs, and other cofactors in a proprietary blend.












Product Summary

The Product summary report takes all the information on this report and provides a summary of the nutritional supplements recommended to help bring the systems of the body back into balance. This plan focuses on the top areas of need as presented in this report.

The Product summary report has been prepared for your patient based upon current algorithms. Additional personalized recommendations for nutritional support may be applicable based on this laboratory evaluation, your patient's history and your clinical practice experience.

PROTOCOLS	PRIMARY PRODUCTS		DOSAGE
Hypoglycemia	K13 Proglyco-SP		Take 1 capsule 3 times a day, or as directed by your healthcare professional.
Vitamin D Need	K35 Ultra-D Complex		Take 1 teaspoon once a day with a meal, or as directed by your healthcare professional. Shake well before use.
Male Testosterone Deficiency	KR17 Testanex		Apply one pump topically two times a day, or as directed by your healthcare professional. Pump may require multiple presses upon first use. Seal pump with plastic plug after each use. Use within 120 days of opening.
Dehydration	Water		Drink at least eight 8-ounce glasses of pure or filtered water a day
Increased Cardiovascular Risk	K14 Methyl-SP		Take 2 capsules 2-3 times a day, or as directed by your healthcare professional.
Hyperlipidemia	K07 OmegaCo3		Take 1 tablespoon once a day with a meal, or as directed by your healthcare professional. Shake well before use. This product has already been recommended earlier in this report. Please do not increase the dosage.
Zinc Need	Z03 Zinc-Zyme		Take 1 capsule 2 times a day with meals, or as directed by your healthcare professional.

Other potential product recommendations

PROTOCOLS	SECONDARY PRODUCTS		DOSAGE
Hypoglycemia	K08 Super EFA Complex		Take 1 tablespoon once a day with a meal, or as directed by your healthcare professional. Shake well before use.
	KR15 AdrenaStim		Apply one pump topically in the morning and at noon, or as directed by your healthcare professional. Pump may require multiple presses upon first use. Seal pump with plastic plug after each use. Use within 120 days of opening.
	K02 Adaptocrine		Take 1 capsule 2 times a day, or as directed by your healthcare professional.
Male Testosterone Deficiency	K03 Opticrine		Take 1 capsule once a day, or as directed by your healthcare professional.
Increased Cardiovascular Risk	K07 OmegaCo3		Take 1 tablespoon once a day with a meal, or as directed by your healthcare professional. Shake well before use.
	K27 Cholestar-RF		Take 1 capsule 2 times a day, or as directed by your healthcare professional.
	K01 Glysen		Take 2 capsules once a day with a meal, or as directed by your healthcare professional.
	K25 Fibromin		Take 1 capsule 2 times a day, or as directed by your healthcare professional.
	KR23 Super Oxicell		Apply one pump topically in the morning, afternoon, and evening, or as directed by your healthcare professional. Pump may require multiple presses upon first use. Seal pump with plastic plug after each use. Use within 120 days of opening.
Hyperlipidemia	K27 Cholestar-RF		Take 1 capsule 2 times a day, or as directed by your healthcare professional. This product has already been recommended earlier in this report. Please do not increase the dosage.
	K25 Fibromin		Take 1 capsule 2 times a day, or as directed by your healthcare professional. This product has already been recommended earlier in this report. Please do not increase the dosage.



Further Testing

Advanced practitioner only report

Based on the results of the analysis of this blood test, the following areas may require further investigation. The suggestions for further testing are merely examples and do not attempt to provide you with an exhaustive list of further evaluation methods.

There are no results available for this report.

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Highly detailed and interpretive descriptions of the results presented in each of the assessment and analysis section reports.

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What to Look For When Values Are Out of Range

Advanced professional only report

This report shows what you need to look for when the blood tests results are out of the optimal reference range. The report lists all the biomarkers that are above or below the optimal reference range and lists all the possible associated health concerns with a short description.

HEMOGLOBIN A1C ↓

(4.50 %)

Hypoglycemia A low hemoglobin A1C (<4.5% or 0.045) may be caused by an inability to maintain adequate long-term levels of glucose. A decreased fasting blood glucose (<75 or 4.16 mmol/L) along with a decreased LDH (<140) is a common finding in reactive hypoglycemia. LDH is an important enzyme for pyruvate metabolism in glycolysis and is associated with pancreatic function and glucose metabolism.

CREATININE ↓

(0.71 mg/dL)

Muscle Atrophy/Nerve-Muscle Degeneration

Due to its connection to muscle metabolism serum creatinine will be decreased in cases of muscle atrophy or nerve-muscle degeneration.

EGFR NON-AFR. AMERICAN ↑

(121.00 mL/min/1.73m²)

An elevated eGFR is not clinically significant

EGFR AFRICAN AMERICAN ↑

(140.00 mL/min/1.73m²)

An elevated eGFR is not clinically significant

POTASSIUM ↓

(3.90 mEq/L)

Adrenal Stress

Adrenal stress causes an increase in the secretions of both the glucocorticoid and mineralcorticoid hormones. An increase in aldosterone, the major mineralcorticoid, from adrenal hyperfunction has an impact on potassium metabolism. Increased aldosterone levels will cause an increase in the amount of renal potassium excretion, which will cause a decrease in serum potassium. If the potassium levels are decreased (<4.0) along with a normal or increased sodium (>142), and/or chloride (>106), adrenal stress is possible. The sodium:potassium ratio will also be increased. Other values that may be out of balance include increased aldosterone and cortisol levels. If the cortisol level is significantly elevated, rule out adrenal adenoma. Urinary chloride will be decreased. Adrenal stress can be confirmed with salivary cortisol studies.

Drug Diuretics

Many of the diuretic drugs are potassium sparing. Even so, serum potassium can be decreased with the use of these drugs. In these cases the BUN (>16 or 5.71 mmol/L) and creatinine (>1.1 or 97.2mmol/dL) will frequently be increased, indicating renal insufficiency, and sodium will be decreased. On the other hand, it is important to not presume that a patient needs potassium because they are on a drug diuretic. Prolonged diuretic use may also deplete thiamine.

Benign Essential Hypertension

Benign Essential Hypertension is common with decreased potassium, even when cortisol, renin and other indicators may be normal. Generally, increased potassium suggests a congestive heart problem, and decreased potassium suggests a fatigued heart muscle. HTN has many potential causes and should be investigated with other methodologies beyond blood chemistries.

SODIUM:POTASSIUM ↑

(35.89 ratio)

Acute Stress An elevated sodium:potassium ratio is an indication of acute stress. Acute stress causes an increase in adrenal activity and an increase in aldosterone output. Aldosterone causes sodium to be retained in the body and an increase in serum sodium. This also causes the potassium to be excreted thus lowering the serum potassium levels. The net effect is an increased sodium:potassium ratio.

An inflammation indicator An elevated sodium:potassium ratio is an indication of a higher aldosterone output. Aldosterone is often considered a pro-inflammatory hormone and cortisol is an anti-inflammatory hormone so an increase in aldosterone, as seen in a high sodium:potassium ratio is seen as an inflammatory indicator associated with inflammation and pain.

ANION GAP ↑

(15.90 mEq/L)

Thiamine (vitamin B1) need An increased anion gap (>12) is associated with thiamine deficiency. If the anion gap is increased (>12) along with a decreased CO₂ (<25), thiamine deficiency is possible. Hemoglobin and hematocrit levels may be normal or decreased (<37 or 0.37 in women and 40 or 0.4 in men). Due to thiamine's role in glycolysis, LDH levels may be decreased and glucose levels may be normal to increased (> 86 mg/dL or 4.77 mmol/L).

Metabolic Acidosis Consider metabolic acidosis if the anion gap is increased (>12) along with a decreased CO₂ (<25) and an increased chloride (>106).

PROTEIN - TOTAL ↑

(7.90 g/dL)

Dehydration

If total protein is increased (>7.4 or 74 g/L) suspect dehydration. Dehydration is a very common problem and should be factored into your blood chemistry and CBC analysis. Suspect a short-term (acute) dehydration if there is an increased HGB (>14.5 or 145 in women or 15 or 150 in men) and/or HCT (>44 or 0.44 in women and >48 or 0.48 in men) along with an increased RBC count (>4.5 in women and >4.9 in men). A relative increase in sodium (>142) and potassium (>4.5) can be noted as well. Suspect a long-term (chronic) dehydration if any of the above findings are accompanied by an increased albumin (>5.0 or 50 g/L), increased BUN (>16 or 5.71 mmol/L), and/or serum protein (>7.4 or 74 g/L).

ALBUMIN ↑

(5.30 g/dL)

Dehydration If albumin is increased (>5.0 or 50 g/L) suspect dehydration. Dehydration is a very common problem and should be factored into your blood chemistry and CBC analysis. Suspect a short-term (acute) dehydration if there is an increased HGB (>14.5 or 145 in women or 15 or 150 in men) and/or HCT (>44 or 0.44 in women and >48 or 0.48 in men) along with an increased RBC count (>4.5 in women and >4.9 in men). A relative increase in sodium (>142) and potassium (>4.5) can be noted as well. Suspect a long-term (chronic) dehydration if any of the above findings are accompanied by an increased albumin (>5.0 or 50 g/L) , increased BUN (>16 or 5.71 mmol/L)and/or serum protein (>7.4 or 74 g/L).

ALK PHOS ↓

(66.00 IU/L)

Zinc deficiency Alkaline phosphatase is a zinc dependent enzyme. Decreased levels (<70) have been associated with zinc deficiency along with decreased WBC or RBC zinc levels and a low normal or decreased total WBC. Follow up a decreased alkaline phosphatase with a zinc taste test.

LDH ↓

(129.00 IU/L)

Reactive Hypoglycemia A common finding in reactive hypoglycemia is a decreased fasting blood glucose along with a decreased LDH (<140). Hemoglobin A1C levels may also be reduced (<4.5% or 0.045). LDH is an important enzyme for pyruvate metabolism in glycolysis and is associated with pancreatic function and glucose metabolism.

BILIRUBIN - TOTAL ↑

(1.00 mg/dL)

Gallbladder Dysfunction: insufficiency or stasis Consider gallbladder dysfunction due to either biliary stasis or biliary insufficiency when total bilirubin levels are elevated (>1.2 or >20.5 mmol/dL) along with increased alkaline phosphatase (>100). GGT, AST, and ALT may be normal or increased (>26). Cholesterol levels may be also increased (>180 or 4.65 mmol/L) but in many cases of gallbladder dysfunction the cholesterol is decreased (<160 or 4 mmol/L). Many cases of biliary stasis will show normal lab values. In these situations suspect biliary stasis or insufficiency if there are strong subjective indicators.

Thymus dysfunction Consider an abnormality in the thymus with an elevated bilirubin (>1.2 or >20.5 mmol/dL) and an increased HGB (>14.5 or 145 g/L in women or 15 or 150 g/L in men) , HCT (>44 or 0.44 in women and >48 or 0.48 in men), and RBCs (>4.5 in women and >4.9 in men) .

Biliary tract obstruction/biliary calculi Bile tract obstruction/biliary calculi should be ruled out when the total bilirubin is increased (>1.2 or 20.5 mmol/dL) along with an increase in both the direct (>0.2 or 3.4 mmol/dL) and indirect bilirubin (>1.0 or 17.1 mmol/dL). You will likely see an increased GGT (>30), a normal to increased ALT (>30), an elevated alkaline phosphatase (>100), and/or LDH (>200).

Liver dysfunction An increased total bilirubin (>1.2 or 20.5 mmol/dL) is associated with liver dysfunction. Dysfunction in the liver may also cause an increase in albumin (>4.0 or 40g/L) and an increase of ALT (>26) from hepatocytes.

RBC hemolysis Increased hemolysis of red blood cells will lead to an increased formation of indirect or unconjugated bilirubin (>1.0 or 17.1 mmol/dL). The level of total bilirubin will rise (>1.2 or 20.5 mmol/dL) when the level of indirect or unconjugated bilirubin exceeds the liver's ability to clear it from the blood. The direct or conjugated fraction remains normal or slightly elevated.

Gilbert's syndrome Gilbert's syndrome is a genetic defect in the ability to clear unconjugated or indirect bilirubin due to a decreased function in one of the phase II liver detoxification pathway enzymes. Males are affected more than females. Clinically, the disorder has elevated total bilirubin levels with 90% or more of the total bilirubin coming from indirect/unconjugated bilirubin. GGT, AST, and ALT show no signs of abnormality. Diagnosis is difficult. Follow the patient for 12-18 months. Persistently elevated total and unconjugated bilirubin level in the absence of other abnormal liver function tests are diagnostic for Gilbert's syndrome.

FERRITIN ↑

(233.00 ng/mL)

Hemochromatosis/ hemosiderosis/iron overload

Hemochromatosis is a disease produced by an excess absorption of iron, which leads to deposition of excess iron in the tissues, especially the liver. Laboratory changes include an increased serum iron (>130 or 23.27 mmol/dL), a decreased TIBC (<250 or 44.8 mmol/dL), an increased % transferrin saturation (usually > 60%), and an increased ferritin level (>200 ng/ml and often >1000). SGOT/AST may be elevated (>40).

Excess consumption of iron

Excess consumption of iron can come from a number of different sources: Elevated levels of iron in the drinking water, Iron cookware, especially when used to cook acidic foods e.g. tomatoes, Consumption of iron containing supplements. All of the above are often the reason for an increased serum iron (>130 or 23.27 mmol/dL) and an increased ferritin (> 200 ng/ml)

Cardiovascular Risk

Low ferritin is the best measure of iron deficiency but most people do not know that elevated ferritin is an important maker of cardiovascular health. High levels are found in inflammation, ischemic heart disease, iron overload (hemosiderosis), and hemochromatosis, the genetic disease that causes iron to be deposited into the tissue. When the transferrin saturation rate, transferrin iron binding capacity, and serum iron are all normal, then a high serum ferritin indicates inflammation, not hemochromatosis.

Inflammation/ liver dysfunction/ oxidative stress

Serum ferritin is one of a group of proteins that can become increased in response to inflammation, infection, or trauma. Elevations can last for weeks. An elevated ferritin (>200) along with normal serum iron is suggestive of inflammation, liver dysfunction, or oxidative stress.

TRIGLYCERIDES ↑

(127.00 mg/dL)

Metabolic Syndrome /hyperinsulinemia/early stage diabetes If triglycerides are increased above the total cholesterol level with increased LDL cholesterol (>100 or 2.59 mmol/L), a decreased HDL (< 55 or < 1.42 mmol/L), and increased fasting blood glucose (> 86 mg/dL or 4.77 mmol/L), then metabolic syndrome and hyperinsulinemia is probable. Metabolic Syndrome can lead to adrenal dysregulation, so adrenal hyperfunctioning should be ruled out. Elevated triglycerides are seen in patients with diabetes. The triglycerides are often higher than the total cholesterol level. Lipid metabolism problems are a hallmark of the early stages of diabetes.

Fatty liver and Liver congestion Increased triglycerides are associated with liver congestion and the early development of fatty liver (steatosis). If total cholesterol (>180 or 4.66 mmol/L), LDL (>100 or 2.59 mmol/L) and triglyceride levels (>80 or >0.90 mmol/L) are increased, and HDL levels are decreased (< 55 or < 1.42 mmol/L), then the early development of fatty liver is possible. Liver congestion, due to the fatty liver, should be considered if total cholesterol is above 180, triglycerides are increased (>80 or >0.90 mmol/L), and the SGPT/ALT is below 10.

Early stage of insulin resistance Elevated triglycerides often accompany the elevated glucose levels that are seen in hyperinsulinism and insulin resistance.

Increased risk of cardiovascular disease, stroke and atherosclerosis An increased triglyceride level is associated with the development of atherosclerosis and an increase in cardiovascular risk and stroke. Atherosclerosis is probable with an increased triglyceride level (>80 or 0.90 mmol/L) in relation to total cholesterol (>180 or 4.66 mmol/L) with an increased uric acid level (>5.9 or > 351 mmol/dL), a decreased HDL (< 45 or < 1.16 mmol/L) and an increased LDL (>100 or 2.59 mmol/L). Platelet levels may also be increased (>385). Homocysteine levels are frequently increased > 7.2 with atherosclerosis. Hs-CRP are frequently >0.55 in men and >1.5 in women, and fibrinogen levels are frequently increased above 300. Diabetes and thyroid hypofunction should also be considered with this pattern.

Poor metabolism and utilization of fats This is often the case in patients that are eating an optimal diet and have elevated triglyceride and cholesterol levels.

Hypothyroidism Primary hypothyroidism is possible if the triglycerides and cholesterol levels are increased along with an increased TSH >2.0. Consider Secondary Hypothyroidism if the TSH is decreased (<1.3).

Hyperlipoproteinemia Lipoprotein disorders usually present with elevated total cholesterol and triglyceride levels. There are 6 distinctive sub-types of these disorders, which are mostly genetic in nature. The lipid electrophoresis is one of the best methods for determining the various metabolic problems associated with hyperlipoproteinemia.

Alcoholism Alcohol is extremely calorie dense. Regular alcohol consumption and alcoholism can lead to significantly elevated levels of triglycerides in the blood. This is often accompanied by a greatly increased GGTP.

HDL CHOLESTEROL ↓

(41.00 mg/dL)

Hyperlipidemia and atherosclerosis

If HDL is less than 25% of the total cholesterol, then there is a strong clinical indication that hyperlipidemia is present. If the serum triglycerides (>80 or >0.90 mmol/L) and LDL (>100 or 2.59 mmol/L) are also increased, hyperlipidemia is likely present and atherosclerosis should be ruled-out.

Diets high in refined carbohydrates

The Standard American Diet (SAD), which is very high in refined carbohydrates, can contribute to decreased HDL levels (< 55 or < 1.42 mmol/L)

Metabolic Syndrome /hyperinsulinemia

If HDL levels are decreased (< 55 or < 1.42 mmol/L), triglycerides are increased above the total cholesterol level with increased LDL cholesterol (>100 or 2.59 mmol/L) and increased fasting blood glucose (> 86 mg/dL or 4.77 mmol/L), then metabolic syndrome and hyperinsulinemia are probable. Metabolic Syndrome can lead to adrenal dysregulation, so adrenal hyperfunctioning should be ruled out.

Oxidative stress

Unoxidized cholesterol, including HDL cholesterol, acts as an antioxidant and a free radical scavenger in the body, so decreased levels put the body at risk for developing oxidative stress, especially lipid peroxidation, and increases the chance of free radical induced diseases.

Heavy metal/Chemical overload

Patients with historically low HDL and total cholesterol levels may be more prone to heavy metal and chemical toxins due to poor cell membrane integrity. This is irrespective of level of exposure, but related more to susceptibility of the individual patient. This may also leave patients at an increased risk for developing neoplasm.

Fatty liver (early development) and Liver congestion

If HDL levels are decreased (< 55 or < 1.42 mmol/L), and LDL (>100 or 2.59 mmol/L), triglyceride (>80 or >0.90 mmol/L) and total cholesterol levels (>180 or 4.66 mmol/L) are increased, then the early development of fatty liver is possible. Liver congestion, due to the fatty liver, should be considered if total cholesterol is above 220 or 5.69 mmol/L, triglycerides are increased (>80 or >0.90 mmol/L), and the SGPT/ALT is below 10. Fatty liver is caused by obesity, excessive alcohol consumption, prescription drugs (e.g. steroids), iron overload, solvent exposure, and rapid weight loss. Fatty changes to the liver tissue can impair the liver's detoxification ability. The degree of fatty liver changes is directly related to the amount of obesity. Fatty liver and liver congestion increases the risk of insulin resistance, hypertension, Metabolic Syndrome, and type II diabetes mellitus.

Hyperthyroidism

The increased metabolic activity found in hyperthyroidism can lead to decreased HDL levels. The body preferentially uses fatty acids, which are transported via lipoproteins, for energy in this heightened metabolic state.

Lack of exercise/ sedentary lifestyle

A sedentary lifestyle has been shown to decrease HDL levels. Increasing cardiovascular and resistance exercise is a very good way to elevate HDL levels.

CHOLESTEROL:HDL ↑

(3.92 Ratio)

A high cholesterol/HDL ratio is associated with an increased risk of cardiovascular disease.

TRIGLYCERIDE:HDL ↑

(3.09 ratio)

Increased Risk of Cardiovascular Disease An increased Triglyceride:HDL ratio is significantly associated with an increased risk for developing cardiovascular disease and is perhaps one of the best predictors of cardiac risk.

Increased Risk of Insulin Resistance and Type II Diabetes An increased Triglyceride:HDL ratio is significantly associated with an increased risk for developing insulin resistance and Type II Diabetes.

FIBRINOGEN ↓

(255.00 mg/dl)

Fibrinogen levels may decreased with liver disease or liver dysfunction

VITAMIN D (25-OH) ↓

(29.00 ng/ml)

Vitamin D deficiency

A decreased Vitamin D is suggestive of a deficiency in vitamin D. Treatment should be initiated to raise the levels into the optimal range.

Vitamin D deficiency is associated with a number of diseases and disorders not limited to:

- Diabetes Mellitus
- Cancer
- Hypertension
- Cardiovascular disease
- Autoimmune/inflammatory disorders
- Vitamin D insufficiency is prevalent in patients with chronic musculoskeletal pain.

TESTOSTERONE TOTAL - MALE ↓

(351.00 ng/dl)

Low Total Testosterone levels in men are associated with the following:

- Metabolic Syndrome
- Diabetes
- Alzheimer's disease
- Increased risk of stroke
- Increased cardiovascular disease risk
- Diminished libido
- Erectile dysfunction
- Loss of muscle tone
- Increased abdominal fat
- Low bone density
- Depression

TESTOSTERONE FREE - MALE ↓

(46.00 pg/ml)

Low Free Testosterone levels in men are associated with the following:

- Metabolic Syndrome
- Diabetes
- Alzheimer's disease
- Increased risk of stroke
- Increased cardiovascular disease risk
- Diminished libido
- Erectile dysfunction
- Loss of muscle tone
- Increased abdominal fat
- Low bone density
- Depression

TOTAL WBCS ↓

(5.20 k/cumm)

Chronic viral infection In a chronic viral infection the total WBC count will be decreased (<5.5), as the body is using up its WBCs. Decreased total WBC (<5.5), increased lymphocyte count (>44), decreased neutrophils (<40), decreased LDH isoenzymes due to a decrease in the total WBC and an increased monocytes (>7) during the recovery phase.

Chronic bacterial infection The total WBC count in a chronic bacterial infection will often be opposite of that seen with active infection:

Decreased total WBC (<5.5), increased neutrophils (>60), decreased lymphocyte count (<24), and decreased LDH isoenzymes due to a decrease in the total WBC. Expect to see an increased monocyte count (>7) during the recovery phase.

Pancreatic insufficiency The body responds to pancreatic insufficiency by using phagocytic white cells to do the job of breaking down food and clearing food residue from the system. This is known as leukocytic auto digestion and can cause a decreased white count (<5.5).

Systemic Lupus Erythematosus (SLE) SLE is a disease characterized by inflammation in several organ systems and the production of auto-antibodies that cause cellular injury. It is a disease of extreme variability in clinical and laboratory presentation. Nearly half of all people suffering from SLE have leukopenia, and anemia is usually present in the active disease. SLE is possible with decreased WBC count (<5.5) and C-complement, and an increased ANA, Alpha 1 globulin, C reactive protein, and gamma globulin.

Decreased production If the following chemistries are out of range we can suspect a functional decreased production from the bone marrow: Decreased total WBC (<5.5), RBCs (<3.9 in women or 4.2 in men), cholesterol (<150 or 3.9 mmol/L), magnesium, and BUN (<10 or 3.57 mmol/L) with an increased MCV (>89.9). Certain drugs, chemotherapeutic agents, radiation, and heavy metals can cause bone marrow depression.

Raw food diet The total WBC (<5.5) will frequently be slightly below the optimum range for patients on a diet high in raw foods.

RBC - MALE ↑

(4.99 m/cumm)

Relative increases in RBC count

Whenever there is a decrease in blood volume, you will see a relative increase in the RBC count (>4.5 in women and >4.9 in men) usually with an increased HCT (>44 or 0.44 in women and >48 or 0.48 in men), and HGB (>14.5 or 145 in women or 15 or 150 in men). Common causes of a relative increase in RBC count include: Dehydration (decreased fluid intake, vomiting, diarrhea), Stress, Tobacco use, Overuse of diuretics

Dehydration

If the RBC count is increased suspect dehydration. Suspect a short-term (acute) dehydration if there is an increased HGB (>14.5 or 145 in women or 15 or 150 in men) and/or HCT (>44 or 0.44 in women and >48 or 0.48 in men) along with an increased RBC count (>4.5 in women and >4.9 in men). A relative increase in Sodium (>142) and Potassium (>4.5) can be noted as well. Suspect a long-term (chronic) dehydration if any of the above findings are accompanied by an increased Albumin (>5.0 or 50 g/L), increased BUN (>16 or 5.71 mmol/L), and/or serum Protein (7.4 or 74 g/L).

Respiratory distress

In severe cases of asthma and emphysema you can expect an increased red cell count with decreased HGB (<13.5 or 135 g/L in women and <14 or 140 in men) and HCT (<37 or 0.37 in women and 40 or 0.4 in men). The body responds to an inability to fully oxygenate the blood with an increase in red blood cells.

Vitamin C need

An increased RBC level is associated with vitamin C need. Albumin will frequently be decreased (<4.0 or 40g/L) along a decreased HCT (<37 or 0.37 in women and 40 or 0.4 in men), HGB (<13.5 or 135 g/L in women and <14 or 140 in men), MCH (<28), MCHC (<32), serum iron (< 85 or 15.22 mmol/dL). There will also be an increased MCV (>90), alkaline phosphatase (>100), and fibrinogen.

Polycythemia vera

A myeloproliferative disease that causes an increase in all blood cell lines. This disease will cause an increased HCT (>44 or 0.44 in women and >48 or 0.48 in men), and HGB (>14.5 or 145 in women or 15 or 150 in men), total bilirubin (>1.2 or 20.5 mmol/dL), uric acid (>5.9 or > 351 mmol/dL), basophils (>1), and ALP (>100). Further testing with blood coagulation studies is needed.

MPV ↓

(8.90 fL)

A decreased MPV is seen in:

- Aplastic anemia, which causes an impaired production in platelets
- Bone marrow depression from radiation chemotherapy, heavy-metal toxicity or oxidative stress

RDW ↑

(13.10 %)

Conditions Associated with an Increased RDW

- Iron Deficiency
- Vitamin B12/folate Deficiency
- Pernicious Anemia
- Thalassemia
- Inflammation

NEUTROPHILS - % ↑

(65.40 %)

Childhood diseases (Measles, Mumps, Chicken-pox, Rubella, etc.) The pattern seen in the Neutrophil count is as follows: Early in the infection Neutrophils - % will be >60% and the Neutrophils - Absolute will be increased >4.2. Levels will be decreased later with Neutrophils - Absolute <1.9 and Neutrophils - % and <40%.

Acute, localized, and general bacterial infections The Neutrophil % result will be increased >60% and you'll see a Neutrophil absolute account >4.2. They are the primary cell type for fighting bacterial infections.

Acute viral infection Neutrophils will tend to be normal

Chronic viral or bacterial infection Frequently in a chronic infection, you'll see an increased Neutrophils - Absolute >4.2 along with an increased Neutrophils % >60% and a decreased total WBC count <5.0.

Inflammation

An increased Neutrophil - Absolute > 4.2 with a Neutrophil - % >60% will often be seen in acute and chronic inflammation (RA, SLE, Rheumatic fever and acute gout)

CREATINE KINASE ↑

(146.00 u/l)

Muscle Damage or Breakdown

The Creatine Kinase level will be elevated with muscle damage or breakdown. You may also see an increase in liver enzymes (SGOT/AST and SGPT/ALT) and LDH. You may also see an increased serum phosphorous and serum potassium.

Damage to the heart muscle as in an acute MI

Creatine Kinase will be elevated with an acute MI, which causes damage to the heart muscle. Expect to see an increase in the CK:MB isoenzyme.

Additional reasons for increased Creatine Kinase

Increased Creatine Kinase is associated with the following:

- Heavy exercise
- Brain damage or inflammation
- Muscular Dystrophy

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