

## How to understand your bloodwork - The Lipid Panel

apo-B

Fasting Insulin - between 2 - 5

hsCRP

Particle size of cholesterol LDL and HDL

Uric Acid

Homocysteine

Omega - 3 index - ideal level >8%

Calcium Score - and the Clearly Soft Plaque scan

### Testing

Cardio IQ - Quest

NMR Lipoprofile blood test - Lab Corp

**Triglycerides** - are the main lipid constituents in the blood and a major source of energy for the body. Excess calories are chemically converted into triglycerides, which are stored in fat cells if they are not needed for energy. Hormones can also signal the release of triglycerides from fat cells to provide energy. Triglycerides circulate through the body with the help of carrier proteins known as lipoproteins particularly very-low-density lipoproteins or VLDL. If you consume than you expend - especially from sugar and carbohydrates - your triglycerides level will become too high, causing a condition known as hypertriglyceridemia. Elevated triglyceride levels are a major risk factor for heart disease, diabetes, insulin resistance, metabolic syndrome and liver disease.

### Triglycerides are measured in mg/dL -

> 499	Very High
200 to 499.	High
150 to 199.	Borderline High.
Less than 150	Normal

Ideal range 50 to 100 mg/dL They should be = to your HDL. 1:1 ratio is ideal Pancreatitis can also a problem with elevated triglycerides. An elevated level also contributes to the hardening and narrowing of the arteries (atherosclerosis). Arrhythmias and blood clot formation can occur. Diets high in refined sugars, high fructose corn syrup ( raises uric acid ) as well as unhealthy fats and trans fats, Chronic inflammation, Being overweight or obese, heavy metals, under active thyroid and other factors - genetic, certain drugs and pregnancy.

Fish Oils can lower Triglycerides and a low sugar, low refined carbohydrate high fiber diet can lower triglycerides, cutting back on alcohol consumption is important too.

**These drugs also are prescribed for elevated triglycerides** - Tricor - *Fenofibrate* Lopid - *Gemfibrozil* and Sustained release Niacin.

### These supplements can be supportive:

Aged Garlic extract - *Kyolic Garlic* 600mg 1 - 3x a day

L-Carnitine - 1 to 3 grams a day

Red Yeast Rice 1,200mg 1 - 2x a day

Probiotics and Green Tea are also supportive.

Monounsaturated Fats: Olive and Avocado Oil reduce LDL levels without lowering HDL  
Omega 3 fats are very supportive - Fish Oils, Flax Oil, Hemp Seed Oil, Chia Seeds, Walnuts

**Cholesterol** is an essential fat that contributes to your normal biological functioning. Produced in the liver, cholesterol is required to create cell membranes as well as bile acids for fat digestion. Cholesterol is Las the principal building block of many of your hormones - estrogen, progesterone, testosterone and plays a vital role in Vitamin D production.

Cholesterol circulates in throughout the body by lipoproteins in the blood.

**HDL - High-density lipoprotein** “good cholesterol” carries cholesterol away from the arteries to the liver, where it is eventually removed from the body. Large HDL is highly beneficial and removes greater amounts of LDL than Small particle HDL. ( *large dump truck vs a mini dump truck* )

**LDL - Low-density lipoprotein** “bad cholesterol” transports through the bloodstream, creating the risk of clogged arteries. It is the type of cholesterol that contributes to heart disease when levels are too high.

**VLDL - Very low-density lipoprotein** which is mostly composed of triglycerides that convert to LDL in the blood thus raising the level of “bad” cholesterol.

There are 2 types of LDL - small particle LDL “bad” and light fluffy LDL “possibly helpful”

**Oxidized LDL** “very bad” represents the amount of damaged cholesterol in your blood.

**Total Cholesterol** is the sum of HDL+LDL+VLDL

### **Reference ranges for total cholesterol**

Total Cholesterol (mg/dL)

> 239 High

200 - 239 Borderline high

Less than 200 Desirable

Target Range: 150 - 200 mg/dL

### **Drugs used to treat:**

**Statins:** Atorvastatin - *Lipitor*, Rosuvastatin - *Crestor*, Lovastatin - *Mevacor*, Pravastatin - *Pravachol*

**Bile acid sequestrates:** Colestipol, Cholestyramine - *Colestid*, *LoCholest*, *Prevalite*, *Questran*  
**Ezetimibe** - *Zetia*

### **Niacin Sustained Release**

### **LDL - low density lipoproteins**

Carry the majority of the cholesterol in the body ( about 70% ) through the bloodstream and distribute it to the cells and tissues. The bad part about LDL is that it becomes “oxidized“ made more toxic more frequently than other lipid particles.

Oxidized LDL becomes lodged in arteries, slowing or completely blocking the flow of blood to your heart and other parts of the body. This sets the stage for coronary artery disease and peripheral artery disease.

Nutrients and botanicals that prevent the oxidation of LDL - Vitamin E family including tocotrienols, Cocoa, Aged Garlic Extract, high polyphenol foods such as green tea, pomegranate, and deeply colorful fruits and vegetables and spices. , and Omega 3 - fatty acids ( fish oils ).

### **Reference ranges for LDL Cholesterol**

> 189 Very High

160 - 189 High

130 - 159. Borderline High

100 - 129. Slightly above normal

< 100. Normal

Target Range 80mg/dl or lower

*People with diabetes and or a pre-existing heart condition should stay in the lower end of the target range.*

*Too low a cholesterol level can be detrimental to hormone production in the body since hormones are made of cholesterol.*

### **Causes of High LDL**

Family history, overweight obesity, excessive alcohol, excessive sugar and high fructose corn syrup excessive refined carbohydrates, insulin resistance, hypothyroidism, high blood pressure, insufficient exercise, insulin resistance, poorly controlled diabetes, kidney disease, chronic stress. Men > 45 and Women > 55 are also likely to have raised levels.

### **Supplements to support elevated LDL:**

Soluble fiber, chromium, magnesium, aged garlic extract, Omega-3 fatty acids, pantethine, Red Yeast Rice. Plant Sterols. Monounsaturated Fats - Olive Oil and Avocado Oil.

### **HDL Cholesterol**

High density lipoprotein HDL carries LDL back to the liver where it is removed from the system. Large particle HDL is more efficient than small particle LDL at retrieving more LDL back to the liver. Measuring ApOa a beneficial marker and ApOb a negative number will also tell you a lot. The APO-B marker might be the single most important marker to look at in cardiovascular disease. Per *Peter Attila*. The ideal level is to have HDL be the same number as Triglycerides a 1:1 ratio. 2:1 is considered good and 3:1 satisfactory.

### **Reference Ranges for HDL Cholesterol**

#### **Men**

< 40 mg/dl	at risk
40 - 50	normal
> 60	target range

#### **Women**

< 50 mg/dl.	At risk
50 - 60	normal
> 60	target range

### **Causes of Low HDL**

Obesity, chronic stress, high refined carbohydrate, high sugar, very low fat, low exercise, high triglycerides, smoking, low omega 3's, low magnesium, testosterone deficiency in men. Certain medications.

Similar supplements to support LDL are the same for raising HDL

*All information on this paper came directly from  
Your Blood Never Lies - How to read a blood test for a longer, healthier life  
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2013 Square One Publishers [www.squareonepublishers.com](http://www.squareonepublishers.com)  
ISBN 978-0-7570-0350-9*