Understanding Lipids

Delivering Comprehensive Cardiovascular Care

PeaceHealth
The Spirit of Health

Understanding Your Lipids

Many people think of lipids and cholesterol as the same thing. Lipids are simply a group of naturally occurring molecules that includes cholesterol, triglycerides as well as other fats and oils. Understanding your lipid profile means knowing your cholesterol and triglyceride numbers.

CHOLESTEROL

Cholesterol is created by our bodies and serves a vital function to keep us healthy. It is used for producing cell membranes and some hormones, and serves other essential bodily functions. But too much cholesterol in the blood, specifically LDL (bad) cholesterol, is a major risk for coronary heart disease (which leads to heart attack) and stroke.

LDL (BAD) AND HDL (GOOD) CHOLESTEROL

There are basically two types of cholesterol, commonly referred to as "good" and "bad." Understanding the difference between the two, and knowing the cholesterol numbers in your blood is important to maintaining heart health.

LDL CHOLESTEROL (BAD)

High levels of LDL (bad) cholesterol in the blood can gradually build up inside the walls of an artery, forming a thick, hard plaque that narrows the artery and makes it less flexible. A narrowed artery could prevent the passage of a clot, increasing the risk for stroke or heart attack.

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HDL CHOLESTEROL (GOOD)

High levels of HDL (good) cholesterol appear to protect against heart attack, while lower levels of HDL (below 40 mg/dL) increase your risk for developing heart disease. Evidence suggests that HDL also appears to slow buildup of LDL (bad) cholesterol, and tends to transport cholesterol away from the arteries.

TRIGLYCERIDES

Triglycerides are the most common form of fat in your body, and serve as a major source of energy. Your body uses the food you eat for daily rebuilding processes and energy. Calories that are consumed and not utilized are turned into triglycerides and stored in fat cells to be used later. This is true no matter what type of foods you eat—carbohydrates, proteins or fats. If you regularly consume more calories than you use, you may end up with high triglyceride levels.

Triglyceride levels below 150 are considered normal. Having high triglyceride levels (200 or above) may increase your risk of developing coronary artery disease.

Lipid Profile

There is a lot you can do to improve your lipid profile:

- **Eat a healthy diet**
- **Maintain a healthy body size**
- **Increase physical activity**
- **Stop smoking**
- **Alcohol in moderation**
- **Learn to manage stress**

YOUR LIPID PROFILE

A lipid test is done after a 8-12 hour fast without food or beverages. The test provides information about total cholesterol, LDL (bad) cholesterol, HDL (good) cholesterol and triglycerides.

OPTIMAL LIPID PROFILE

A priority in lipid-lowering guidelines is to lower LDL-C to your goal. The goal is determined by your individual risk factors. Optimal level of LDL-C is below 100 mg/dL; for those with increased risk factors the goal may be below 70 mg/dL. Risk factors include: existing heart disease, cigarette smoking, elevated blood pressure or taking antihypertensive medication, family history of premature coronary artery disease, diabetes, age and low HDL-C.

Total Cholesterol

- *based on LDL, HDL and Triglycerides*

LDL-C

- *less than 100 is optimal*
- *less than 70 with increased risk factors*

HDL-C

Desirable numbers:

- *above 40 (male)*
- *over 50 (female)*

Triglycerides

- *below 150 mg/dL is considered normal*

Diet and Nutrition

Cholesterol comes from two sources:

1. The cholesterol you eat in foods that contain cholesterol
2. Your internal production of cholesterol

Most of the cholesterol and triglycerides in your body are made in your liver from the by-products (digestion) of carbohydrates, proteins and fats. In other words, all the foods you eat can be turned into cholesterol and triglycerides if the body does not need them for daily building processes or immediate energy requirements.

DIET - THE BASICS

To understand more clearly how cholesterol and triglycerides are formed means knowing some basic nutrition information. Once you understand how lipids are made in the body, you can then make the necessary diet and lifestyle changes to improve your lipid profile.

NUTRITION OVERVIEW

Every day your body is in the process of building healthy new cells. The building blocks for those new cells are the foods and beverages that you consume. You truly are what you eat!

Nutrients are divided into two groups - large and small. The large nutrients are proteins, fats and carbohydrates, and they each play a different role in the daily building process. The small nutrients are vitamins and minerals, all of which are essential for good health and found abundantly in vegetables, fruits and many other whole foods.

THE LARGE NUTRIENTS

Proteins are used primarily to build muscles, fats are used primarily to build structures inside the body, and carbohydrates are the preferred and primary source of body fuel.

Simply put, if you ingest more fuel (carbohydrates) than your body can use within a short period of time, the excess fuel that is not needed right away is turned into cholesterol and triglycerides and stowed away as fat, usually around the waistline creating that infamous "apple" shape. The arrangement of turning fuel to fat

storage for later use is perfect in times of famine or food scarcity. The process is supervised by a well-known hormone called insulin.

To help you understand how insulin turns carbohydrates (natural sugars) into cholesterol and triglycerides, let us follow the path of a carbohydrate. Let's say you eat a bowl of pasta, the pasta is rapidly broken down and digested into individual molecules of sugar. The sugar is absorbed and this triggers the release of the hormone insulin. Insulin's primary role in the body is blood sugar regulation. Insulin and sugar then travel directly to the liver for processing.

In the liver, any excess sugars that are not needed for fuel are turned into cholesterol and triglycerides, they are then shuttled through the body in a little transport bus we call a VLDL (very low density lipoprotein molecule) and stowed away as fat, usually around the waistline.

MAKE THE MOST OF YOUR FUEL - GET BETTER MILEAGE!

To make better use of the fuel you consume, it is important to slow down digestion so the fuel "drips" slowly into your system. This also helps with the digestion and absorption processes. Eating a balance of protein, fats, carbohydrates and vegetables at each meal will usually slow down digestion. This is because proteins "walk," fats "crawl," but carbohydrates "run" though the digestive process. By eating some protein and fats with carbohydrates, digestion gets slowed down considerably.

Some people refer to the process of slowing down digestion as lowering the glycemic response of the meal. The "glycemic response" is simply a measure of how fast a food, or in this case the meal, raises blood sugar.

BALANCING MEALS

Ideally, each meal should include some good quality proteins, healthy fats, whole unrefined carbohydrates and good amounts of non-starchy vegetables. This is relatively easy to accomplish with practice. For example, a turkey sandwich on whole grain bread with lettuce, tomato, mustard and a little real mayonnaise, served with a small side of fresh crunchy veggies or salad with olive oil based dressing - how delicious!

Dietary Fiber

Fiber is a part of carbohydrate foods that cannot be digested. Dietary fiber, commonly called "bulk" or "roughage," helps maintain healthy intestinal elimination. A diet high in fiber helps protect you from medical conditions such as heart disease and cancer, aids in weight loss, helps stabilize normal blood sugar levels, and helps prevent a host of other medical conditions, including elevated lipids. A total of 25-30 grams of fiber daily for adults is recommended and can be achieved if you include good amounts of non-starchy vegetables, nuts, seeds and whole grains in your daily food choices.

SUGGESTIONS FOR INCREASING FIBER

- Increase fiber slowly. Too much, too fast may cause gas and bloating.
- Include a variety of fiber sources such as whole grains, vegetables, unsalted nuts, seeds and whole fruits (not juice).
- Choose high-fiber breads and cereals, try to find products that contain about 4-5 grams per serving.
- Gradually increase vegetable intake to 4-5 servings daily (½ cup = 1 serving).
- Snack on fresh veggies such as broccoli, carrots and celery. Try sprinkling vegetables with lemon juice for a surprisingly great flavor.
- Serve fruit as dessert.
- Add extra veggies to prepared or frozen meals.
- Add extra veggies to a sandwich, including tomatoes, cucumbers, spinach, bell peppers, scallions, etc.

Specific Diet Recommendations

Aim for a balance of proteins, healthy fats, unrefined carbohydrates and vegetables at each meal.

CARBOHYDRATES

Carbs are the sugars, starches and fiber foods such as grains, legumes, fruits and vegetables. Carbohydrates should be included at each meal.

Specific carbohydrate recommendations are highly individualized and depend on many factors, including: age, activity level, medical conditions, healthy or damaged metabolism, gender-related hormonal status, history of yo-yo dieting and "diet thinking," desire for weight loss or weight gain, and emotionally driven eating behaviors and habits.

For example, carbohydrate intake at:

- Breakfast may range from 15-30 grams
- Lunch may range from 15-45 grams
- Dinner may range from 15-45 grams
- Morning and afternoon snacks may range from 15-30 grams
- Athletes would require far more carbohydrates per day.
- Individuals with metabolic disorders such as diabetes Type 2 and insulin resistance and those with excess body fat would most likely be better suited to lower intakes.

Carbohydrate Examples

Approximately 15-18 grams of carbs per serving

Whole Grains

1/2 cup whole-grain cereal
1/2 cup bulgur wheat
1/3 cup brown rice
1/3 cup buckwheat
1/3 cup barley
1/2 cup corn grits
1/3 cup quinoa
2 1/2 cups popcorn
1/3 cup couscous
1/2 cup wheat bran

Starchy Vegetables

1/2 cup corn
1/2 cup peas
1/2 cup lima beans
1/2 cup winter squash
1/2 cup carrots
4 oz. vegetable juice
1 artichoke
1 cup beets
1/2 medium sweet potato
1/2 medium baked potato

Legumes

1/4 cup aduki beans
1/3 cup black beans
1/3 cup chickpeas (garbanzo)
1/3 cup lentils
1/3 cup navy beans
1/3 cup split peas
1/3 cup white beans
1/3 cup northern beans

Breads, Crackers, Pasta

1 slice whole - grain bread
1/2 pita
1/2 English muffin
1/3 bagel
1 small dinner roll
1/2 cup pasta (cooked)
4-6 whole-grain crackers
1 corn tortilla

Fruits

3/4 - 1 cup berries
1/2 banana
15 grapes
2 figs
2 dates
One medium size piece of fruit: apple, orange, peach or plum

Sugars (referred to as simple sugars) are rapidly digesting carbs, found in milk, fruits and table sugar. Starches are slower digesting carbs found in breads, grains, cereal, pasta and starchy vegetables, these carbohydrates are often high in fiber. In addition to higher fiber, whole grains contain appreciable amounts of vitamins and minerals and are far healthier than refined white flour products. It is important to choose whole grain products rather than refined white flour products.

FRUITS AND VEGETABLES

Two servings of fruit daily. Choose seasonal varieties.

NON-STARCHY VEGETABLES

Four to six servings daily. Starchy vegetables count as a carbohydrates, non-starchy vegetables do not. Choose seasonal varieties and include a range of colors everyday—carrots, bell peppers, romaine lettuce, etc.

GRAINS

Four to six servings daily depending on energy expenditure. Whole grains contain fiber and retain many of the essential vitamins and minerals necessary for good health. Choose whole grain products over refined white flour products. Look for the word "whole" on the ingredient label of breads, cereals, crackers, etc. To avoid possible food sensitivities and allergies from over-consumption of wheat products over time, choose mixed grain products whenever possible such as multi-grain breads.

LEGUMES

Four to five servings weekly. Legumes are an excellent source of non-animal protein, fiber and other important nutrients. However, because they also contain a significant amount of natural sugars, legumes fall into the carbohydrate category.

FATS

Fats are essential to life. Some fats are healthier than others. Fats from vegetables and nuts are generally considered the healthiest. For example, healthy fats include those found in olive oil, olives, avocado and nuts.

OMEGA-3 FATS

Include two to four servings of cold water fish weekly. An excellent source for omega-3 fats are cold water fish and seafood (for example, herring, salmon, mackerel and halibut). Omega-3 fats have been shown to lower the risk of heart attacks.

NUTS AND NUT BUTTERS

Nuts, especially walnuts and almonds, are high in minerals, folate, plant sterols, vitamin E and fiber. Walnuts contain appreciable amounts of omega-3 oils. Read ingredient labels when purchasing nut butters to avoid added sugars and other unnecessary additives.

SATURATED FATS

Saturated fats found in meats, poultry, cheese, butter, milk and milk products should be kept to a minimum. However, avoid fat-free products because manufacturers often add unhealthy sweeteners to make up for lack of taste.

TRANS FATS

Trans fats are chemically processed fats found in many products that have hydrogenated and partially hydrogenated oils in them. Read ingredient labels carefully and avoid these products. Trans fats have no place in the human body.

PROTEINS

Include protein at each meal. Portions should be moderate, ranging from 2-6 oz per meal, depending on body size, activity level, and medical conditions. A serving of meat/poultry resembles the size of a deck of cards. Choose lean meats and poultry products. Choose naturally lower fat cheeses such as mozzarella, swiss and low-fat cottage cheese. Opt for whole eggs (versus egg substitute) in moderation, and choose cold water fish when possible.

Low-Sodium Options

You may have heard of a low-sodium diet or a low-salt diet and wondered whether they are the same or different diets. Salt is actually a combination of two minerals: sodium and chloride (NaCl). Sodium levels are high in both commercial and sea salt. Salt that is commercially produced is made up of 99.9% sodium chloride, with 2,350 mg of sodium/teaspoon. Sea salt is comprised of 2,132-2,350 mg sodium/teaspoon.

- Commercial Salt: 99.9% sodium chloride, with 2,350 mg of sodium/teaspoon
- Sea Salt: 2,132-2,350 mg sodium/teaspoon

In practical terms, there is no difference between a low-sodium and low-salt diet. The mineral sodium is found as a natural ingredient in many foods; however, the most common form of sodium is salt.

THE LOW-SODIUM DIET IS 2000 MG (2 GRAMS)

Salt substitutes use potassium instead of sodium. You may use them if your doctor approves. However, you should not use salt substitutes with some medications. Check with your doctor to be sure that you can use a salt substitute each time your medication changes.

LOW-SODIUM: 4 STEPS

1. Do not add salt to your food
2. Modify favorite recipes to low-sodium
3. Choose foods naturally low in sodium
4. Read ingredient labels

With enough dedication, it's fairly simple to retrain your taste buds. Making low-sodium choices will come naturally in time. Herbs and spices - for example, rosemary, bay leaves and basil - are a great alternative to salt.

Read ingredient labels and select items with low- reduced- or no-salt added products. Try vinegars, lemons, fresh horse radish without added salt, low-sodium baking powder, low-sodium baking soda or low-sodium chili sauce.

LOW-SODIUM FOOD INGREDIENT LABELS

Check the ingredient label. Some chemical preservatives, such as sodium benzoate, sodium propionate, sodium citrate and sodium phosphate, contain small amounts of salt. Most heavily salted foods are canned vegetables and soups, V8 juice, pickled foods and "fast food" items.

Avoid purchasing products with food labels containing any of the following words, indicating a product contains sodium compounds:

- Soda
- Sodium bicarbonate
- Sodium carbonate

Much of the sodium found in processed foods can be found in preservatives. Some keywords to look for are:

- Sodium benzoate
- Sodium sulfite
- Sodium caseinate
- Sodium alginate

- ***Sodium Free:*** *Less than 5 mg per serving*
- ***Very Low-Sodium:*** *35 mg or less per serving*
- ***Low-Sodium:*** *140 mg or less per serving*
- ***Reduced Sodium:*** *At least 25% less than original product*
- ***Without Added Salt:*** *No salt is added to a product that normally has added salt*
- ***No Salt Added:*** *Unsalted*

One of the best things you can ever do for your health and longevity is to eat a whole food, balanced diet. Include proteins, healthy fats, unrefined carbohydrates and fresh vegetables.

Practice eating balanced meals and importantly, really allow yourself the time to appreciate and enjoy the meal!

To cultivate good habits around food — practice the following 7 habits:

1. Eat three well-balanced meals daily
2. Put your food on an attractive plate
3. Eat at the table
4. Avoid distractions when eating
5. Drink alcohol in moderation
6. Drink 5-6 glasses of water daily
7. Find sources of pleasure other than eating when you are not hungry

Notes

Delivering Comprehensive Cardiovascular Care

PeaceHealth Medical Group Cardiology is a part of the comprehensive heart care team at the Cardiovascular Center at PeaceHealth St. Joseph Medical Center in Bellingham. Our cardiac and vascular specialists represent all adult heart specialties and are recognized nationally and internationally as world leaders in their field. We collaborate with primary care physicians, surgeons and radiologists to deliver on the PeaceHealth promise of providing safe, evidence-based, compassionate care.

Our specialists are nationally and internationally recognized for their expertise in:

- General cardiology
- Non invasive and invasive cardiology
- Interventional cardiology
- Vascular medicine
- Vascular interventions
- Cardiac rhythm management

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