



Health & Social Service Committee Newsletter
February 2022

The Central Jersey Club of NANBPWC, Inc.
Alyce Franklin-Owens, President

• THINK HEART, THINK HEALTH. •

Cholesterol Guidelines for Heart Health

∞

LEARN MORE:

- Causes of High Cholesterol
- TLC to Lower High Cholesterol
- Prevention & Treatment

**NEWS, IDEAS &
INSIGHTS**

Dr. Gayle Flannelly, PharmD
Chairperson

VOLUME



ALL ABOUT CHOLESTOROL FOR HEART HEALTH

Written by Dr. Tanya Randall

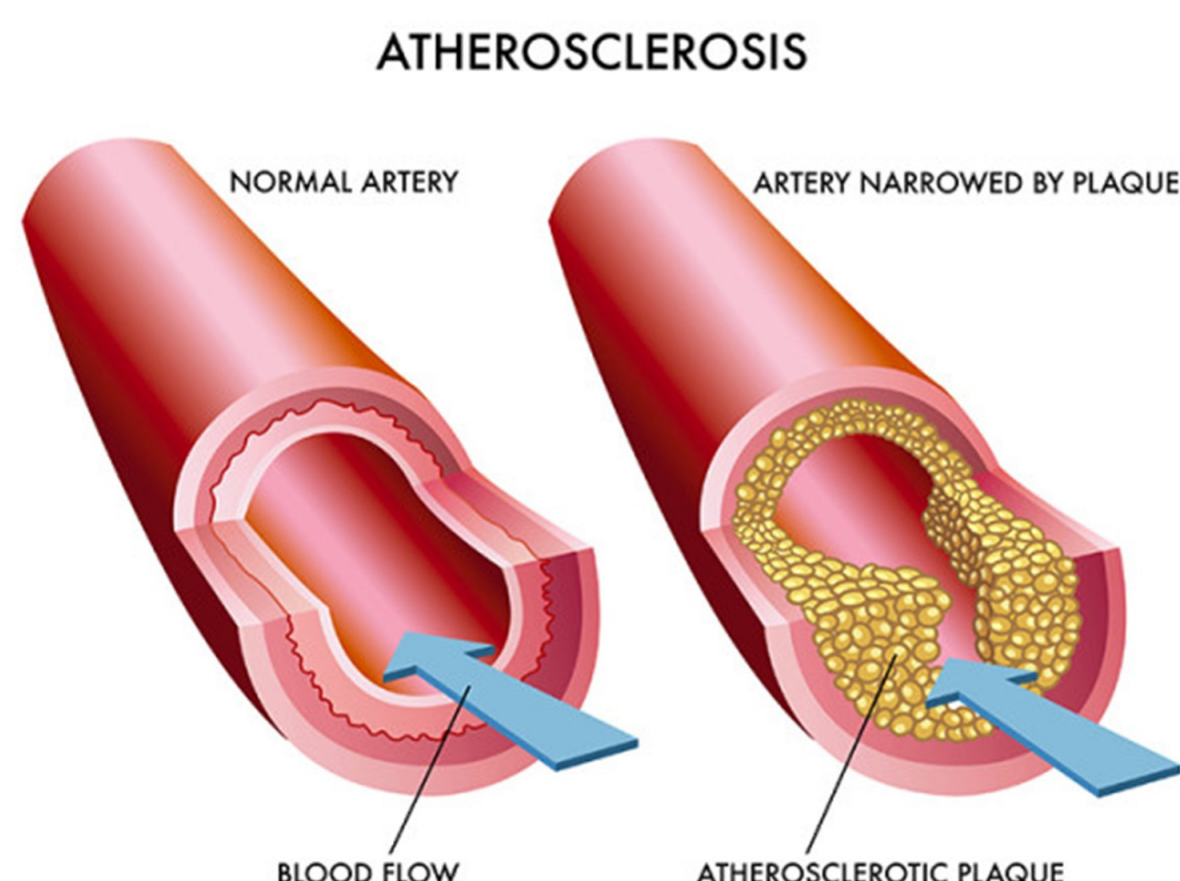
Lipids: What you should know


Cholesterol and triglycerides are the two main types of fat molecules — or lipids — in the body. Without them, the body could not function. Cholesterol is an essential component of cell membranes. The body uses cholesterol to produce vitamin D, hormones such as estrogen, and substances that aid digestion.

The body has two sources of cholesterol and triglycerides: the liver and your diet. The cholesterol molecule is a waxy substance found only in animal products (meat, milk, cheese, butter, and cream). These foods are also high in saturated and trans fats. Eating an excess of cholesterol-rich foods will raise blood cholesterol levels. The liver produces all the cholesterol the body needs in healthy humans, so you do not need supplemental cholesterol from your diet.


Triglycerides are the most common form of fat in the body. They store excess energy from your diet. Your triglyceride levels will be elevated by eating foods containing simple carbohydrates, saturated fats, and trans fats. Excess alcohol, uncontrolled diabetes, and genetics may also cause elevated triglycerides. Other health conditions such as underactive thyroid, obesity, polycystic ovarian syndrome, or kidney disease result in elevated triglycerides.

Cholesterol and triglycerides travel throughout the body in the blood, but only with the help of lipoproteins which ferry these fat molecules to various destinations. Low-density lipoproteins (LDL) are known as bad cholesterol because they sneak through artery walls and unload the cholesterol, causing narrowing of the arteries by plaque formation or atherosclerosis. Atherosclerosis blocks arteries to your brain to cause a stroke or to your heart to cause a heart attack. HDL, or high-density lipoprotein, clears cholesterol from the bloodstream and ferries it back to the liver for removal from the body. HDL can also help remove the cholesterol that LDL leaves embedded behind the artery walls. That is why HDL is known as good cholesterol. So, in general, optimal lipid levels are characterized by low levels of LDL and high levels of HDL.





Atherosclerosis



Risk Factors

Non-Modifiable	Potentially Modifiable
Age - middle to late Men >45 years old Women >55 years old	Hyperlipidemia - High LDL Low HDL Hypertension
Sex - Males	Smoking Diabetes Obesity,
Genetic - Familial Hypercholesterolemia	Sedentary lifestyle Diet
Family History Early CAD or Stroke	



What your cholesterol level means

Everyone over the age of 20 should have their cholesterol checked every five years. Your doctor will draw your blood after an overnight fast. The complete lipoprotein profile will include Total Cholesterol, LDL, HDL, Triglycerides.

Cholesterol levels for children, ages 6–19

AMOUNT (mg/dL)	TOTAL	LDL	HDL	TRIGLYCERIDES
Ideal	<170	<110	>45	<150
Borderline	170–199	110–129	N/A	150–199
Too high or low	>200	>130	<45	High: 200–499 Very high: >500

Source: American Academy of Pediatrics and US National Library of Medicine

INSIDER

Cholesterol levels for adults, ages 20 and over

AMOUNT (mg/dL)	TOTAL	LDL	HDL	TRIGLYCERIDES
Ideal	<200	<100	>60	<150
Borderline	200–239	130–159	Women: 40–59 Men: 50–59	150–199
Too high or low	>240	High: 160–189 Very high: >190	Women: <40 Men: <50	High: 200–499 Very high: >500

Source: Mayo Clinic and US National Library of Medicine

INSIDER

Young women have higher levels of HDL cholesterol than men because the female sex hormone estrogen boosts this good cholesterol. But everything changes at menopause. At this point, the total and LDL cholesterol rise, and HDL cholesterol falls. Therefore, women who had favorable cholesterol values during their childbearing years may have elevated cholesterol later in life. Of course, genetics and lifestyle play a significant role.

Causes of

HIGH CHOLESTEROL:

Unhealthy lifestyle habits will elevate your cholesterol. These habits and the effect on your cholesterol will be discussed in the next section entitled “Therapeutic Lifestyle Changes”. In this section we will focus on genetics or a factor you are unable to change that will cause you to have high cholesterol.

Familial Hypercholesterolemia (FH)

This genetic disorder affects about 1 in 250 people. It increases the likelihood of having coronary heart disease at a younger age. Typically, people with this disorder have someone in their family who suffered a heart attack before fifty years old.

How do you know if you have FH?

Signs of FH include:



LDL-cholesterol levels over 190 mg/dL in adults



Family health history of early heart attacks or heart disease



Swollen or painful Achilles tendons



Bumps around the knuckles, elbows, or knees

Talk to your doctor if you think you could have FH

If your doctor suspects you have FH, he or she may refer you for genetic counseling and testing. Three genes affect how your body regulates and removes cholesterol from your blood. About 60-80% of people with FH have a mutation in one of these three genes.

Most people with FH only have one mutation. In exceedingly rare cases, a person can have two mutations, which results in a much more severe and rare form of FH called homozygous FH. People with homozygous FH have highly elevated cholesterol levels and can have heart attacks in childhood. If a child has a cholesterol level above 160 mg/dl, he or she should be evaluated for FH. Finding the disorder early and treating it can reduce your risk of heart disease by about 80%.

Prevention and Treatment of High Cholesterol

THERAPEUTIC LIFESTYLE CHANGES (TLC)

To recap, your liver makes all the LDL (bad) cholesterol that the body needs. Your unhealthy lifestyle causes your body to produce more LDL cholesterol than it needs. New guidelines emphasize preventing heart disease by recommending "therapeutic lifestyle changes (TLC)" to lower LDL.

THE TLC DIET

SATURATED FATS

Calories per Day	Total Fat	Saturated Fat
1,500	42-58 grams	10 grams
2,000	56-78 grams	13 grams
2,500	69-97 grams	17 grams

The only fats worse than saturated fats are Trans Fatty Acids. These manufactured oils are known as partially hydrogenated oils. They not only increase your LDL cholesterol, but they lower your HDL cholesterol. Many fried foods, baked goods, pizza dough, cookies, and crackers contain trans fats.

Check the nutrition facts on the package of food products to make sure they do not have trans-fats. Make sure to also check the ingredient list for "partially hydrogenated oil,"

Therapeutic Lifestyle Changes (TLC) to lower your LDL cholesterol

- **TLC Diet**
 - Reducing saturated fat (<7% of calories)
 - Reducing cholesterol intake (< 200 mg/day)
 - Increasing intake of soluble fiber (10-25 gm/day) and plant stanols/sterols (2g/day)
- Weight management
- Increasing physical activity
- Controlling high blood pressure
- Quitting smoking



Saturated fats are typically solids at room temperature. No more than 25 to 35% of your daily calories should come from dietary fats. Less than 7% of your daily calories should come from saturated fat.

Most foods high in saturated fats have more than the daily recommended amount of fat per day in one serving. For example, a four-ounce piece of grass-fed beef has 30 grams of saturated fat.

THE FACTS ON FAT

The American Heart Association recommends replacing bad (saturated) fats with good (unsaturated) fats as part of a healthy eating pattern.

LOVE IT
UNSATURATED (POLY & MONO)
• Lowers rates of cardiovascular and all-cause mortality
• Lowers bad cholesterol & triglyceride levels
• Provides essential fats your body needs but can't produce itself

LIMIT IT
SATURATED
• Increases risk of cardiovascular disease
• Raises bad cholesterol levels

LOSE IT
ARTIFICIAL TRANS FAT, HYDROGENATED OILS & TROPICAL OILS
• Increases risk of heart disease
• Raises bad cholesterol levels

EAT SMART ADD COLOR MOVE MORE BE WELL

LEARN MORE AT [HEART.ORG/EATSMART](https://www.heart.org/eatasmart)

Prevention and Treatment of High Cholesterol

THERAPEUTIC LIFESTYLE CHANGES (TLC)

Unsaturated Fat

Monounsaturated and polyunsaturated are two kinds of unsaturated fats. When eaten in moderation and substituted for saturated and trans fats, they may improve your blood cholesterol. Sources of **unsaturated fats** are avocados, olives, and liquid vegetable oils. Fish and walnuts are high in omega-3 fatty acids and contain **unsaturated fats**. Omega-3 fatty acids will not lower your LDL level but may help raise your HDL level and lower your triglyceride level. They may also protect your heart from blood clots and inflammation and reduce your risk of a heart attack. Salmon, tuna (canned or fresh), herring, and mackerel contain high levels of omega-3 fatty acids. Try to eat these fish two times a week.



Increase intake of soluble fiber

Only **soluble fiber** effectively lowers your cholesterol. Studies have shown that consuming 10 to 25 grams of **soluble fiber** a day can lower cholesterol by 18%. It only decreases LDL cholesterol. Fiber intake does not affect triglycerides or HDL Cholesterol. **Soluble fiber** mixes with liquid in your gut to form a gel-like substance that binds to cholesterol in the small intestine. The binding of the cholesterol prevents it from entering your bloodstream and traveling to other parts of the body. Increase your **soluble fiber** intake by eating more oats, oranges, and beans.

Limit alcohol.

Alcohol adds calories with no nutritional value to your diet, leading to weight gain. Being overweight can raise your LDL level and lower your HDL level. Too much alcohol increases your risk of heart disease because it can raise your blood pressure and triglyceride level. One drink is a glass of wine, beer, or a small amount of hard liquor. Studies recommend that men have no more than two alcoholic drinks per day and women should have no more than one drink containing alcohol in a day.

Plant Stanols and sterols

You can also add certain food products that contain **plant sterols** (such as cholesterol-lowering margarine) to boost your diet's LDL-lowering power.

WHAT ARE PLANT STEROLS
and how do they work?



Known as **phytosterols**, plant sterols are plant-based micro-nutrients naturally present in fruits, vegetables, nuts, seeds, cereals, legumes and vegetable oils.¹ Studies indicate that when consumed as part of a diet low in saturated fat and cholesterol, **plant sterols can help reduce the absorption of cholesterol in the gut**, which can lower LDL blood cholesterol.²

Just as humans have cholesterol, so do plants. Due to its similar structure, plant sterols compete with cholesterol for absorption by the gut.³

Experts recommend consuming between 1,500-3,000 mg of plant sterols per day.⁴ Cooking oils are an easy way to incorporate plant sterols into your diet.

Weight Management

Losing weight if you are overweight can help lower LDL. Losing weight is highly recommended for people with high triglycerides and low HDL levels who have a large waist measurement. Research shows that women whose waist measures more than 35 inches and men more than 40 inches are at a greater risk for developing heart disease.

The ratio of this waist measurement relative to your hip measurement appears to be one of the strongest predictors of having a heart attack. Increased abdominal girth can lead to metabolic syndrome.

Exercise

You should have 30 minutes of physical activity on most, if not all, days for general health. Exercise can help raise HDL and lower LDL and is especially important for those with high triglycerides and low HDL levels. The thirty minutes of activity should be moderate intensity, which means you can only speak in two-to-three-word sentences. Good exercises to try are running, walking briskly, swimming or dancing. If you are not physically fit, you can work your way up to moderate exercise.

High Blood Pressure

High Blood Pressure (systolic >140 or diastolic >90) or Hypertension increases the stress on the arteries in your body. The increased pressure in your arteries causes microscopic tears where the LDL cholesterol can deposit. The cholesterol deposits cause the arteries to narrow, increasing blood pressure even more. More research is necessary to investigate the interaction between high cholesterol

METABOLIC SYNDROME

What is METABOLIC SYNDROME? It is a **CLUSTER OF RISK FACTORS** that can increase your risk of having: **HEART ATTACK**, **STROKE**, **TYPE 2 DIABETES**

KNOW YOUR NUMBERS

People with metabolic syndrome have **AT LEAST 3 OF THE FOLLOWING**:

- Obesity**: Waist Circumference: 40+ inches for men, 35+ inches for women
- HIGH Triglycerides**: Greater than or equal to 150 mg/dL
- LOW HDL or "Good" Cholesterol**: Less than 40 mg/dL for men, 50 mg/dL for women
- HIGH Fasting Blood Glucose**: Greater than or equal to 100 mg/dL
- HIGH Blood Pressure**: Greater than or equal to 130 mmHg/85 mmHg

How to PREVENT it

The best ways to **PREVENT – EVEN REVERSE –** metabolic syndrome:

- Lose weight**
- Eat better:**
 - Eat fewer simple carbohydrates
 - Increase fiber
 - Consume healthy fats
- Commit to a regular exercise program**

Statistics:

- Affects **1 OUT OF 3** adults in the U.S.
- Becomes much more **COMMON AS WE AGE**. Nearly **HALF OF ADULTS 60+** years old have it.
- 85% OF PEOPLE WITH DIABETES** have it.
- It's closely linked to **OBESITY**.

For more information, visit CardioSmart.org/MetabolicSyndrome

Prevention and Treatment of High Cholesterol



Most people know that smoking increases your risk of heart disease. Smoking has many detrimental effects on the body: increased heart rate, blood pressure, clotting of blood, and clogging of the arteries. Smoking also raises your level of LDL cholesterol and triglycerides and decreases your HDL cholesterol level. Smoking cessation increases your HDL cholesterol and reduces your blood pressure and heart rate. There have been no studies that showed that smoking cessation lowers LDL but increasing your HDL or good cholesterol may be worth trying to quit.

Nutritional Supplements

So far, we have discussed lifestyle changes that may effectively decrease your LDL cholesterol (bad) and triglycerides while increasing your HDL cholesterol (good). There are nutritional supplements that effectively improve your cholesterol numbers. Your doctor may recommend you take Red Yeast Rice, niacin, and omega-3 Fish Oil to improve your cholesterol. They all work by various mechanisms and lower different components of the total cholesterol.

Red Yeast Rice contains a potent HMG-CoA reductase inhibitor, the same chemical as lovastatin (a prescription drug used to treat high cholesterol). In multiple studies, treatment with red yeast rice demonstrated a reduction in LDL cholesterol by an average of 22% and triglycerides by 7%. HDL cholesterol was unaffected. In clinical trials, red yeast rice reduced the risk for nonfatal myocardial infarction by 62% and coronary artery disease mortality by 31% compared with placebo.

Niacin, a form of vitamin B, is available over the counter and improves HDL cholesterol levels.

It helps remove LDL cholesterol from your bloodstream. It also lowers triglycerides by decreasing the production of blood fats in the liver. Treatment with niacin does not reduce death rates due to heart attack or stroke. Doses of 2 to 3 grams per day added to prescribed statin drugs are customary. Niacin is also available by prescription, Niaspan. **If your doctor has prescribed niacin for you, do not take the supplement. Supplements are unregulated and may have increased side effects.**

Omega-3 fatty acids. Whether you get this from eating fish or taking the over-the-counter supplement, omega-3 fatty acids may help lower your triglycerides or increase your HDL cholesterol. Fish oil is more likely to work in those with extremely high triglyceride levels than those with moderate levels. Flaxseed is another source of omega-3 fatty acids. Unlike fish oil supplements, flaxseed decreases LDL cholesterol, which may be due to its high soluble fiber content.

Omega-3 fatty acids ethyl esters are prescribed medications derived from fish oils that are chemically changed and purified. A daily dose of 2g to 4g significantly lowers triglycerides. It is hard to get this much from diet alone; supplementation is necessary with prescription drugs Lovaza and Vascepa.



Prescription Medication

Should I take cholesterol-lowering medication?

If your LDL and heart-disease risk are both high, doctors may prescribe medications simultaneously as lifestyle changes. For others, a trial of six to 12 weeks of therapeutic lifestyle changes (TLC) to reduce your LDL-cholesterol will precede starting medication. Patients started on a cholesterol-lowering medication should continue lifestyle changes.

Some drugs reduce cholesterol by blocking the production of LDL cholesterol. In contrast, others remove the bad cholesterol by binding to it.

Drugs also treat high triglycerides. We will focus on statins, the most prescribed medications to treat cholesterol. See the chart below for a summary of cholesterol-reducing medications.

TABLE 2.1-12. Lipid-Lowering Agents

CLASS	EXAMPLES	MECHANISM OF ACTION	EFFECT ON LIPID PROFILE	SIDE EFFECTS
HMG-CoA reductase inhibitors (statins)	Atorvastatin, simvastatin, lovastatin, pravastatin, rosuvastatin	Inhibit the rate-limiting step in cholesterol synthesis.	↓ LDL, ↓ triglycerides	↑ LFTs, myositis, warfarin potentiation.
Lipoprotein lipase stimulators (fibrates)	Gemfibrozil	↑ lipoprotein lipase, leading to ↑ VLDL and triglyceride catabolism.	↓ triglycerides, ↑ HDL	GI upset, cholelithiasis, myositis, ↑ LFTs.
Cholesterol absorption inhibitors	Ezetimibe (Zetia)	↓ absorption of cholesterol at the small intestine brush border.	↓ LDL	Diarrhea, abdominal pain. Can cause angioedema.
Niacin	Niaspan	↓ fatty acid release from adipose tissue; ↓ hepatic synthesis of LDL	↑ HDL, ↓ LDL	Skin flushing (can be prevented with ASA), paresthesias, pruritus, GI upset, ↑ LFTs.
Bile acid resins	Cholestyramine, colestipol, colesevelam	Bind intestinal bile acids, leading to ↓ bile acid stores and ↑ catabolism of LDL from plasma.	↓ LDL	Constipation, GI upset, LFT abnormalities, myalgias. Can ↓ absorption of other drugs from the small intestine.



Prescription Medication

Statins

This class of drugs, also known as **HMG CoA reductase inhibitors**, works in the liver to prevent cholesterol from forming, thus reducing the amount of cholesterol circulating in the blood. Statins are most effective at lowering LDL (bad) cholesterol. Still, they also help lower triglycerides (blood fats) and raise HDL (good) cholesterol.

Lowering cholesterol is not the only benefit associated with statins. These medications may lower your risk of heart disease and stroke by stabilizing the plaques or cholesterol build-up on blood vessel walls and reducing the risk of certain blood clots.

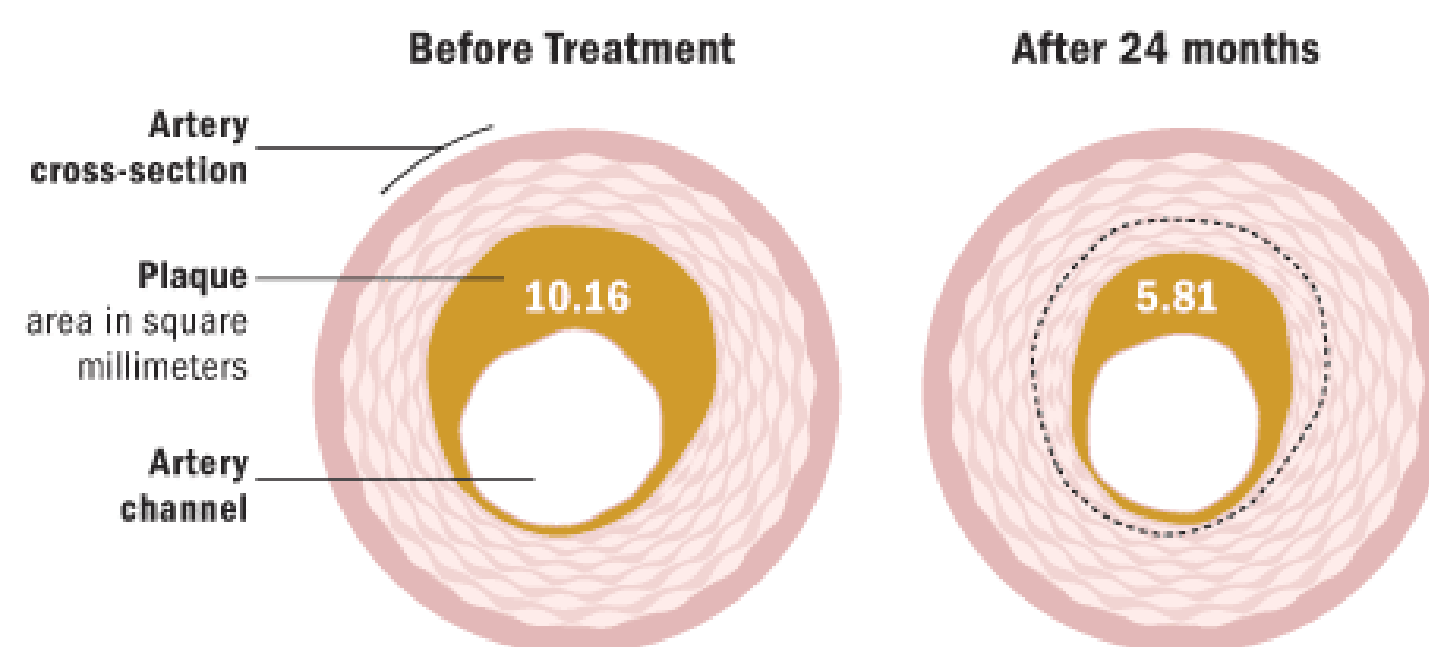
Most people tolerate statins, but some have side effects that may subside as the body adjusts to the medication. Your doctor may have to decrease your dose, change to a different statin, or change to another cholesterol-lowering drug. **Coenzyme Q10 supplements** may help prevent statin side effects, though more studies are needed to determine any benefits of taking it. Talk to your doctor first to ensure the supplement will not interact with any of your other medications.

To learn more about how these drugs work to lower your cholesterol:

[View an interactive slideshow to see how cholesterol drugs work.](#)

Signs of Improvement

Atherosclerosis is the progressive buildup inside the arteries of fatty plaque, which can rupture and cause heart attacks. In a study of high-risk heart patients, intensive treatment with a statin drug reversed the disease and reduced plaque buildup, as this rendering of one patient's treatment shows.



Note: The study showed a 6.8% median reduction in total plaque volume
Source: The Journal of the American Medical Association



How does your doctor determine treatment?

Whether you need statin therapy depends on your cholesterol levels, and other risk factors for heart disease and atherosclerosis discussed earlier in this article. With this risk-factor information, your doctor will place you in one of four risk categories for heart disease. The higher your risk, the lower your LDL cholesterol goal will be:

ATP III LDL Cholesterol Goals in Patients with Dyslipidemia²

Risk Category	LDL Cholesterol Goal (mg/dL)
High risk: CHD or CHD risk equivalents ^a (10-year risk >20%)	<100 (optional <70)
Moderately high risk: ≥2 risk factors ^b (10-year risk 10% to 20%)	<130 (optional <100)
Moderate risk: ≥2 risk factors ^b (10-year risk <10%)	<130
Lower risk: 0 or 1 risk factor ^b	<160

ATP = adult treatment panel; CHD = coronary heart disease;
HDL = high-density lipoprotein; LDL = low-density lipoprotein

Risk includes not only coronary heart disease (CHD) (heart attack) also cerebrovascular accident (CVA) (stroke) and peripheral artery disease (PAD). Having any or all these diseases makes you “high risk.”

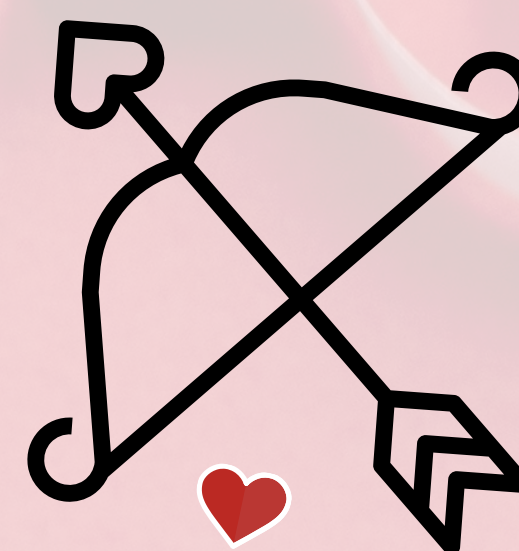
To calculate your risk, click here (<https://cccccalculator.ccctracker.com/>)

- CONCLUSION -

Cholesterol Guidelines for Heart Health

Cholesterol is a substance that your body needs, but as with many things, too much of a good thing is not good for you. High cholesterol is a risk factor for atherosclerosis, leading to coronary artery disease and stroke. Throughout this article, you have discovered reasons you have elevated cholesterol and the steps to lower your cholesterol. You can reduce your bad cholesterol (LDL) and triglycerides and raise your good cholesterol (HDL) through lifestyle modification. Begin with watching what you eat, exercising, and quitting smoking. Suppose behavior modification does not lower your cholesterol enough to reduce your risk of developing coronary artery disease and stroke. In that case, your doctor will prescribe medication. There are numerous medication options, but statins are the first line.

Please use this information to discuss your risk of atherosclerosis with your physician before you start any supplements as they may interfere with your prescribed medication. For additional resources, **please visit <https://www.heart.org/en/health-topics/cholesterol/cholesterol-tools-and-resources>**.
Video by AHA summarizing cholesterol <https://www.youtube.com/watch?v=JJ0cV0V4WGU>



References

<https://www.heart.org>

<https://my.clevelandclinic.org/health/articles/16866-cholesterol-guidelines--heart-health>

<https://my.clevelandclinic.org/health/articles/17100-cholesterol-what-you-need-to-know-about-high-blood-cholesterol>

<https://www.mayoclinic.org/diseases-conditions/high-blood-cholesterol/in-depth/statins/ART-20045772?p=1>

<https://www.hopkinsmedicine.org/health/wellness-and-prevention/why-cholesterol-matters-for-women>

<https://medlineplus.gov/howtolowercholesterolwithdiet.html>

Zhou Q, Wu J, Tang J, Wang JJ, Lu CH, Wang PX. Beneficial effect of higher dietary fiber intake on plasma HDL-C and TC/HDL-C ratio among Chinese rural-to-urban migrant workers. *Int J Environ Res Public Health*. 2015;12(5):4726–4738. doi:10.3390/ijerph120504726

Gepner, Adam D et al. "Effects of smoking and smoking cessation on lipids and lipoproteins: outcomes from a randomized clinical trial." *American heart journal* vol. 161,1 (2011): 145-51. doi: 10.1016/j.ahj.2010.09.023

Lin CC, Li TC, Lai MM. Efficacy and safety of *Monascus purpureus* Went rice in subjects with hyperlipidemia. *Eur J Endocrinol*. 2005; 153:679-686. Abstract

Becker DJ, Gordon RY, Morris PB, et al. Simvastatin vs. therapeutic lifestyle changes and supplements: randomized primary prevention trial. *Mayo Clin Proc*. 2008;83:758-764. Abstract

The Central Jersey Club of NANBPWC, Inc.
Alyce Franklin-Owens, President

CJC Health & Social Service Committee News letter, Dr. Gayle Flannelly, Chairperson