

**Do Not Recommend
Iron Supplements
until you
Watch This Webinar**

Test, Don't Guess

If you're recommending iron supplements without knowing your client's iron levels, you'll be glad you watched this webinar.

You'll Learn

- 🔴 The dangers of recommending an iron supplement when it's not needed.
- 🔴 Two scenarios where you should never recommend an iron supplement (includes case study showing how oral contraceptives cause chronic fatigue by depleting vitamin B₆).
- 🔴 How to quickly identify the blood chemistry patterns for these two scenarios using LabSmarts.

About Me and LabSmarts



MaryAnn Marks

Creator, Co-founder, and CEO



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847-668-1934



/MaryAnnMarks



Easy-to-use, affordable (\$9/mo), and time saving functional blood chemistry analysis software



Nutrition Consultant, Bauman College, 2016



Expert in functional blood chemistry analysis



20-year career in technology and engineering



Skilled in creating automation software



MBA, BS in Civil Engineering



LabSmarts.com



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@LabSmarts

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"It is likely that as many people are being injured by iron supplementation as are receiving medical benefit from it."

—R. L. NELSON, M.D.

Professor of Surgery, University of Illinois College of Medicine at Chicago, and
Epidemiology/Biometry Program, University of Illinois School of Public Health

Traditionally, the medical community has focused on too little iron in the body, largely ignoring iron overload and its potential hazards. *Exposing the Hidden Dangers of Iron* introduces the medical professional to the intricacies of iron in various body systems. Containing a practical guide to diagnosis, it also includes such subjects as the treatment of iron-loading conditions, reference charts, glossa section with contact information for leading national vo agencies and the latest iron-related treatment products

Early detection of iron overload disease represents a ma prevention opportunity. Detection and treatment of iron the course of the illness, can substantially reduce the sev organ damage, and death from associated chronic

—DAVID SATCHER, M.D., Ph.D.

Former Assistant Secretary for Health and U.S. Surgeon

"We estimate that one in three people has an iron-related

—RANDY S. ALEXANDER

Founder and Chairman, Iron Disorders Institute

E. D. Weinberg, Ph.D., is Professor Emeritus of Microbiology and I School of Medicine at Indiana University at Bloomington. His study and he is a world-renowned authority on iron as a significant risk fa thy, cancer, infection, arthritis, various endocrine diseases, and sad drome. A pioneer in the field of iron studies, he has written more th books devoted to iron.

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IRON OVERLOAD: Underdiagnosed & Deadly

"EXPOSING THE HIDDEN DANGERS OF IRON provides the family practitioner with an excellent introduction to the complexities of excess body iron and a practical guide to diagnosis and treatment."

—MARK PRINCELL, M.D., Director Emergency Services DeSoto Health System, Greenville, South Carolina

The Iron Disorders Institute Presents...

EXPOSING THE HIDDEN DANGERS OF IRON

What Every Medical Professional Should Know about
the Impact of Iron on the Disease Process

E. D. WEINBERG, Ph.D.

Indiana University, Iron Disorders Institute Scientific Advisory Board Chair, Publications Chair

Foreword by LOIS K. LAMBRECHT, M.D.

Introduction by RANDY S. ALEXANDER
Founder and Chairman, Iron Disorders Institute

Edited by CHERYL GARRISON

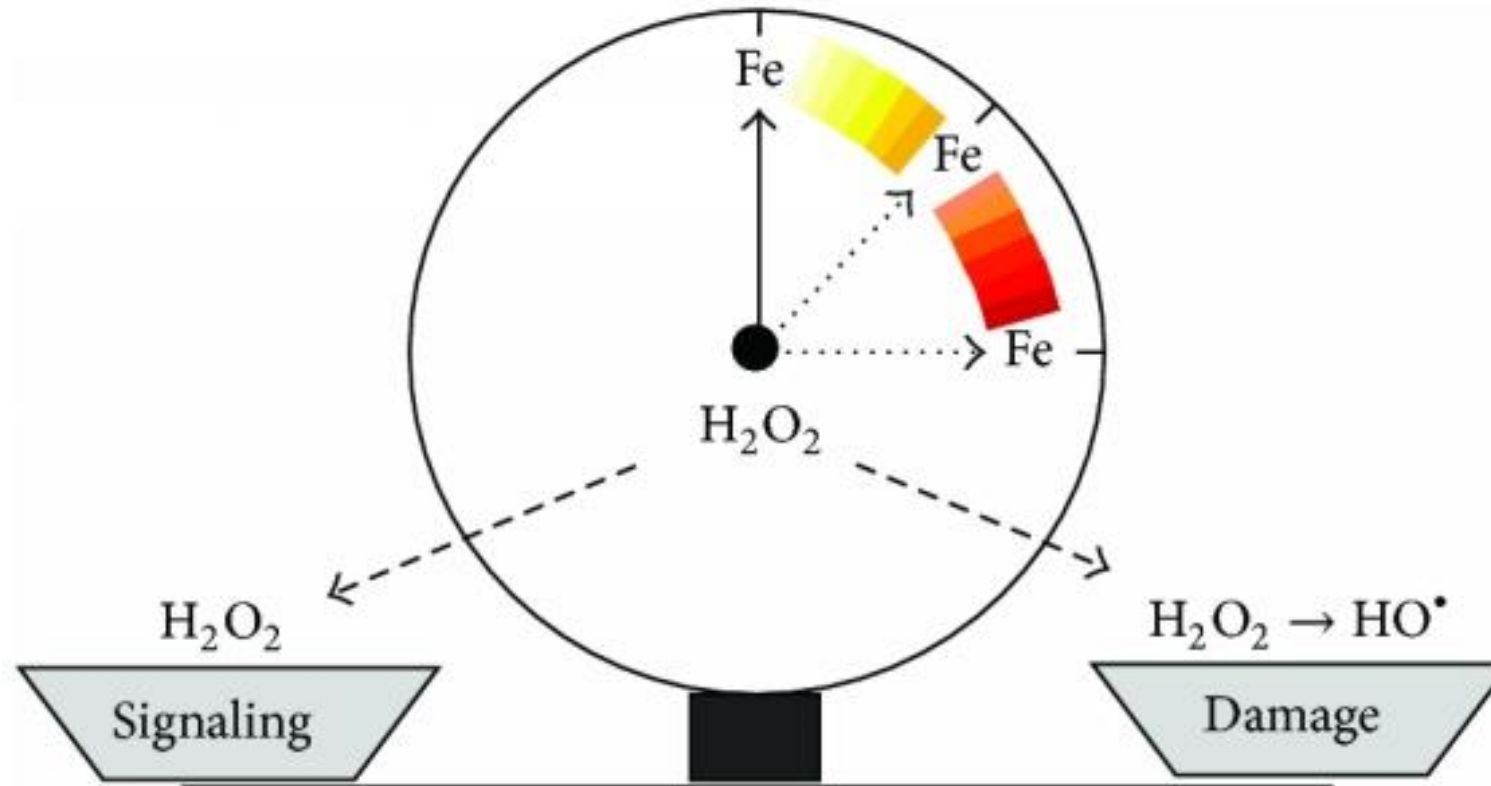
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Excess Iron Can Cause Free Radical Damage



Increased iron (Fe) may change the role of hydrogen peroxide (H_2O_2) from a relatively safe compound involved in cell signaling to a source of the highly toxic hydroxyl radical (HO^\bullet).

Don't Make This Assumption

Microcytic hypochromic anemia
(low hemoglobin with small, pale red blood cells)
is always caused by iron deficiency.

This is NOT true!

Test, Don't Guess

It's important to know your client's values for **serum iron, % saturation, TIBC, and ferritin** before recommending an iron supplement.

You Could Cause Harm

You could unknowingly cause your client to experience **tissue damage, joint swelling, or prolonged infection** as a result of iron overload.

Iron Supplementation Without Justification Caused Oxidative Stress in Pregnant Women

Clinical Trial > Biol Trace Elem Res. 2001 Nov;83(2):103-10. doi: 10.1385/BTER:83:2:103.

Increased lipid peroxidation in pregnant women after iron and vitamin C supplementation

B Lachili¹, I Hininger, H Faure, J Arnaud, M J Richard, A Favier, A M Roussel

Affiliations + expand

PMID: 11762527 DOI: 10.1385/BTER:83:2:103

Abstract

Iron overload could promote the generation of free radicals and result in deleterious cellular damages. A physiological increase of oxidative stress has been observed in pregnancy. A routine iron supplement, especially a combined iron and vitamin C supplementation, without biological justifications (low hemoglobin [Hb] and iron stores) could therefore aggravate oxidative stress. We investigated the effect of a daily combined iron supplementation (100 mg/d) and vitamin C (500 mg/d as ascorbate) for the third trimester of pregnancy. The supplemented group (n = 27) and antioxidant micronutrients (Zn, Se, retinol, vitamin E) were compared to a control group (n = 27), and the results were compared to the control group. At delivery, all the women exhibited normal Hb and iron stores. However, plasma iron level was higher than in the control group (p < 0.05). Plasma levels were significantly enhanced (p < 0.05) for iron, zinc, and selenium. No significant changes were observed in plasma trace elements and metalloenzymes. Furthermore, the alpha-tocopherol plasma level was significantly lower in the supplemented groups, suggesting an increased utilization of vitamin E. These data suggest that pharmacological doses of iron, associated with high vitamin C intakes, can result in uncontrolled lipid peroxidation. This is predictive of adverse effects for the mother and the fetus. This study illustrates the potential harmful effects of iron supplementation when prescribed only on the assumption of anemia and not on the bases of biological criteria.

“This is predictive of adverse effects for the mother and the fetus.”

- 27 pregnant women in 3rd trimester given 100 mg/d of iron and 500 mg/d vitamin C.
- 27 in control group not given supplementation.
- After delivery, both had normal hemoglobin and ferritin, but supplemented group had higher serum iron, lower vitamin E, and higher TBARS (lipid peroxidation).
- Uncontrolled lipid peroxidation in supplemented group.

“This study illustrates the potential harmful effects of iron supplementation when prescribed only on the assumption of anemia and not on the bases of biological criteria [(low hemoglobin and iron stores)].”

This is Where You Add Value

1. Order/obtain CBC, CMP, and iron panel with ferritin.
2. Use LabSmarts to analyze your client's results.
3. Quickly identify patterns for **2 scenarios where you should never recommend an iron supplement.**

Two Scenarios, Never Recommend Iron

1. Heme Synthesis Dysfunction (Sideroblastic Anemia)

- 💧 Iron is present but can't be converted into heme to make hemoglobin.
- 💧 Client does not need more iron; already has more than enough.

2. Bacterial Infection

- 💧 Some bacteria can use iron to generate energy.
- 💧 Body purposely keeps iron out of the serum, away from bacteria.
- 💧 Recommending an iron supplement can prolong the infection.

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- 🩸 **Presents as elevated serum iron, % saturation, and ferritin.**

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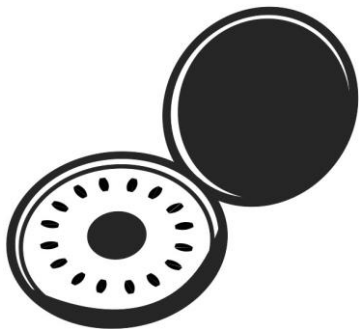
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- 🔴 Could be low vitamin B₆ or zinc; both are needed for heme synthesis.
- 🔴 **Could be lead toxicity – interferes with enzyme in this process.**

Heme Synthesis Dysfunction

CASE STUDY

How long-term oral contraceptive use can cause heme synthesis dysfunction resulting in chronic fatigue.

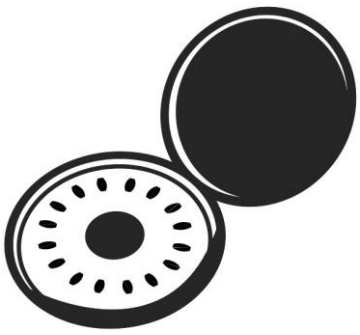
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Oral contraceptives
deplete vitamin B₆

Estrogen increases the breakdown of tryptophan, which contains 3 pathways dependent on pyridoxal-5'-phosphate (PLP or P5P), a form of vitamin B₆.

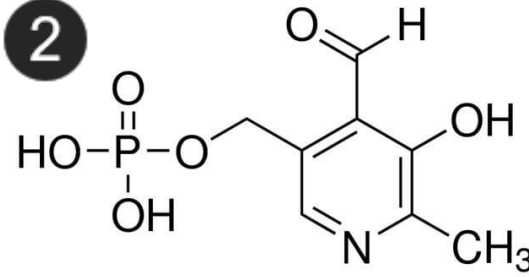
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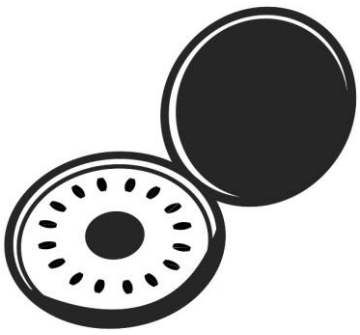
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P5P is needed to synthesize heme to make hemoglobin.

Decreased P5P results in
decreased hemoglobin

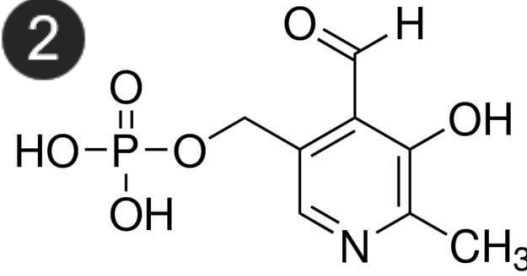
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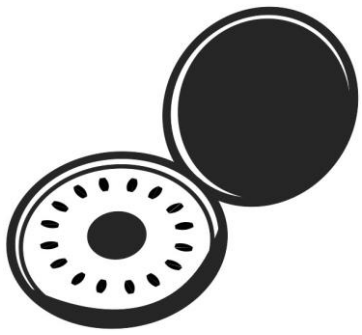
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Hemoglobin inside red blood cells binds to oxygen. RBCs deliver oxygen to all cells of the body.

Decreased hemoglobin results
in decreased oxygen delivery

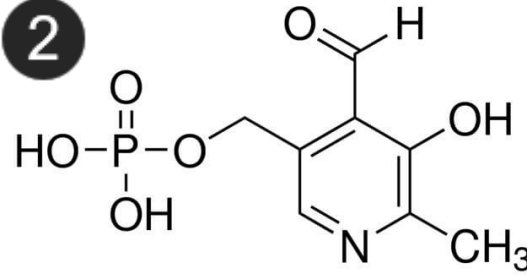
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Hemoglobin inside red blood cells binds to oxygen. RBCs deliver oxygen to all cells of the body.

Mitochondria inside cells use oxygen to make energy (ATP).

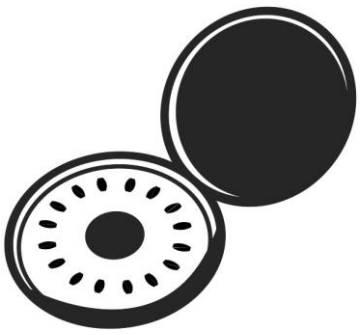
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Decreased hemoglobin results
in decreased oxygen delivery

Decreased oxygen results in
decreased energy production

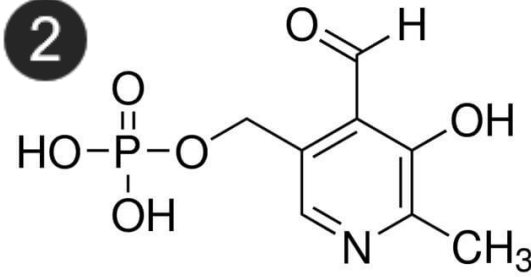
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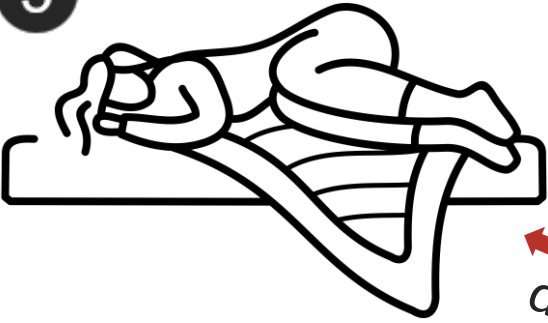
Decreased P5P results in
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3



Hemoglobin inside red blood cells binds to oxygen. RBCs deliver oxygen to all cells of the body.

5



Chronic lack of energy production can result in chronic fatigue.

Decreased oxygen results in
decreased energy production

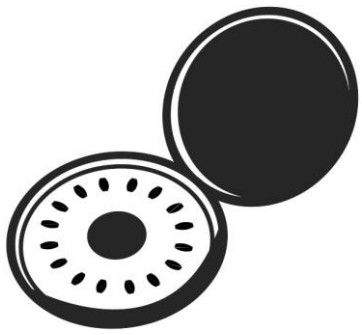
Mitochondria inside cells use oxygen to make energy (ATP).

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Decreased hemoglobin results
in decreased oxygen delivery

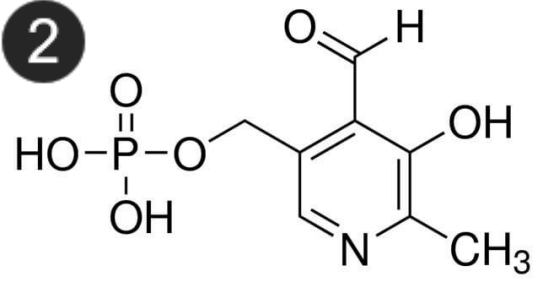
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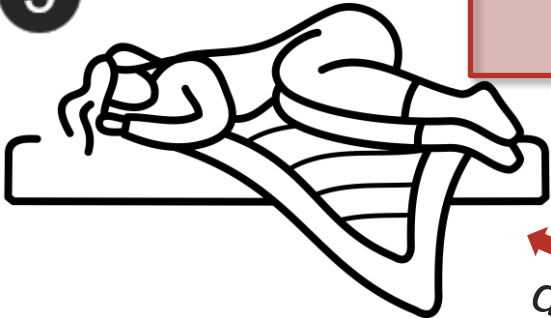
OC Pathway to Chronic Fatigue
OCs ↑ estrogen ↑ tryptophan catabolism
↓ B6 (P5P) ↓ heme ↓ hemoglobin
↓ oxygen delivery ↓ energy (ATP)

3



Hemoglobin inside red blood cells binds to oxygen. RBCs deliver oxygen to all cells of the body.

5



Chronic lack of energy production can result in chronic fatigue.

Decreased oxygen results in decreased energy production

Mitochondria inside cells use oxygen to make energy (ATP).

4



Decreased hemoglobin results in decreased oxygen delivery

Method of Assessment

Using values from the client's blood work, LabSmarts automated the analysis of patterns to determine the...

- 🔴 Likelihood of anemia (suboptimal blood oxygen delivery)
- 🔴 Type of anemia (RBC size and color)
- 🔴 Possible root causes of anemia

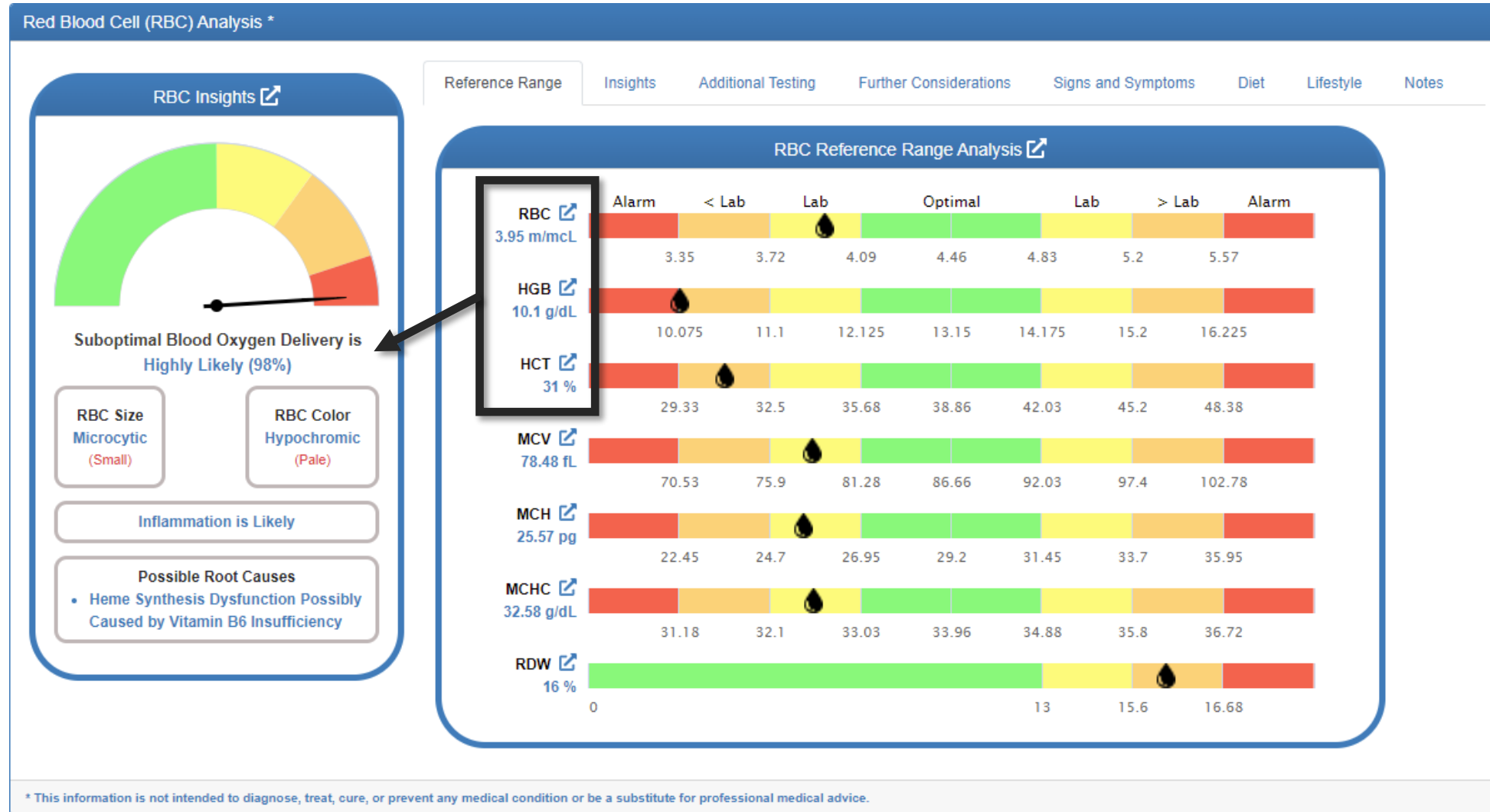
Heme Synthesis Dysfunction Identified

LabSmarts identified that it was highly likely the client had suboptimal blood oxygen delivery, most likely caused by heme synthesis dysfunction as a result of vitamin B₆ insufficiency.

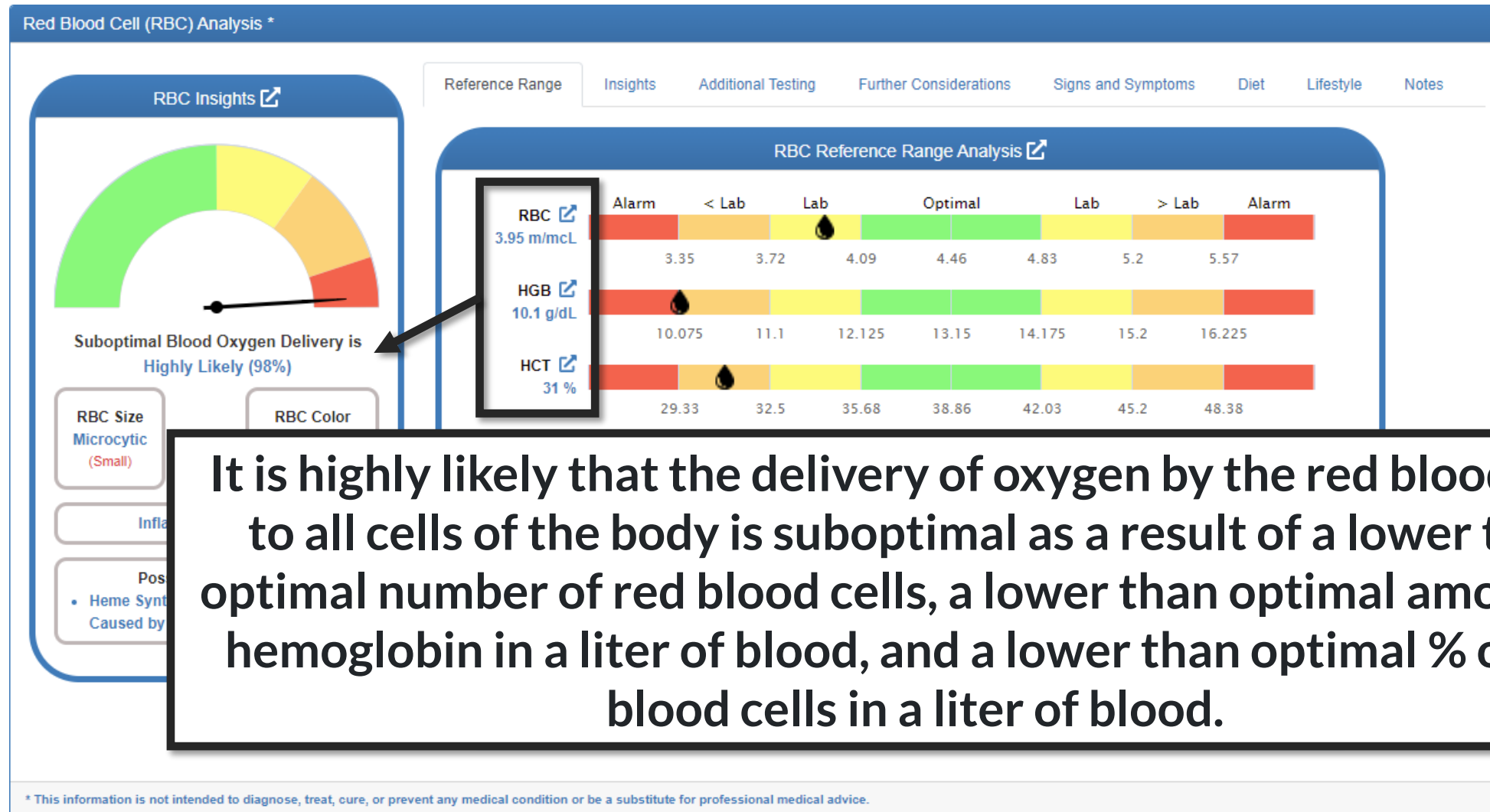
Diagnostically known as...

acquired sideroblastic anemia caused by vitamin B₆ deficiency

Determining the Likelihood of Anemia

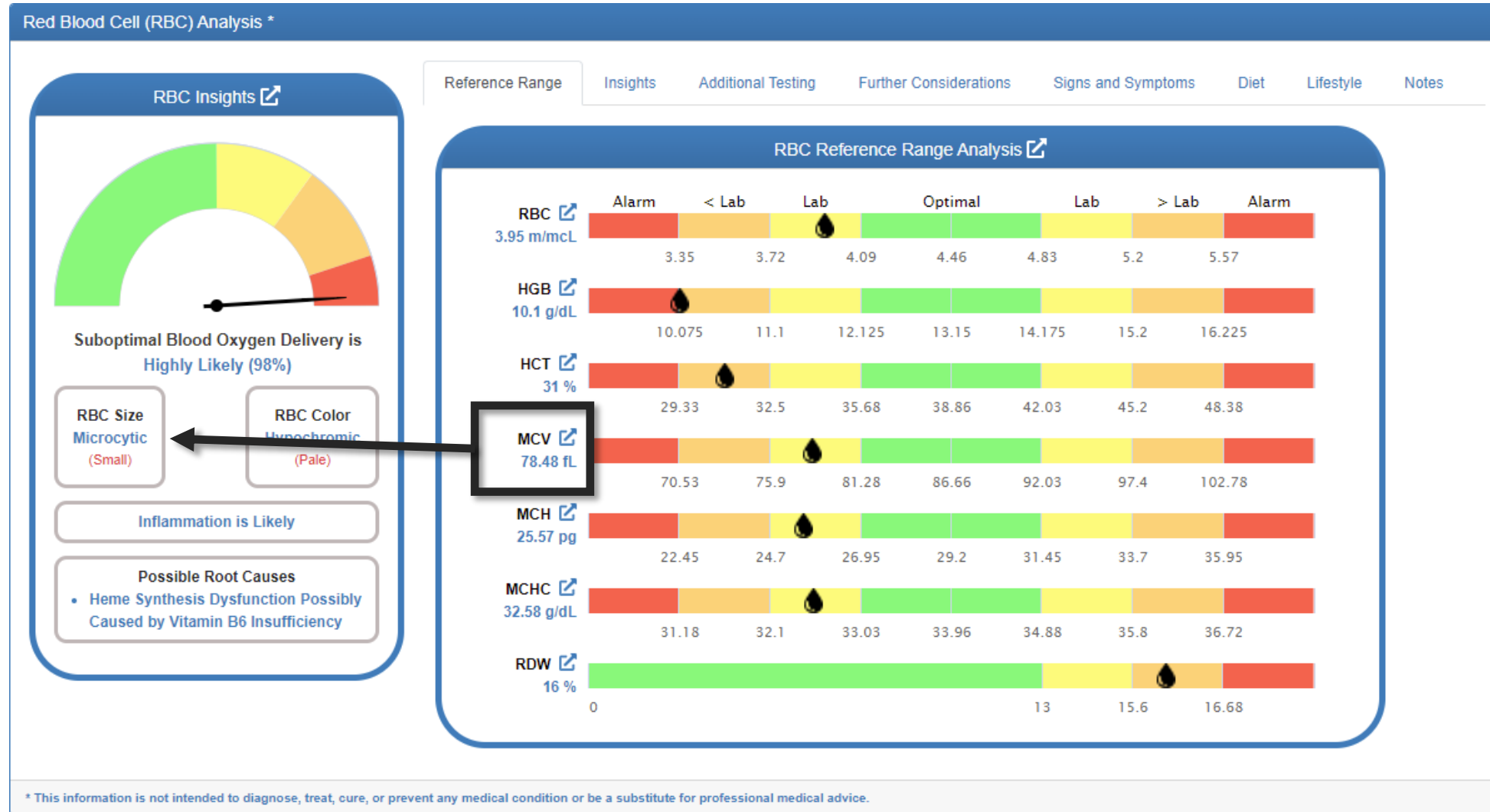


Determining the Likelihood of Anemia

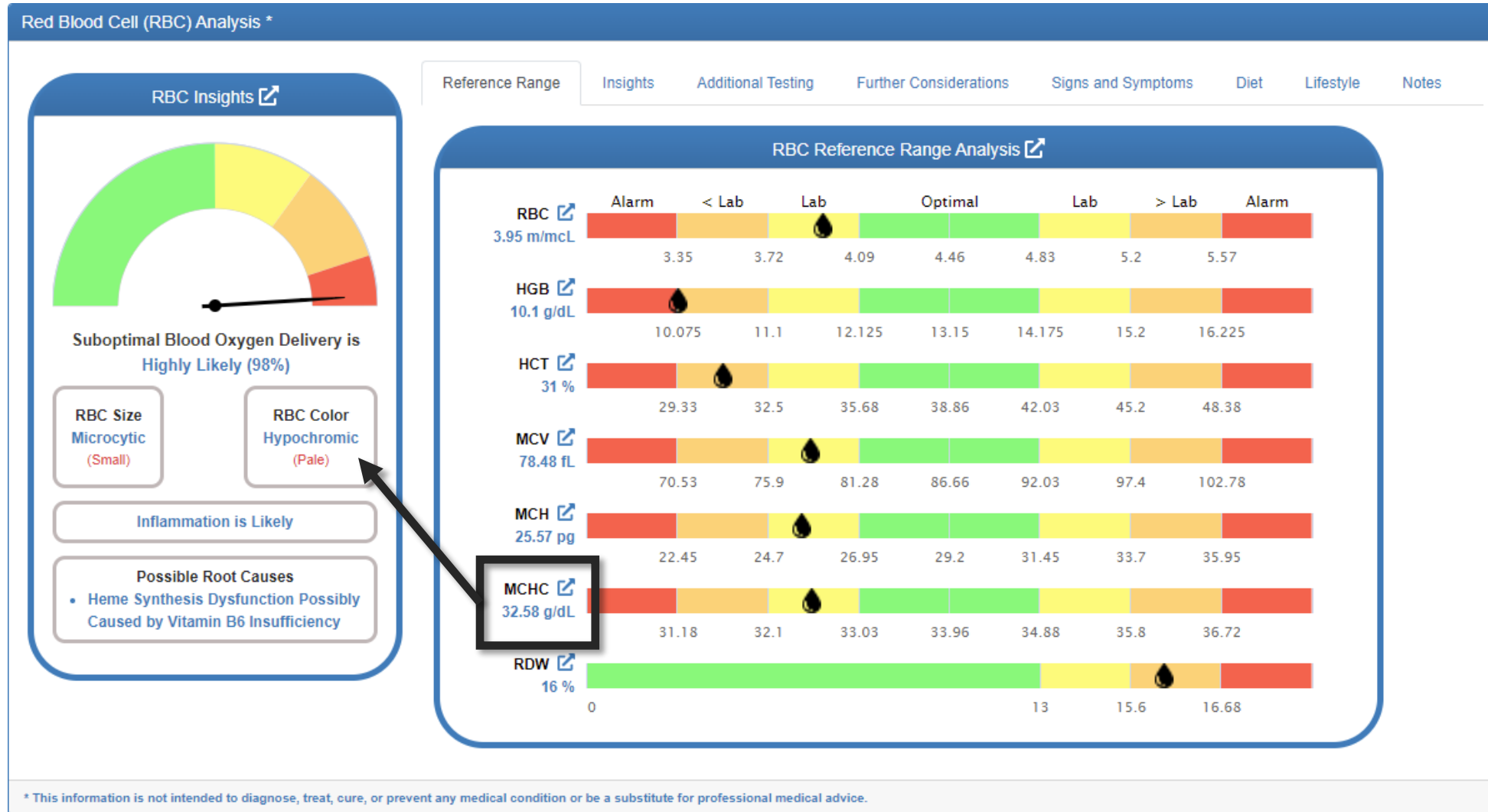


It is highly likely that the delivery of oxygen by the red blood cells to all cells of the body is suboptimal as a result of a lower than optimal number of red blood cells, a lower than optimal amount of hemoglobin in a liter of blood, and a lower than optimal % of red blood cells in a liter of blood.

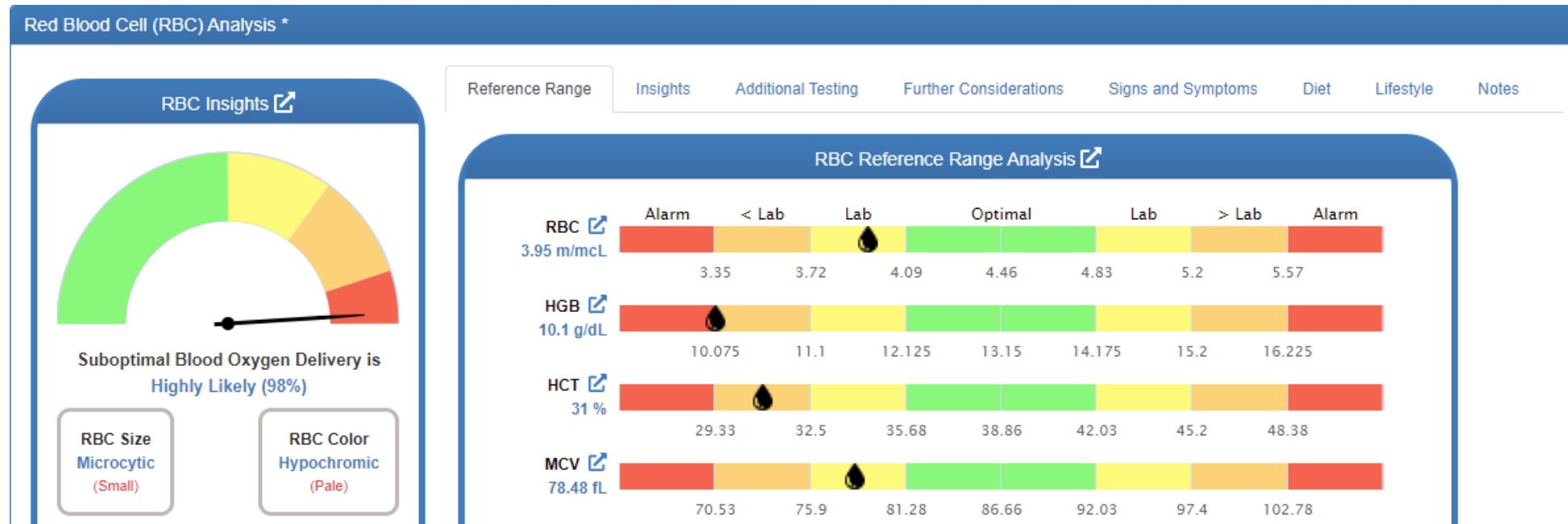
Determining the Type of Anemia



Determining the Type of Anemia

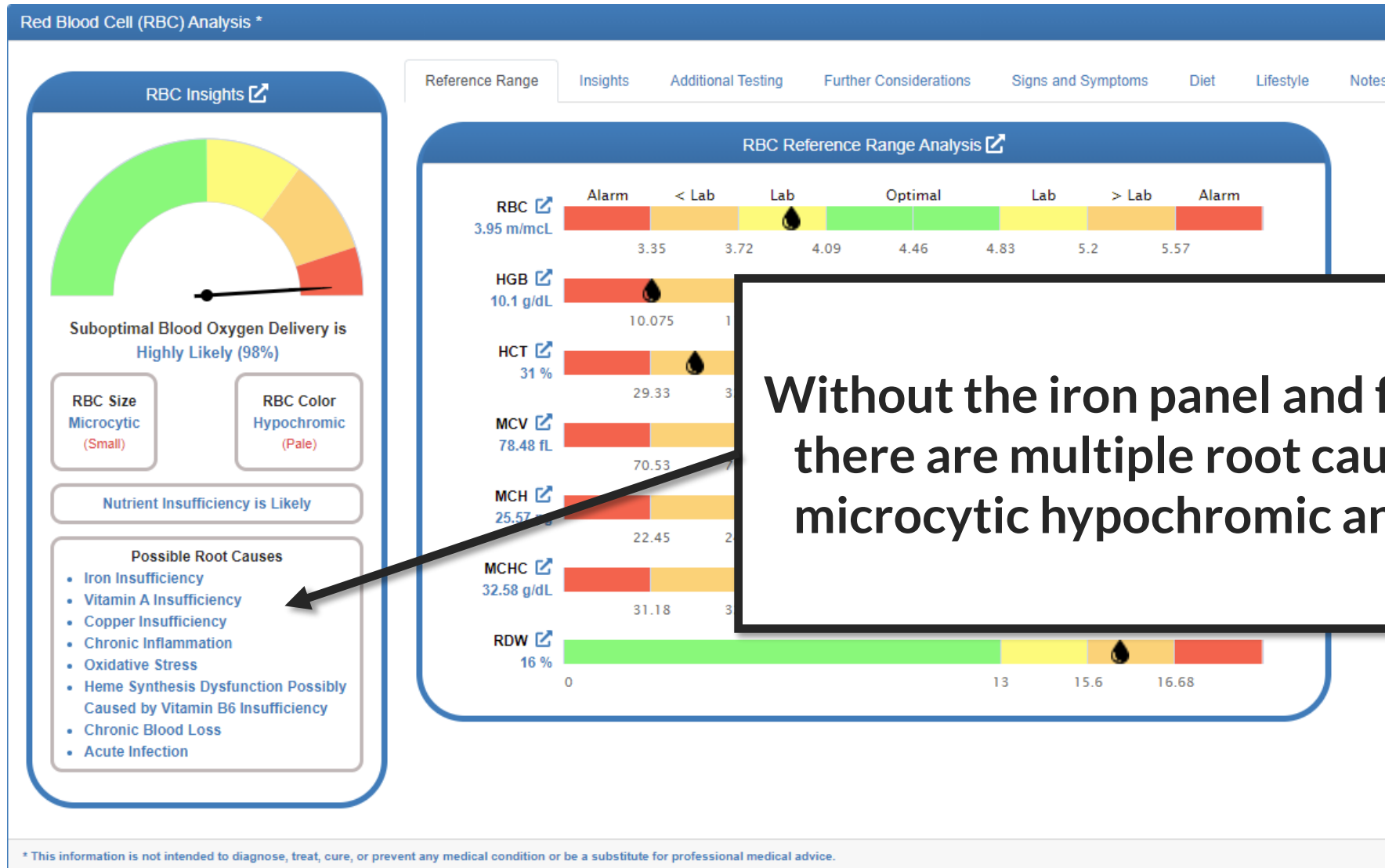


Determining the Type of Anemia



The delivery of oxygen by the red blood cells to all cells of the body is suboptimal as a result of smaller than optimal red blood cells (microcytic) containing a lower than optimal amount of hemoglobin for their size (hypochromic).

Possible Root Causes of Anemia

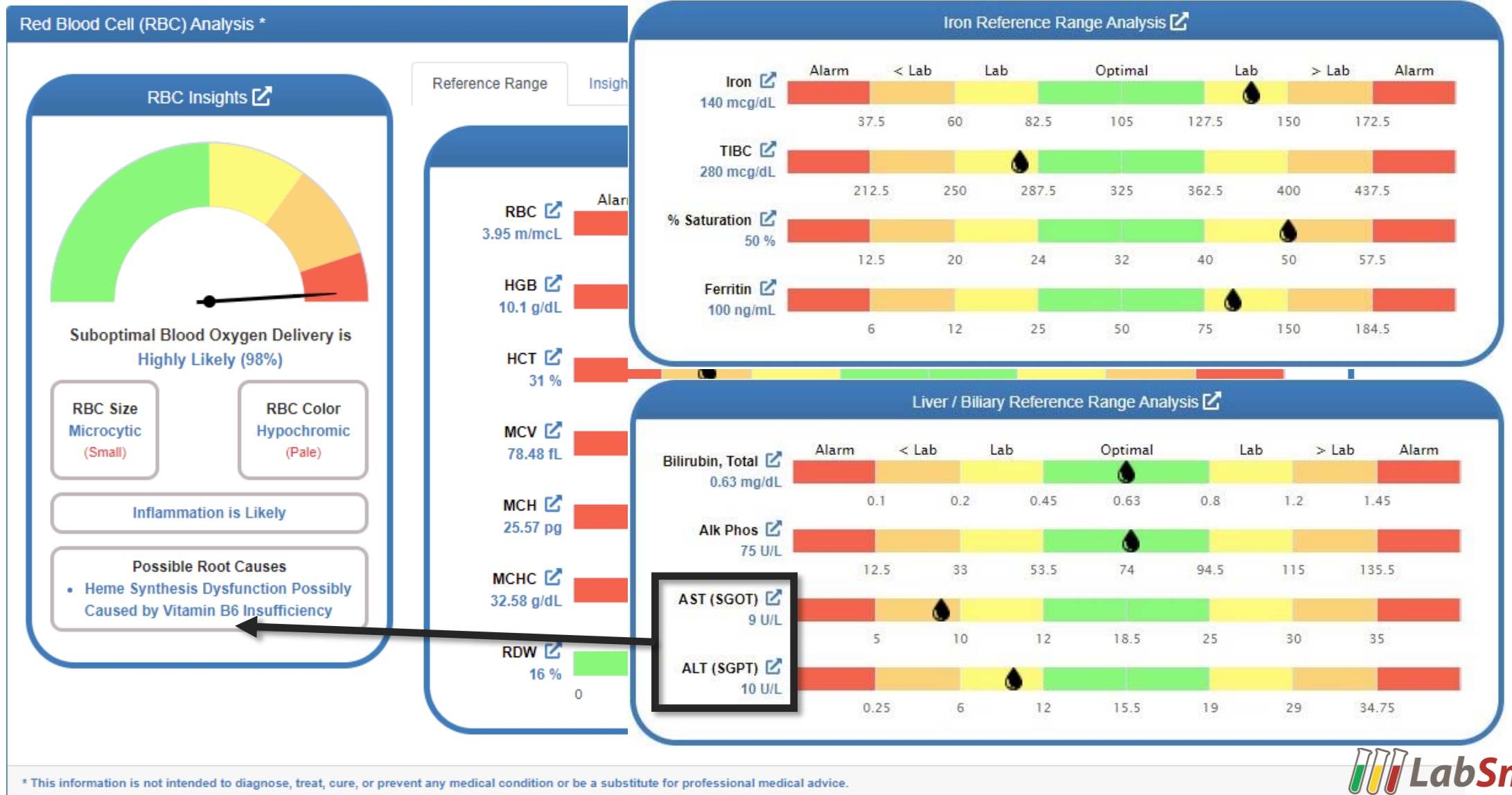


Possible Heme Synthesis Dysfunction



* This information is not intended to diagnose, treat, cure, or prevent any medical condition or be a substitute for professional medical advice.

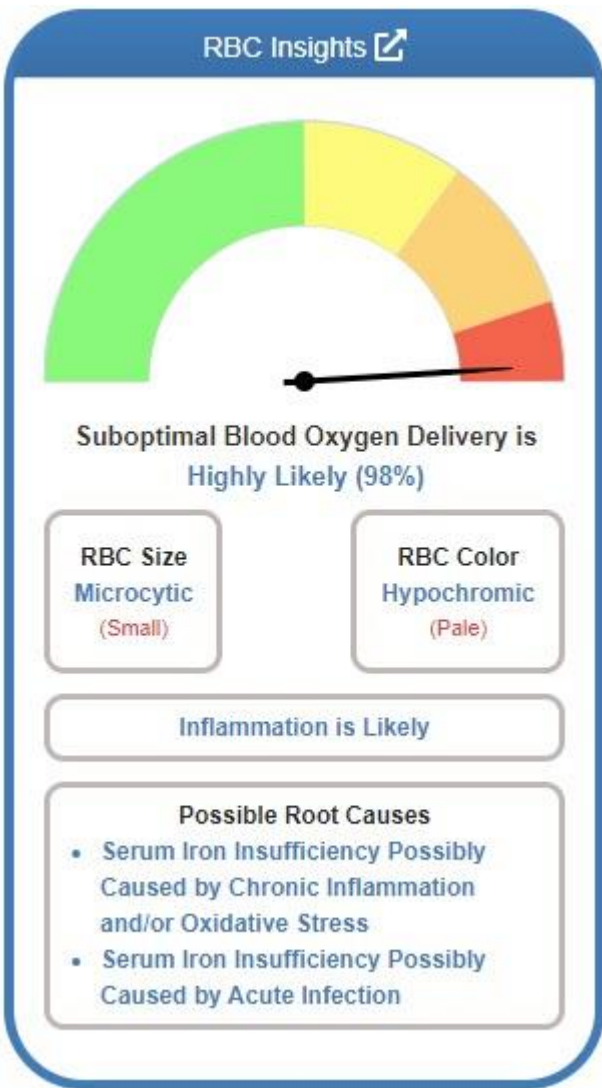
Possibly Caused by Low Vitamin B₆



Recommendations & Outcome

- 💧 100 mg of pyridoxal-5'-phosphate twice a day for 2 months
- 💧 Foods rich in B₆ (client does not eat meat/dairy)
 - 💧 salmon, sweet potatoes, potatoes, avocado, spinach, banana, cabbage, and squash
 - 💧 raw broccoli and cauliflower because frozen has high amounts of pyridoxine glycoside, a form of B₆ with greatly reduced bioavailability
- 💧 B complex, multi-vitamin, vitamin D, and vitamin C
- * Noticeable improvement in energy after just 2 weeks!
- * Re-ran blood work after 2 months – anemia was gone!

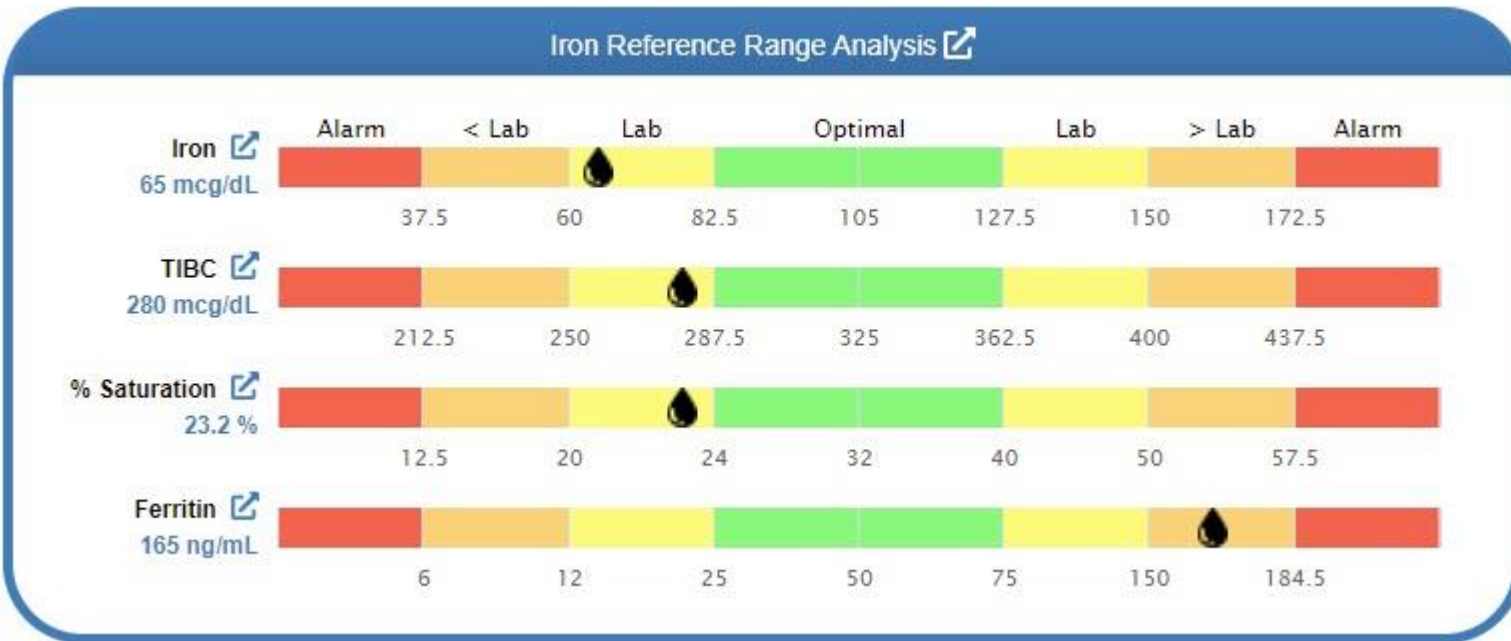
Bacterial Infection



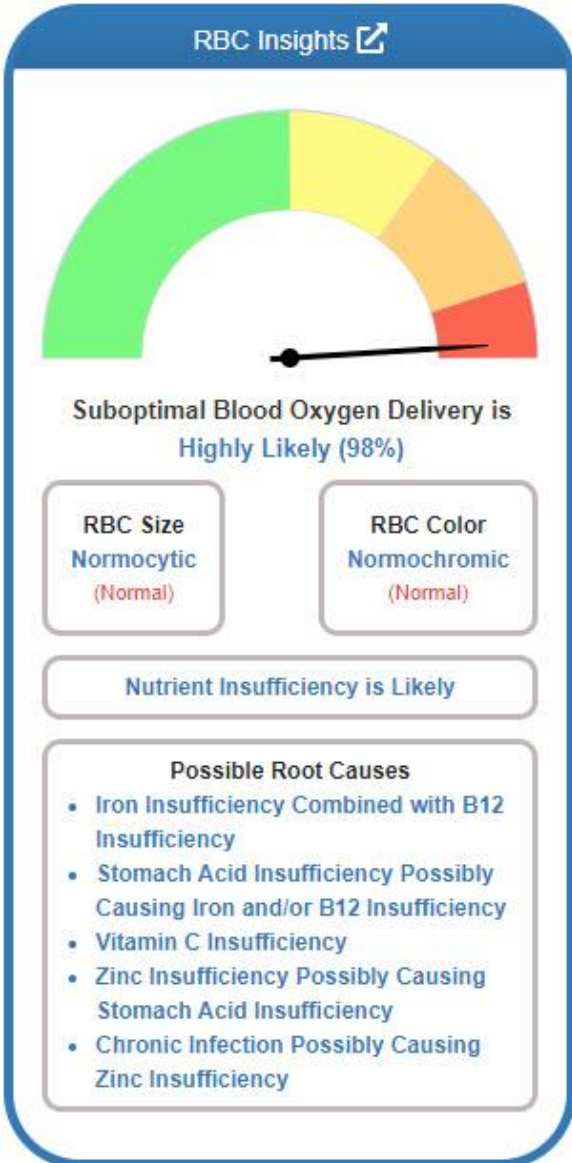
Acute or chronic bacterial infection...



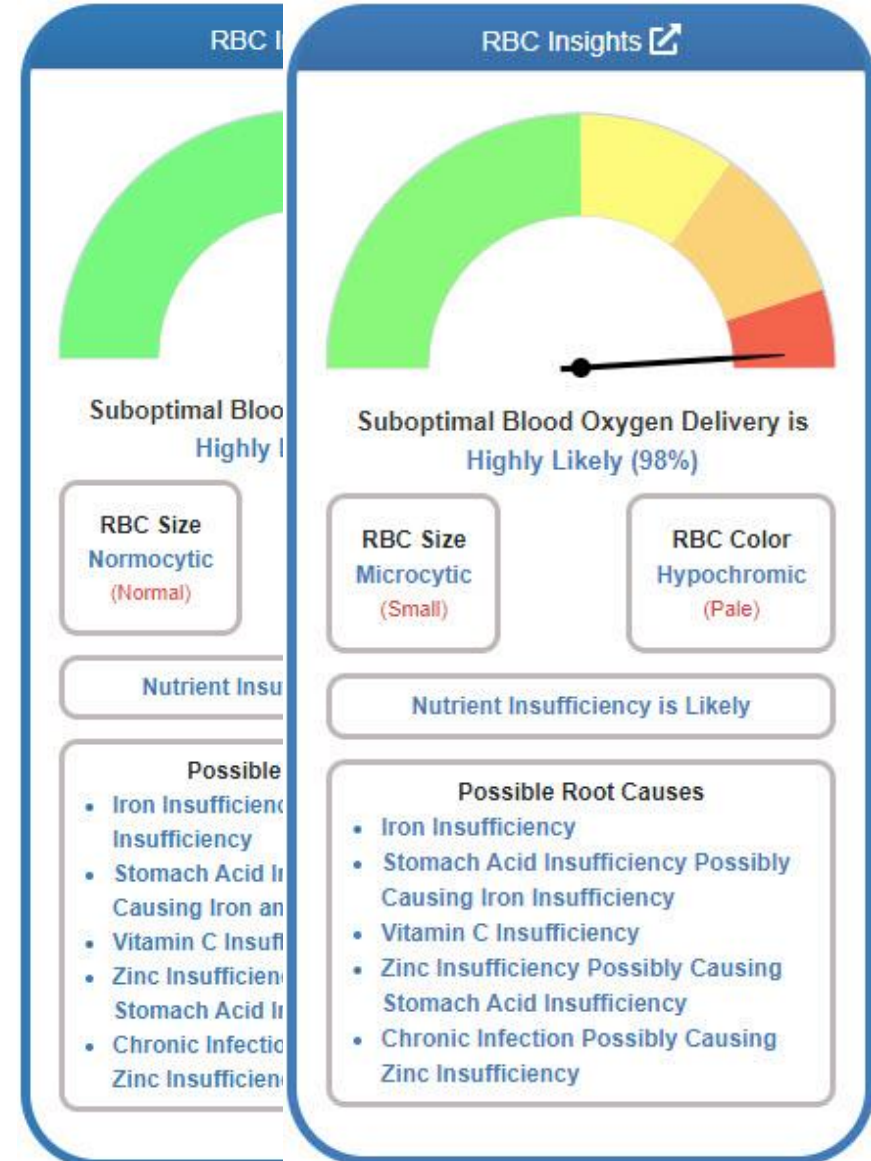
A scenario where you should never recommend an iron supplement.



Over 100 Different Combinations



Over 100 Different Combinations



Over 100 Different Combinations



Over 100 Different Combinations



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Over 100 Different Combinations



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Over 100 Different Combinations

RBC Insights

Suboptimal Blood Oxygen Delivery is Highly Likely (93%)

RBC Size
Normocytic (Normal)

RBC Color
Hyperchromic (Dark)

Possible Root Causes

- Acute Premature RBC Destruction

Possible

- Bone Marrow Failure
- Chronic Inflammation
- Oxidative Stress
- Chronic Infection

Acute Dehydration

Oxygen Insufficiency

Cigarette Smoking

Oxygen Intoxication





Blood Work Analysis Software That Helps You

GET TO THE ROOT CAUSE

LabSmarts makes Functional Blood Chemistry Analysis simple for practitioners

[CREATE A FREE ACCOUNT](#)

Sign Up to Get the Studies

We will periodically send you detailed information on the studies we use to define our optimal reference ranges. Users already get this info, so no need to sign up here if you already have an account.

[GET THE STUDIES!](#)



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Monthly Yearly (2 months free)

	Free Trial	10 Tests	Unlimited
Features	\$0	\$9 /mo	\$19 /mo
# of Tests i	3 total	10 /mo	unlimited
View Analysis Online	✓	✓	✓

Live Demo of LabSmarts

Ready to Analyze Blood Work?

Do you know what to look for when a client hands you their blood work?

Do you know how to interpret their results from a functional perspective?

Take FDN's FBCA Course

Here's What You'll Learn

- 🔴 Benefits of blood testing
- 🔴 Problems with lab ranges
- 🔴 Optimal vs lab ranges
- 🔴 How to order blood tests
- 🔴 51 blood markers and what each measures
- 🔴 What it means when a marker is high or low
- 🔴 Blood chemistry patterns to look for
- 🔴 Functional tests to correlate with
- 🔴 Basic supplements for various patterns

FDN ADVANCED PHOSPHORUS OPTIMAL RANGE: 3.0 – 4.0 mg/dL

HIGH	LOW
<ul style="list-style-type: none"> Parathyroid hypofunction Bone growth and/or repair Excessive phosphorus consumption Excessive Vitamin D supplementation Renal insufficiency 	<ul style="list-style-type: none"> Parathyroid hyperfunction Hypochlorhydria Hyperinsulinism Vitamin D deficiency Diet high in refined carbohydrates Alcoholism

BLOOD CHEMISTRY PATTERNS

- Hyperparathyroidism (↑ Calcium)
- Hypoparathyroidism (↓ Calcium)
- Hypochlorhydria (↓ Chloride, ↑ CO₂, ↑ BUN, ↑ Globulin, ↓ Total Protein, ↓ Albumin, ↓ Serum Phosphorus, ↓ Calcium, ↓ Iron, ↓ Alkaline Phos)





FUNCTIONAL TESTS TO CORRELATE WITH

- GI Pathogen Stool Analysis (H pylori, pathogens)
- SpectraCell Labs Micronutrient Test (Vitamin D)

OTHER CONSIDERATIONS

- Diet (refined carbs, soda)

FDN ADVANCED SUPPLEMENTATION - BASIC GI SUPPORT

PANCREATIC INSUFFICIENCY	HYPOCHLORHYDRIA	BILIARY STASIS / BILIARY INSUFFICIENCY
<p>↓ Digestive enzymes</p> <p>↓ BUN, ↑ GGT</p>	<p>↓ Hydrochloric acid (stomach acid)</p> <p>↓ Chloride, ↑ CO₂, ↑ BUN, ↑ Globulin, ↓ Total Protein, ↓ Albumin, ↓ Serum Phosphorus, ↓ Calcium, ↓ Iron, ↓ Alkaline Phosphatase</p>	<p>↓ Bile salts</p> <p>↑ Bilirubin, ↑ GGT, ↑ Alkaline phosphatase, ↑ Total cholesterol</p> <p>(biliary = gall bladder & bile ducts)</p>
		 

Rule out H pylori first!

FDN ADVANCED MARKER, PATTERN, WHY, & CORRELATION

- MARKER: BUN**
↑ BUN - could suggest hypochlorhydria (low stomach acid)
- PATTERN: HYPOCHLORHYDRIA**
 - ↓ Chloride
 - ↑ CO₂
 - ↑ BUN
 - ↑ Total Globulin
 - Normal or ↓ Total Protein and/or Albumin
 - ↓ Serum Phosphorus
 - ↓ Calcium
 - ↓ Iron
 - ↓ Alkaline phosphatase
- WHY MIGHT THERE BE HYPOCHLORHYDRIA?**
 - H pylori infection
 - Hypothyroidism
 - Micronutrient deficiency
 - Lack of protein in the diet
 - Stress
 - Autoimmune condition
 - Acid-blocking medication
- CORRELATE WITH HISTORY/SYMPTOMS/ FUNCTIONAL LAB TEST RESULTS**
 - ***Helicobacter Pylori Stool Antigen***
 - H. pylori Antigen
 - * Detected *
 - ✓ Undigested food in the stool
 - ✓ Indigestion, bloating after meals

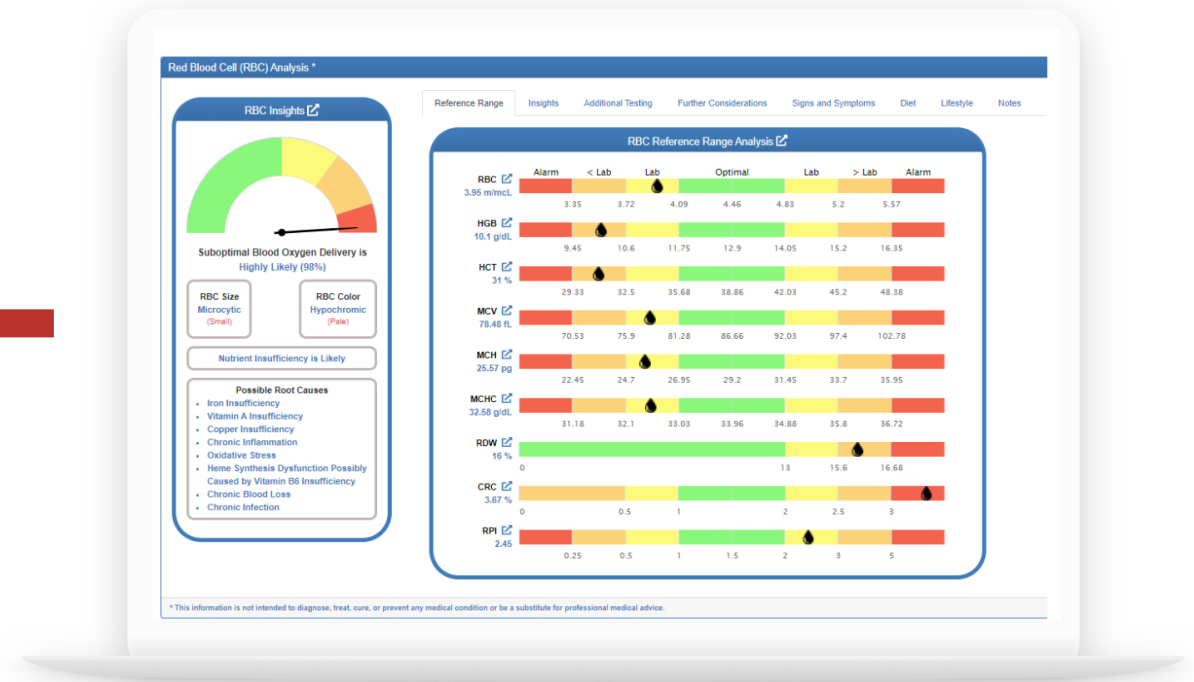
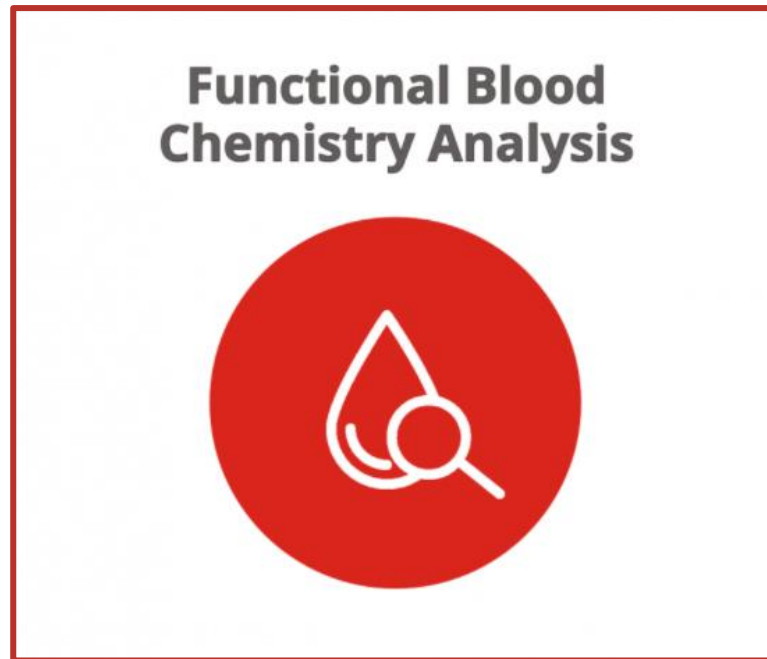
FDN ADVANCED CMP - IN (continued from)

COMPREHENSIVE METABOLIC PANEL	
Bilirubin (Total)	A pigment in the bile which is a recycles red blood cells.
Alkaline Phosphatase	An enzyme found mainly in the
LDH	A group of metabolic enzymes found in all tissues in the body. Its highest concentrations are found in the heart, liver, lungs, brain, kidney, pancreas, and skeletal muscle.
AST (SGOT)	A metabolic enzyme found mainly in the heart, liver, and muscles. In the Krebs's cycle, Vitamin B6 is a major co-factor for AST's reactions.
ALT (SGPT)	A metabolic enzyme found in the liver, muscle, heart, and kidney cells. High levels of the enzyme will be released into the bloodstream when there is damage to these cells. Vitamin B6 is a major co-factor for ALT's reactions.
GGT (GGTP)	A metabolic enzyme found primarily in liver cells which increases when there is damage to the liver or bile ducts. GGT is usually the first liver enzyme to rise in the blood when any of the bile ducts that carry bile from the liver to the intestines become obstructed.

Liver Markers (enzymes)

Take Advantage of These Special Offers

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