What is Cholesterol and Triglycerides?

Cholesterol is a waxy, fat-like substance found in most body tissues and is produced naturally within the body. It is an important constituent of cell membranes, helps with brain function, aids digestion, and is a precursor to many compounds including our hormones and Vitamin D. Cholesterol is part of a healthy body, but having too much of it in your blood, may be associated with an increased risk of coronary heart disease.

Cholesterol travels around the body attached to Lipoproteins. There are two main types of Lipoproteins:

Low-density lipoprotein (LDL): This type transports cholesterol to the tissues and is often called "bad cholesterol". When you have too much LDL cholesterol in your blood, it can join with fats and other substances to build up in the inner walls of your arteries, creating a thick, hard substance called **plaque**. The arteries can become clogged and narrow, and blood flow is reduced, which is referred to as **Atherosclerosis**. If the buildup of plaque ruptures, a blood clot may form at this location or a piece may break off and travel in the bloodstream, causing a heart attack or stroke. However, it is medically controversial if the LDL is the significant risk factor within this process and thus, does lowering the LDL significantly reduce risk? Currently, our American Heart Association advocates that a low LDL range is better.

High-density lipoprotein (HDL): This type of lipoprotein transports cholesterol back to the liver which then allows removal from the body. For this reason, it is referred to as "good cholesterol". HDL can also remove cholesterol from plaque within the arteries, so a higher level of HDL-cholesterol is considered "Cardio-protective".

Triglycerides: These are circulating fats within the blood and like cholesterol, are an important measure of heart health. The body converts any calories it doesn't need right away into Triglycerides. Triglycerides are stored in your fats cells and will be released as needed for energy between meals. High Triglycerides may contribute to hardening of the artery walls and plaque formation. Extremely high levels can also cause acute inflammation of the pancreas (pancreatitis).

Cholesterol Ranges:

Total Cholesterol

- Below 200 mg/dL — Desirable
- 200–239 mg/dL — Borderline High
- 240 mg/dL and above — High

LDL Cholesterol

- 100–129 mg/dL — Ideal
- 130–159 mg/dL — Low Risk
- 160–189 mg/dL — Moderate Risk
- 190 mg/dL and above — High Risk

HDL Cholesterol (Heart Healthy Cholesterol)

- Below 50 mg/dL (women) — Poor
- 50–59 mg/dL — Better
- 60 mg/dL and above — Best

Triglycerides

- Below 150 mg/dL — Low Risk
- 150–175 mg/dL — Moderate Risk
- 200–499 mg/dL — High
- 500 mg/dL and above — Very High

Ways to Create Normal Cholesterol Levels

- Healthy Eating: focus on a whole foods diet with minimal processed foods:
    1. Eat a variety of fruits and vegetables. Recommend 5-9 servings per day.
    2. Eat whole grain foods like whole grain bread, cereal, pasta and brown rice.
    3. Eliminate "White", refined sugar and starches.
    4. Choose lean meats, select options labeled "loin" and "round." which usually have the least amount of fat.
    5. Fatty fish such as salmon, trout, albacore tuna and sardines. Enjoy at least 2x/week.
    6. Eat more unsalted nuts, seeds, and legumes (dried beans or peas).
    7. Non-tropical vegetable oils like canola, corn, olive or safflower oils are preferable.
    8. Increase soluble fiber to 5-10 grams per day, and in some cases, up to 25gms/day.
    9. Limit saturated and trans fats (fats that are solid at room temperature)
- Exercise: 30-40 minutes of Aerobic exercise 3-4 times a week
- Stop Smoking
- Consider Nutritional Supplements:
    1. **Berberine:** Berberine is a bioactive compound that can be extracted from several different plants. It has been shown to be effective in lowering high LDL cholesterol levels and Triglycerides. It can also be useful in weight loss and stabilizing blood sugars.
    2. **Extended-release (ER) nicotinic acid** or **Niacin: (**vitamin B3) Large studies have suggested that time-released niacin helps to reduce LDL levels, raise HDL levels, reduce triglycerides and even reduce VLDL particles (by up to 68 percent!).
    3. **Red Yeast Rice:** Red yeast rice extract is a form of fermented rice developed in China. It has active ingredients similar to the Pharmaceutical medications called Statins. Because they are gentler, they often minimize undesirable side effects. Several studies support its use. Like Statins, RYR may reduce levels of CoQ10, so a supplement is recommended.
    4. **Omega 3 Fatty Acids:** Have been showed to elevate the desirable HDL levels and reduce Triglyceride levels
- Take Cholesterol-Lowering Medication – in some cases medications maybe required, some examples are:
    1. **Statins**
    2. **Fibrates**
    3. **PCSK9 Inhibitors**

After initiating a treatment plan, we may have you return to clinic for repeat testing to verify the success of these changes, generally in 12-16 weeks. We may recommend a more comprehensive risk assessment called the CardioMetabolic test through the company Spectracell. This test looks at more specific LDL subtypes, includes genetic bio-markers, inflammatory measurements, and evaluation of Type 2 Diabetes Risk.

We may also recommend a **Coronary** CT **Calcium Scan** (CCS). This is a computed tomography (CT) **scan** of the heart for the assessment of severity of **coronary** artery disease. Specifically, it looks for **calcium** deposits in the **coronary** arteries that suggest narrowing arteries and increased risk of heart attack.

To have access to your labs online, please see our front desk for directions on how you can create an account in PatientFusion.com. This allows you to access labs, send messages, and print out a list of your medications online.