



# Cholesterol

---

WE THRIVE TOGETHER

# What is Cholesterol?

Cholesterol is a fatty substance manufactured in the liver. It is necessary for certain body processes.

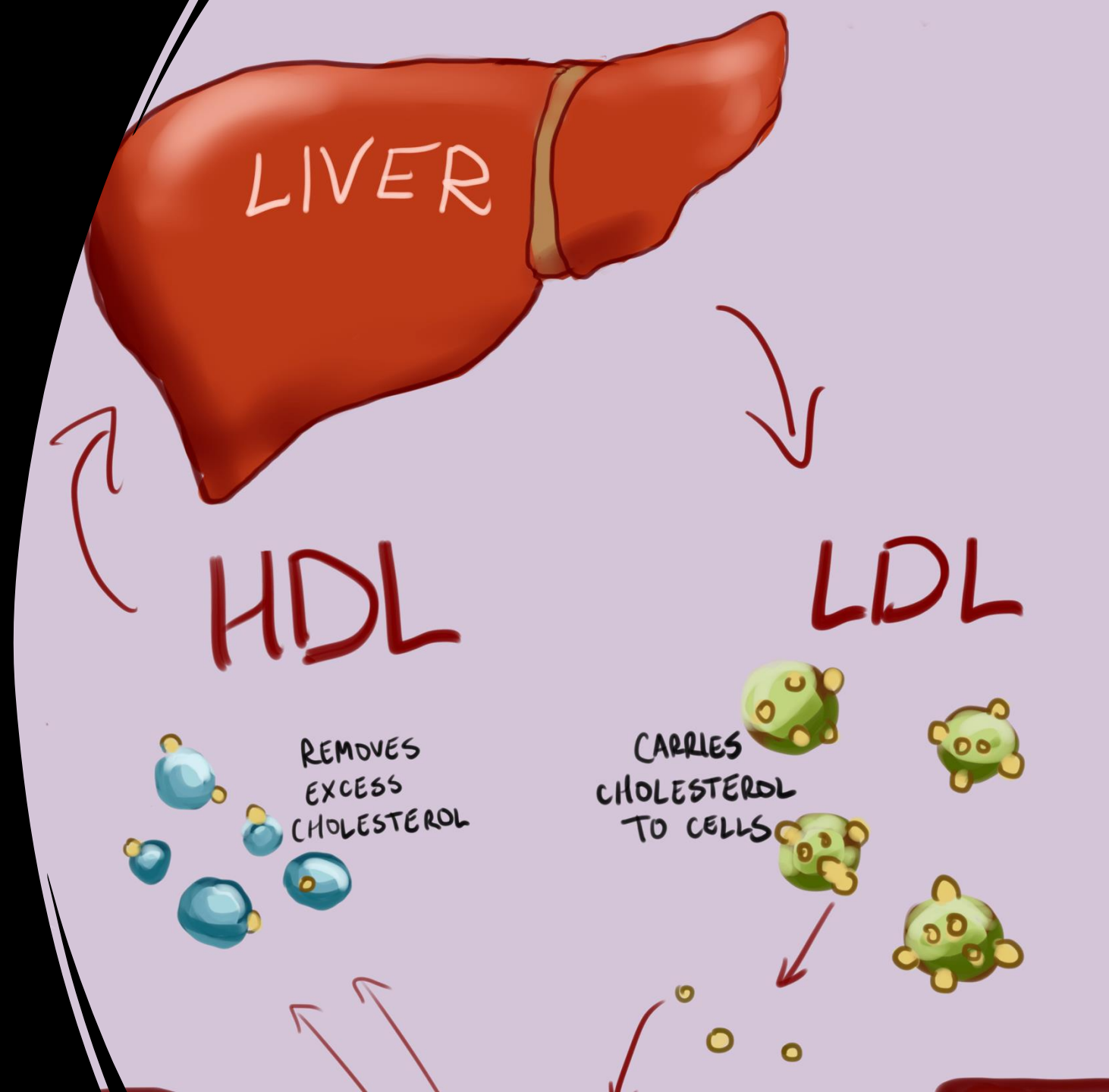
There are 4 types of cholesterol: Total, LDL, HDL, Triglycerides.

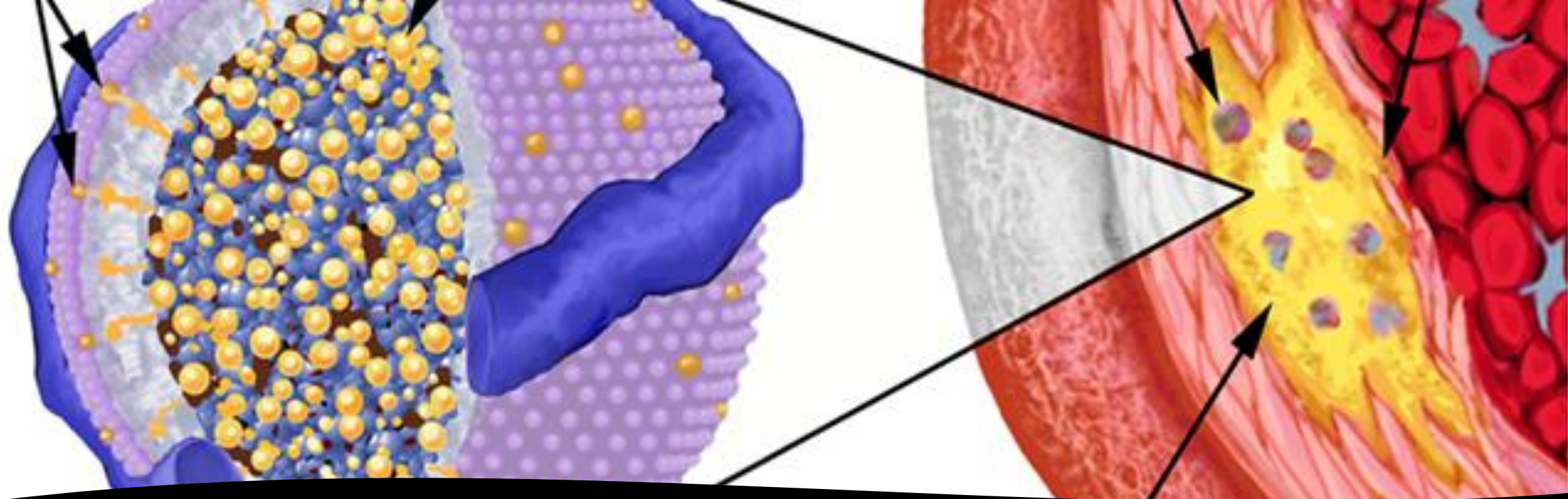
Each of these types should fall into normal limits. Meaning not too high or too low

# Blood cholesterol

Your Healthy Target total Cholesterol : Less than 200 mg/dL total

Why it matters : cholesterol is a fatty substance found in your body cells. It helps your body make important vitamins and hormones. But too much cholesterol can lead to plaque buildup inside your blood vessels. This sticky substance causes your arteries to harden and narrow , which limits blood flow to your heart.





LDL: Less than 100 mg/dL

HDL: Men greater than 40 mg/dL and Women greater than 50 mg/dL

## Your Lipoprotein Targets:

- Why it matters : the body makes all the cholesterol it needs. Cholesterol circulates in the bloodstream but cannot travel by itself. As with oil and water, cholesterol (which is fatty )and blood (which is watery )do not mix. So cholesterol travels in packages called lipoproteins, which have fat (lipid) inside and protein outside. Two main kinds of lipoproteins carry cholesterol in the blood .
- low density lipoprotein, or LDL, is called the bad cholesterol because it carries cholesterol to tissues, including the arteries. Most of the cholesterol in the blood is the LDL form. The higher the level of LDL cholesterol in the blood, the greater your risk for heart disease.
- High density lipoprotein, or HDL, it's called the good cholesterol because it takes cholesterol from tissues to the liver, which removes it from the body. A low level of HDL cholesterol increases your risk for heart disease.

# New considerations for cholesterol management

**CHOLESTEROL IS VITAL FOR**  
 cell structure  
 hormone production  
 brain function  
 nerve function  
 skin health  
 immune function  
 and much more...

**SOURCES OF CHOLESTEROL IN THE BODY:<sup>2</sup>**  
 25% dietary sources  
**75%** made by the liver

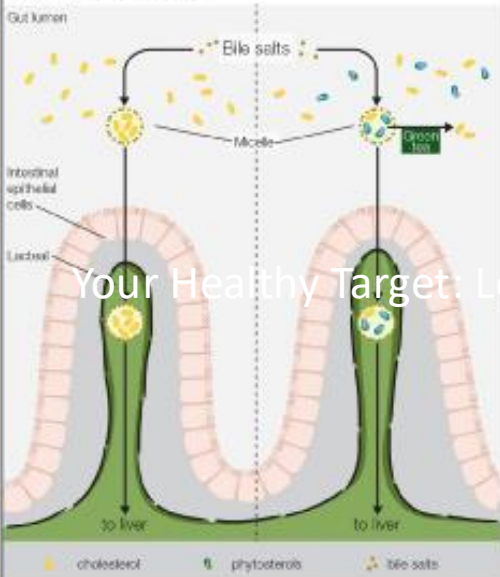
**1 IN 3**  
 Australians over 18 years has  
**ABNORMAL OR HIGH CHOLESTEROL LEVELS<sup>3</sup>**

almost **50%**  
 of people with **DYSLIPIDAEMIA** are **NOT** on **MEDICATION<sup>3</sup>**

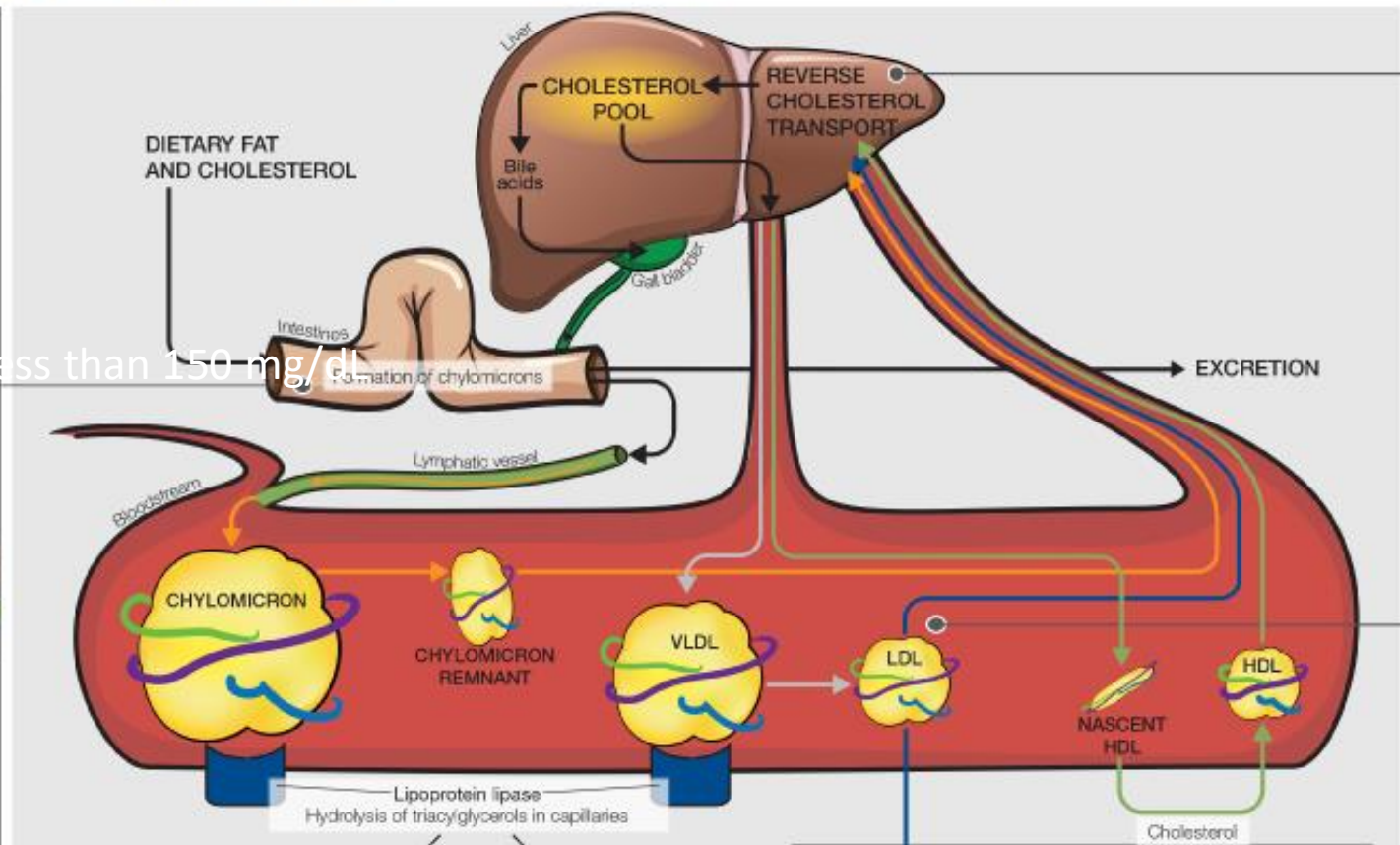
Lifestyle factors such as **SMOKING & OBESITY** are associated with **ABNORMAL CHOLESTEROL<sup>3</sup>**

## MAINTAINING HEALTHY CHOLESTEROL LEVELS<sup>4-16</sup>

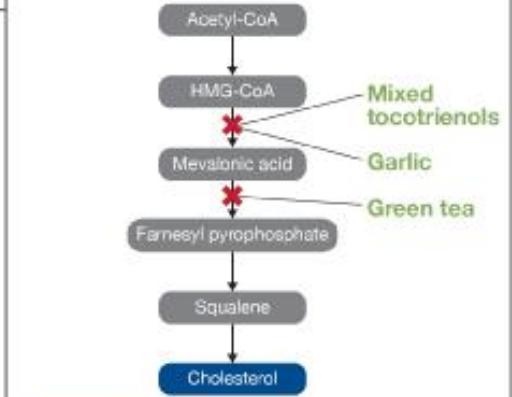
### REDUCING INTESTINAL ABSORPTION OF CHOLESTEROL: PHYTOSTEROL ESTERS, GREEN TEA AND BETA-CAROTENE<sup>4\*</sup>



**Phytosterols** and cholesterol have a similar chemical structure. Phytosterols compete with dietary and biliary cholesterol for incorporation into micelles, therefore lowering intestinal cholesterol absorption.  
**Green tea** catechins reduce intestinal cholesterol absorption by interfering with the micellar solubility of cholesterol. Green tea catechins form insoluble co-precipitates with cholesterol and increase faecal excretion of cholesterol.



### REDUCING CHOLESTEROL BIOSYNTHESIS: MIXED TOCOTRIENOLS, GARLIC AND GREEN TEA<sup>11\*</sup>



**Tocotrienols, garlic and green tea** downregulate cholesterol biosynthesis in the liver by inhibiting various enzymes. Tocotrienols and garlic inhibit the key enzyme HMG-CoA reductase. Green tea inhibits three enzymes – mevalonate kinase, mevalonate decarboxylase and farnesyl pyrophosphate synthase.

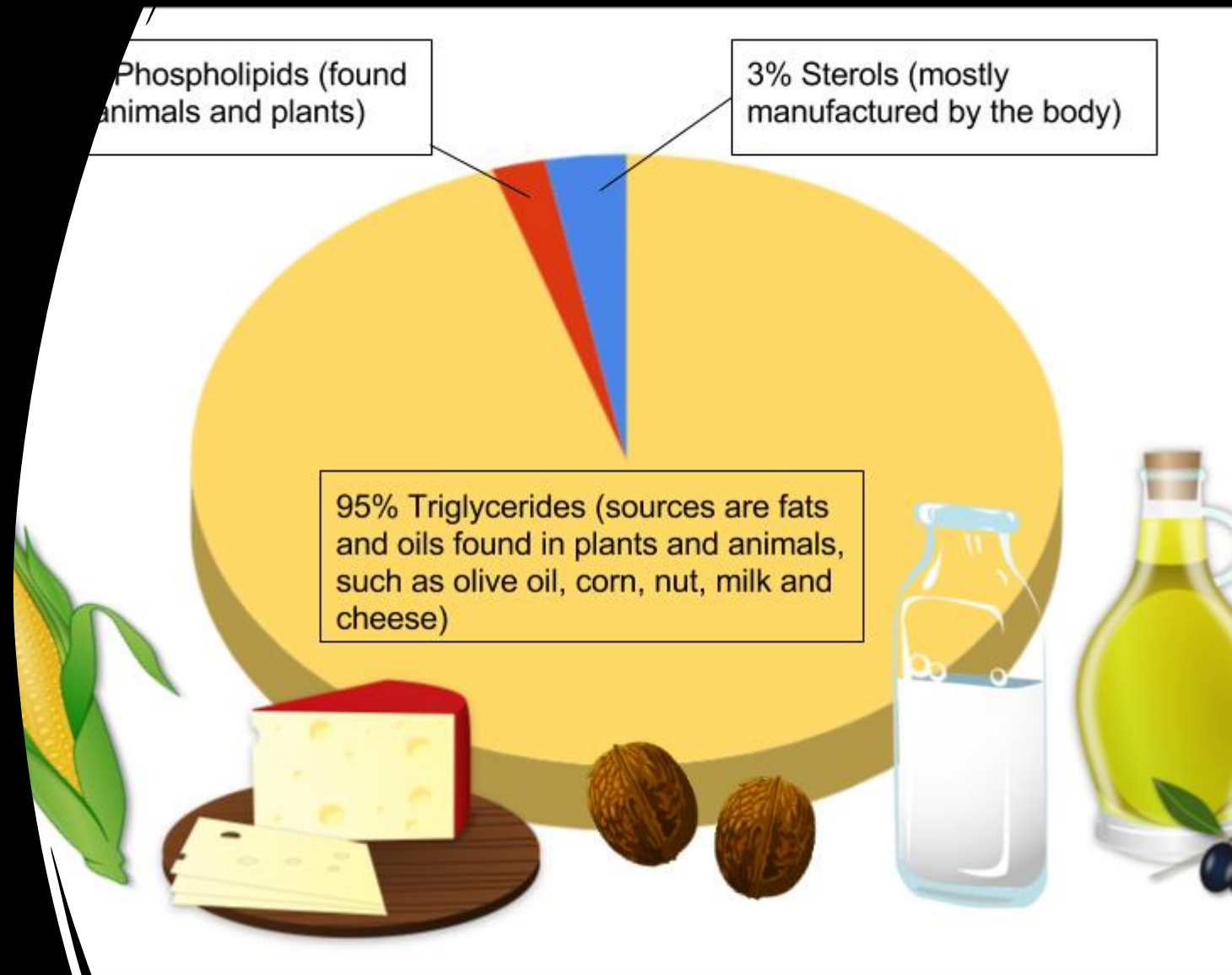
### ANTIOXIDANT PROTECTION OF LDL: MIXED TOCOTRIENOLS AND BETA-CAROTENE<sup>11-14</sup>



Your Healthy Target: Less than 150 mg/dL

# Why it matters

Triglycerides, which are produced in the liver, are another type of fat found in the blood and in food. Causes of high triglycerides are overweight / obesity , physical inactivity , cigarette smoking, excess alcohol intake, and a diet very high in carbohydrates (60% of calories or higher ). A triglyceride level of 150 mg/dL or higher also is one of the risk factors of metabolic syndrome .



# CHOLESTEROL AND TRIGLYCERIDE LEVELS *in adults*

	TOTAL	HDL	LDL	TRIGLYCERIDES
HIGH	240 or higher	n/a	160 or higher	200 or higher
BORDERLINE	200-239	n/a	130-159	150-199
GOOD	less than 200	40 or higher	less than 100	less than 150
LOW	n/a	less than 40	n/a	n/a

## SOURCES:

U.S. Department of Health and Human Services, Mayo Clinic, and Cleveland Clinic

## Causes of High Cholesterol

Heredity

Diet high in saturated fat

Sedentary lifestyle

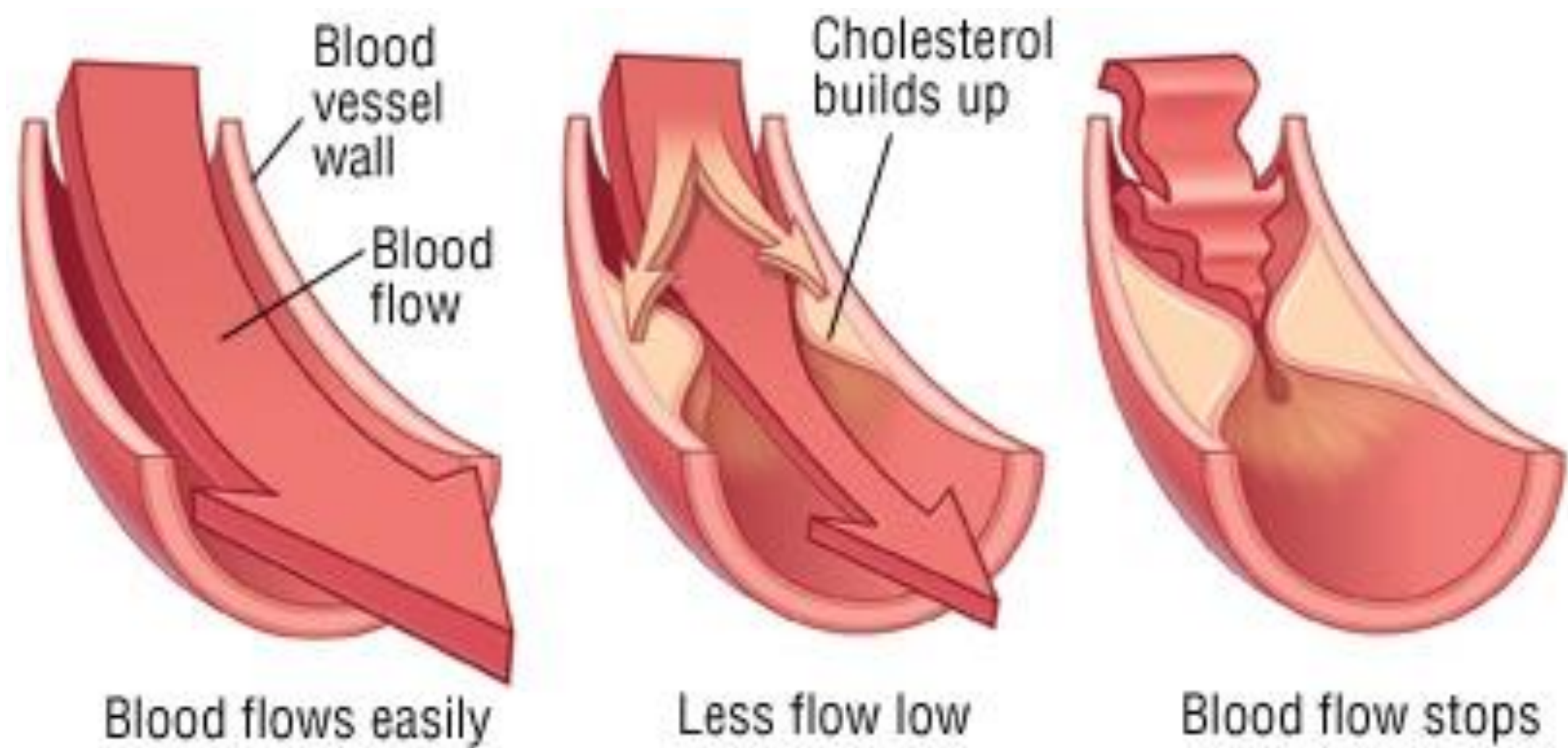
# Adverse Effects of High Cholesterol

Atherosclerosis—hardening of the arteries causing narrowing of the vessel

Plaques—fatty deposits in the walls of arteries

Impaired blood flow through cardiac arteries leading to angina, MI and other cardiac issues

Impaired blood flow through cerebral arteries leading to TIA & CVA



Ways to reduce  
and/or maintain  
healthy  
cholesterol  
levels



Diet low in saturated fat



Healthy BMI



Regular exercise (raises HDL)



Medication as prescribed

# Positive Lifestyle Choices

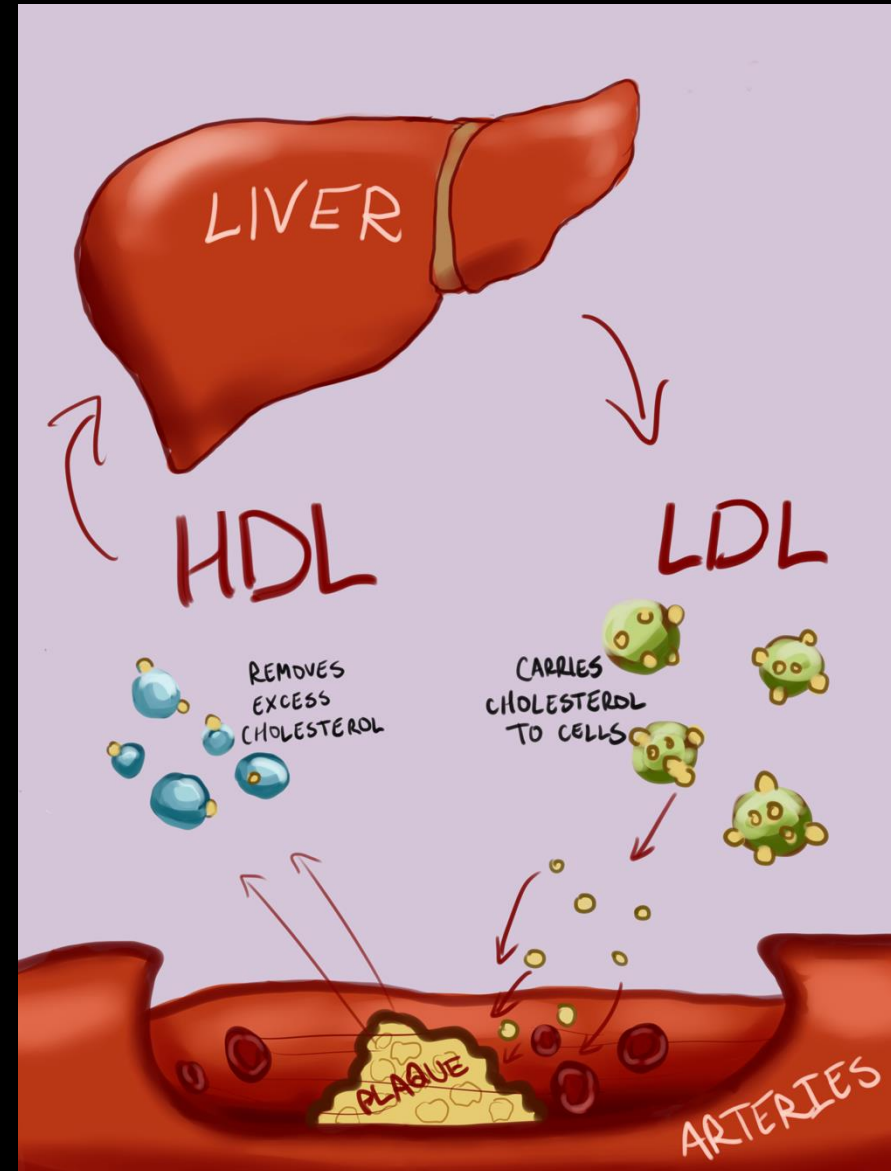


Whether you need to lower your blood pressure, cholesterol, glucose, or BMI, positive lifestyle choices often lead to a healthier you. More importantly, you feel energized. Let's talk about some ways to initiate positive lifestyle choices that can improve cholesterol.

# Does my diet impact my cholesterol?

---

- Yes, what you eat can affect the amount of cholesterol circulating in your blood. Cholesterol is a waxy substance that your body needs to function. Your liver produces enough cholesterol to support your body's processes. So, you don't need to get it from food (and it's not an essential nutrient). The cholesterol you gain from your diet is extra and unnecessary, like adding sand to a beach. That being said, your diet only affects about 20% to 30% of the cholesterol in your blood.
- There are certain foods that cause your "bad" cholesterol (LDL) level to rise higher than normal. On the other hand, other foods can help lower your LDL level. Knowing which foods to eat and which foods to avoid can help you manage your cholesterol levels and lower your risk of heart disease.



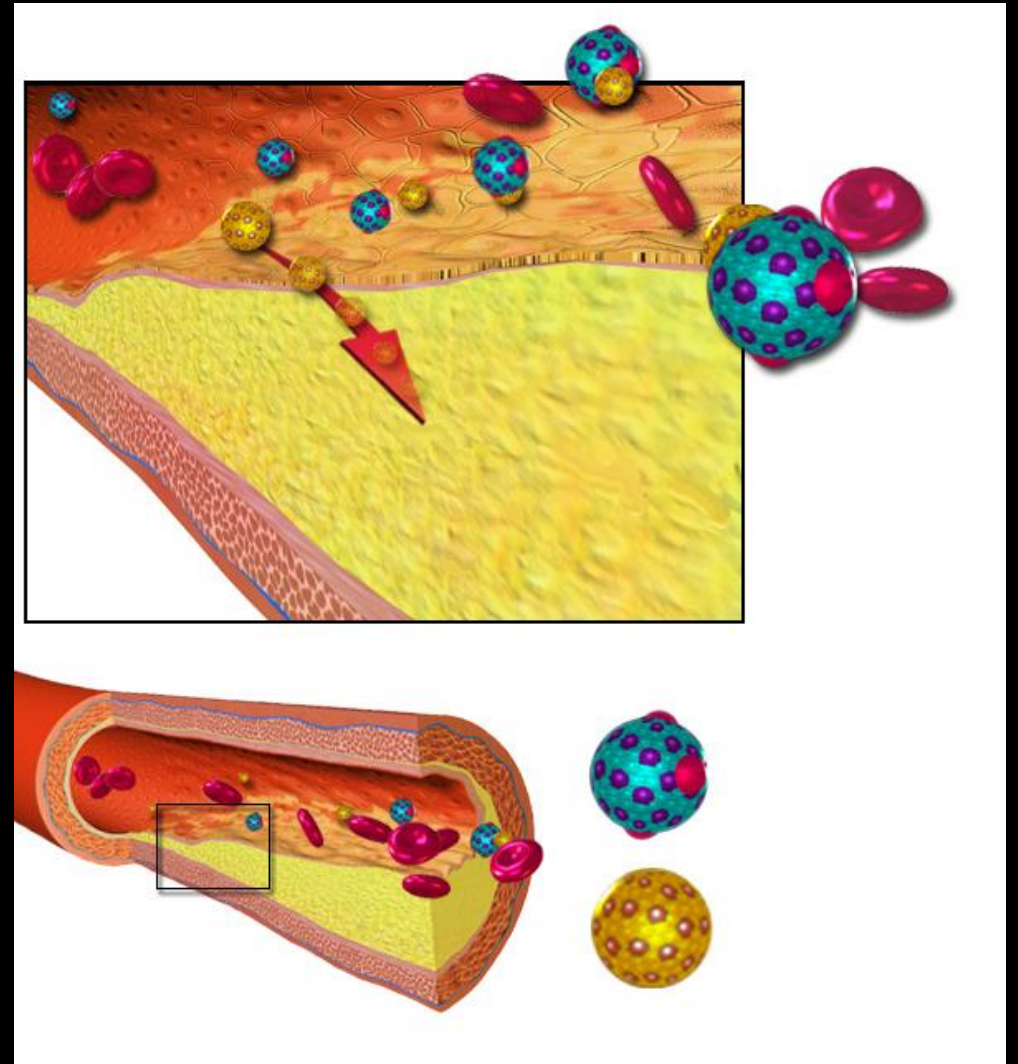
# Cholesterol and Nutrition



Your diet affects your cholesterol. To lower your cholesterol, limit foods high in saturated fat and avoid foods with trans fat. These fats raise your “bad” cholesterol (LDL). Adding more soluble fiber and plant-based foods to your diet can lower your LDL cholesterol while also giving you the nutrition you need for an active, vibrant life.

## What is the main food source of cholesterol?

- The main food sources of cholesterol (called dietary cholesterol) are animal products. These include meats, cheeses and dairy products.
- When it comes to lowering your cholesterol levels, research shows it's not dietary cholesterol we should worry about. Instead, two types of unhealthy fats — saturated fat and trans fat — are the culprits behind elevated bad cholesterol. It just so happens that many of the foods high in dietary cholesterol also may contain these unhealthy fats.





## How can I lower my cholesterol with diet?

Here are some steps you can take to lower your cholesterol with your diet:

- Add more soluble fiber to your diet.
- Limit your intake of saturated fat.
- Don't eat trans fat.
- Eat balanced meals.

# Add more soluble fiber to your diet

Some ingredients help lower your LDL cholesterol. The main one to know is soluble fiber. This is a form of fiber that's water-soluble. Soluble fiber binds around bile (which is composed of cholesterol) and removes it with your body's waste. Aim for 10 to 25 grams of soluble fiber per day. Ask your provider what amount is best for you based on your calorie needs.

Add more soluble fiber to your diet by eating:

- Dried beans, lentils and split peas.
- Apples, blackberries and citrus fruits.
- Oats and oat bran.
- Brown rice.



# Limit your intake of saturated fat

---

Saturated fat is a type of fat that's solid at room temperature. Common sources of saturated fat include:

- Processed meat, including hot dogs, sausage, bacon and pepperoni.
- Fatty cuts of meat, including ribs, poultry with the skin and highly marbled meat.
- Full-fat dairy products, including butter, heavy cream, cream cheese and sour cream.
- Coconut oil and palm oil.
- Fried food.

Your body needs some saturated fat to be healthy. But it can be easy to eat too much if you're not checking nutrition labels. Learning how much saturated fat is in some of your usual foods can help you find ways to cut back.

You might wonder, how much is too much? Aim to get no more than 5% to 6% of your daily calories from saturated fat.



The chart below offers suggested limits based on [how many calories](#) you need each day.

Calories you need per day	Saturated fat limit
1,200	7 to 8 grams
1,400	8 to 9 grams
1,600	9 to 10 grams
1,800	10 to 11 grams
2,000	11 to 13 grams
2,200	12 to 15 grams

---

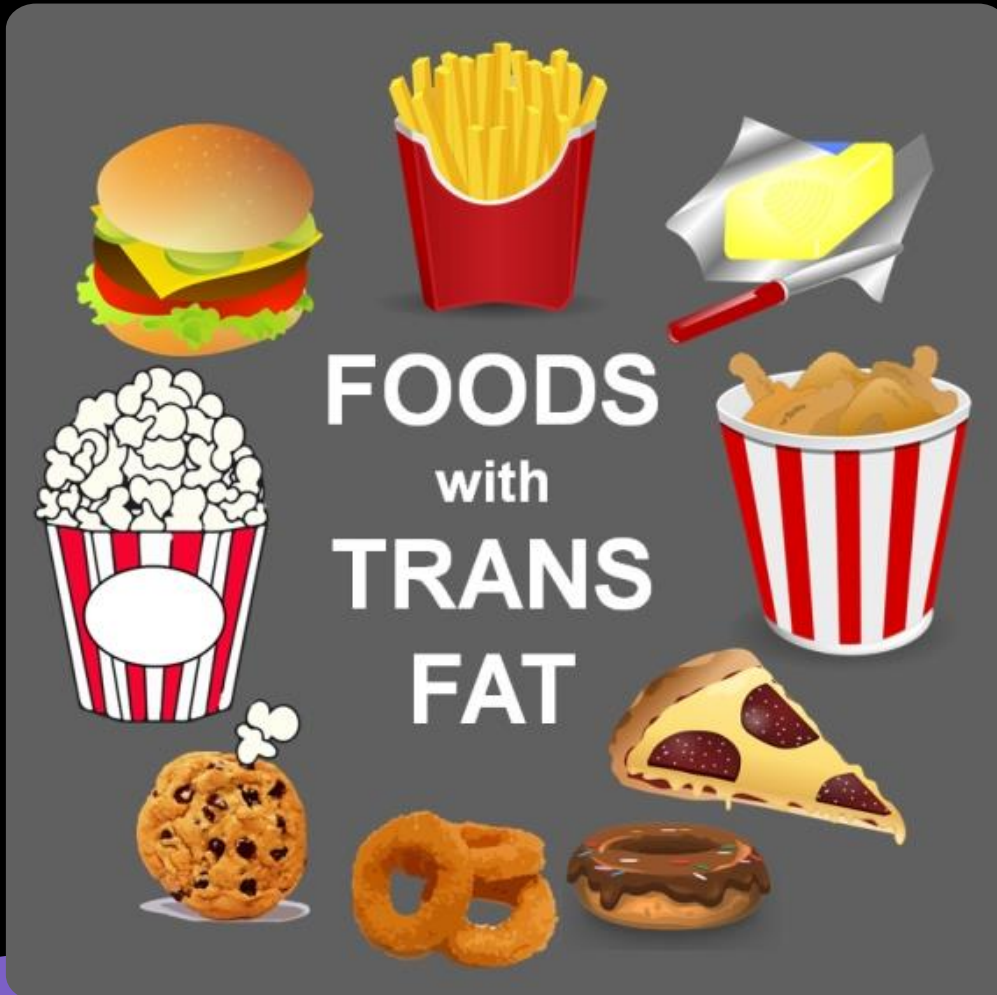
Keep in mind that those ranges are suggestions, not hard and fast rules. Being too focused on numbers and strict limits can lead to disordered eating habits, like orthorexia. Plus, dietitians caution that getting too caught up in the numbers can cause you to eliminate some foods that are actually more healthy than harmful.

For example, olive oil contains some saturated fat, but its health benefits make it worth adding to your diet in moderation (up to four tablespoons per day). Other foods with saturated fat that you want to keep in your diet include avocados and walnuts.

The key is looking at the food source. It's OK if you slightly go over the suggested ranges for saturated fat if the fat is coming from otherwise healthy foods. When in doubt, speak with a dietitian to learn which sources of saturated fat you should eliminate and which you can keep in moderation.



# Don't eat trans fat



- Trans fat is a combination of liquid vegetable oil and hydrogen. Traditionally, fast foods and processed foods had been major sources of trans fat in people's diets. That's because those foods contained partially hydrogenated oils, which gain trans fat through the manufacturing process. However, in 2018, the U.S. Food and Drug Administration (FDA) banned the use of partially hydrogenated oils in food.
- While that's good news, it still doesn't mean fast foods and processed foods are harmless. They may be high in saturated fat. Plus, they may still contain trans fat due to their cooking method (like frying). Your body doesn't need any trans fat. It harms your body, and its food sources have no health benefits. So, it's best to completely avoid it, if possible.
- To limit trans fat in your diet, avoid eating:
  - Fast food.
  - Fried food.
  - Commercial baked goods, such as cookies, doughnuts and pastries.

# Eat balanced meals

When trying to reach healthy cholesterol levels with your diet, it's important to eat meals that contain a balance of:

- Fruits.
- Vegetables.
- Grains.
- Protein foods.
- Dairy/dairy alternatives.
- Fats.



# Can I have snacks or desserts?

Eat snacks sparingly, and be careful about the ones you choose. Aim for snacks low in saturated fat, sugar and sodium. Here are some good options for healthy snacks and suggested portion sizes:

Nuts like walnuts, almonds, pecans or pistachios (1/4 cup).

Pumpkin seeds or sunflower seeds (1/4 cup).

Roasted chickpeas (1/2 cup).

Fresh fruit (a small orange or apple) with a handful of nuts.

Celery (a few stalks) with peanut butter or almond butter that contains no added sugar.

Popcorn (3 cups, popped) and a string cheese.

Raw vegetables (1 cup) with hummus (1/4 cup).

Greek yogurt (6 ounces) with whole grain cereal (1/2 cup).

Steamed vegetables (1 cup) with cheese (1 ounce).

Be cautious when buying low-fat snacks or desserts at the store. Many of these treats are low in fat but high in sugar. Keep an eye on sugar content and talk with your healthcare provider about how much sugar is OK for you to eat. This is especially important if you have a history of [high blood sugar](#) or [diabetes](#).

One way to have a treat that's low-sugar and low-fat is to experiment in the kitchen with [healthy dessert recipes](#). Many recipes have little or no sugar yet still taste great.

# What are some cooking tips?

Cooking at home helps you take control of your diet. But just because something is home-cooked doesn't mean it's healthy or good for your cholesterol levels. Keep in mind these tips to cook in ways that support your healthy eating plan. Your provider or dietitian can provide you with many more tips, too.

- **Add more fish to your meals.** Try for at least 8 ounces per week, and don't fry it!
- **Avoid using butter, lard and shortening.** Use a healthy cooking oil (like olive oil) instead, but only use a small amount. Try using low-salt vegetable stock instead of oil when sautéing or baking vegetables, fish or poultry.
- **Bake, broil or steam your foods.** Avoid frying them.
- **Check recipes for butter and oil substitutes.** Many recipes will provide options like applesauce or bananas for baking.
- **Double the amount of veggies when making soup.** This will increase the fiber content in your soup. To make room, cut the amount of rice or noodles in half.
- **Find herbs and spices you enjoy.** Use them to add flavor to your dishes and replace butter, salt or high-fat sauces.
- **Make your own salad dressing.** Use olive oil and balsamic vinegar (or a similar combination). Salad dressings are often hidden sources of saturated fat.
- **Remove the fat from the top of soups or stews.** Put your pot of soup or stew in the fridge for a few hours after it's cooled down. When you take it out, you'll see a layer of solid fat on top that's easy to remove.
- **Remove the skin from chicken before cooking.** Add seasonings to the meat itself, rather than the skin.



## What if I change my diet and my cholesterol is still too high?

What you eat can either raise or lower the amount of cholesterol in your blood, especially the bad kind that leads to atherosclerosis. This knowledge can be empowering.

Your choices can make a difference. But sometimes, even your best effort won't lower your cholesterol to where it needs to be. There are a few reasons why.





# Your genes play a role

- Scientists believe that heredity (the genes you inherit) impacts your cholesterol. As a result, dietary changes help, but sometimes they can't make a big enough dent to get your numbers in the healthy range.
- Some people have very high cholesterol because their bodies can't get rid of enough LDL cholesterol. This inherited condition is called familial hypercholesterolemia. So, it's hard for those people to lower their cholesterol levels through diet alone. They may need statins or other medications, too.

## \* Your cholesterol goes up as you get older

- As we age, our cholesterol levels go up. So, dietary changes might not have the same impact at age 60 as they would at age 30.

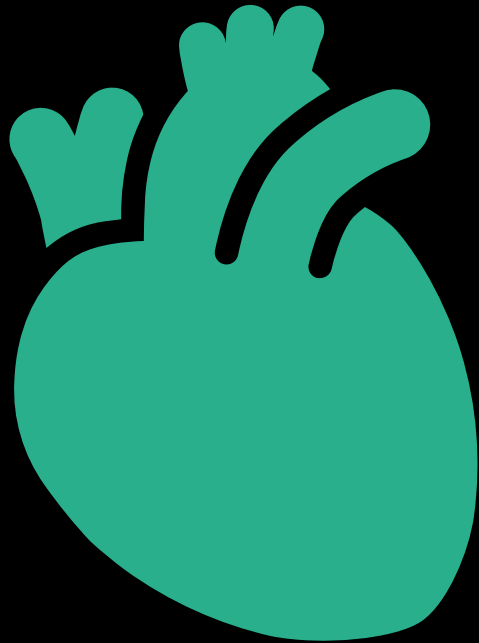




# Change takes time

---

- If you've made changes to what you eat, you might hope to see changes in your cholesterol numbers right away. But your cholesterol numbers reflect patterns that develop over time.
- Picture a huge chalkboard covered in writing. If you swipe over the board once with an eraser, you'll erase some of the writing. But you need to keep swiping for a while to get rid of all the writing. Meanwhile, someone else is writing on the parts you just erased. (You're probably still eating some foods that raise your LDLs, and your body is still producing cholesterol!)
- Be patient and give your body time to adjust to your new nutritional plan. Meanwhile, build exercise into your daily routine. Also, ask your provider how long it may take to see changes and whether you'd benefit from medications along with your new eating plan.



The foods you eat can have a powerful effect on your health, including your cholesterol levels. If you're starting to make changes to your diet, be patient with yourself. Don't expect to overhaul your eating plan overnight. Make small, simple changes, and gradually add more as you go along. You might miss some of your favorite foods. But try to focus on the new foods you're exploring, rather than the ones you're limiting.

Involve your family and friends in your new plan. Explain why you're making these changes and how they can support you. It's a lot easier to stay with a nutrition plan when the people around you encourage you in reaching your goals.

## Source

<https://my.clevelandclinic.org/health/articles/16867-cholesterol--nutrition-tlc>