

Facing Facts About Cholesterol



Heather McCracken, MPH, RD
Nutritionist & Health Educator
UCSD Student Health Services

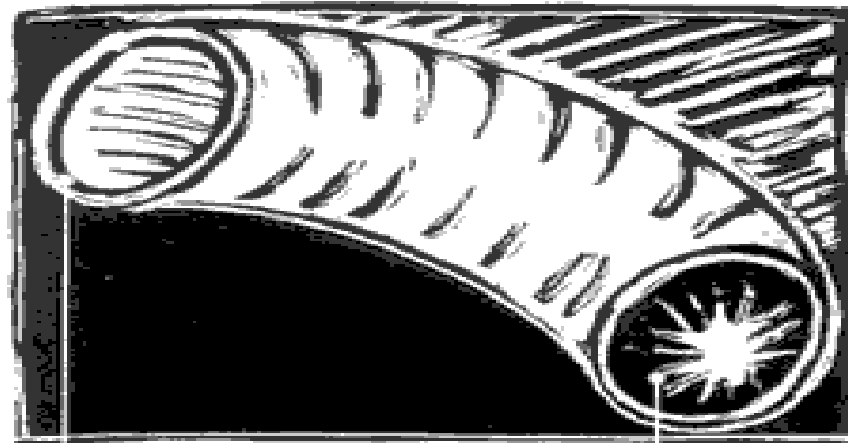


Why Blood Cholesterol Matters

- Blood cholesterol plays an important part in deciding a person's chance or risk of getting coronary heart disease (CHD).
- The higher your blood cholesterol level, the greater your risk.
- Heart disease is the number one killer of men and women in the United States.

The Blood Cholesterol -- Heart Disease Connection

- Too much cholesterol in the blood leads to build up on the walls of the arteries called “atherosclerosis” or “hardening of the arteries.”



Normal artery wall

Abnormal narrowed
artery opening

Figure 1



The Blood Cholesterol -- Heart Disease Connection

- Atherosclerosis narrows the arteries and can slow down or block blood flow to the heart.
- With less blood, the heart gets less oxygen which can lead to chest pain, heart attacks or even death.



Risk Factors for Heart Disease

- Factors You Can Do Something About
 - cigarette smoking
 - high blood cholesterol (high total and LDL)
 - low HDL-cholesterol
 - high blood pressure
 - diabetes
 - obesity/overweight
 - physical inactivity



Risk Factors For Heart Disease

■ Factors You Cannot Control

– Age:

- 45 years or older for men
- 55 years or older for women

– Family history of early heart disease (heart attack or sudden death):

- father or brother stricken before the age of 55
- mother or sister stricken before the age of 65



Who Can Benefit From Lowering Blood Cholesterol?

- Almost everyone can benefit from lowering his or her blood cholesterol.
- Lowering cholesterol slows the fatty buildup in the arteries, and in some cases can help reduce the buildup already there.



Cholesterol -- In Your Blood, In Your Diet

■ Cholesterol

- a waxy substance found in all parts of your body
- helps make cell membranes, some hormones and vitamin D
- comes from two sources
 - your body
 - the foods you eat



Cholesterol -- In Your Blood, In Your Diet

- Blood cholesterol is made in the liver and your liver makes all the cholesterol your body needs.
- Dietary cholesterol comes from animal foods like meats, whole milk dairy foods, egg yolks, poultry and fish.
- Foods from plants, like vegetables, fruits, grains and cereals, do not have any dietary cholesterol.



Lipoproteins

- In order for cholesterol to travel through blood, it must be coated with a layer of protein to make a “lipoprotein.”
- Two types of lipoproteins:
 - low density lipoprotein (LDL)
 - high density lipoprotein (HDL)



LDL and HDL: The Bad and The Good

- LDL-Cholesterol (“bad” cholesterol)
 - carries most of the cholesterol in the blood
 - when there is too much in the blood, it can lead to cholesterol buildup in the arteries
- HDL-Cholesterol (“good” cholesterol)
 - helps remove cholesterol from the blood and helps prevent the fatty buildup



Things That Affect Blood Cholesterol

■ **What you eat**

- high intake of saturated fat, dietary cholesterol, and excess calories leading to excess weight

■ **Overweight**

- being overweight can make your LDL-cholesterol level go up and your HDL-cholesterol level go down

■ **Physical activity**

- increased physical activity lowers LDL-cholesterol and raises HDL-cholesterol

■ **Heredity**

- your genes partly influence how your body makes and handles cholesterol

■ **Age and Sex**

- blood cholesterol levels in both men and women begin to go up around age 20



Have Your Blood Cholesterol Checked

- All adults age 20 and over should have their blood cholesterol checked at least once every 5 years.
- Total Cholesterol
 - Less than 200 mg/dL desirable
 - 200 to 239 mg/dL borderline-high
 - 240 mg/dL or greater high
- A person with “high” cholesterol has more than twice the risk of heart disease compared to someone whose cholesterol is 200 mg/dL.



HDL-Cholesterol Levels

- Unlike total cholesterol, the lower your HDL, the higher your risk for heart disease.
- An HDL level less than 40 mg/dL increases your risk for heart disease.
- The higher your HDL level, the better. Above 60 mg/dL is considered “high.”



LDL-Cholesterol Levels

- LDL-cholesterol level is a better predictor of heart disease than total blood cholesterol.
- LDL Cholesterol
 - less than 100 mg/dL optimal
 - 100-129 mg/dL near optimal/above optimal
 - 130-159 mg/dL borderline high risk
 - 160-189 mg/dL high risk
 - 190 mg/dL and above very high risk



The “Ratio”

- Ratio = $\frac{\text{total cholesterol or LDL level}}{\text{HDL level}}$
- A ratio under 5.0 is considered average heart disease risk; under 3.0 is considered low risk.
- The ratio is too general: it is important to know the value for each level separately because LDL- and HDL-cholesterol levels both predict your risk for heart disease.



Triglycerides

- Triglycerides are the form in which fat is carried through the blood to the tissues. The bulk of the body's fat tissue is in the form of triglycerides.
- It is not clear whether high triglycerides alone increase your risk of heart disease. But many people with high triglycerides also have high LDL or low HDL levels.
 - less than 150 mg/dL normal
 - 150-199 mg/dL borderline high
 - 200-499 mg/dL high
 - above 500 mg/dL very high



Guidelines for Heart-Healthy Living

- Choose foods low in saturated fat.
- Choose foods low in total fat.
- Choose foods high in starch and fiber.
- Choose foods low in cholesterol.
- Be more physically active.
- Maintain a healthy weight, and lose weight if you are overweight.



Choose foods low in saturated fat.

- All foods that contain fat are made up of a mixture of saturated and unsaturated fats.
- Saturated fats raise blood cholesterol more than anything else you eat.
- Less than 10% of your total daily calories should come from saturated fat.
- Read labels!



Choose foods low in total fat.

- Eating foods low in fat will help limit your amount of saturated fat intake.
- When you do eat fat, substitute unsaturated fat -- either polyunsaturated or monounsaturated -- for saturated fat.



Choose foods high in starch and fiber.

- Breads, cereals, pasta, grains, fruits and vegetables are low in saturated fat and cholesterol.
- Foods high in starch and fiber are also good sources of vitamins and minerals.
- When eaten as part of a diet low in saturated fat and cholesterol, foods with soluble fiber -- like oat and barley bran and dry peas and beans -- may help to lower blood cholesterol.



Choose foods low in cholesterol.

- Dietary cholesterol can raise blood cholesterol, although usually not as much as saturated fat.
- Dietary cholesterol is found only in foods that come from animals.
- Egg whites and foods from plant sources do not have cholesterol.



Be more physically active.

- Being physically active helps improve blood cholesterol levels: it can raise HDL and lower LDL.
- Being more active can also help you lose weight, lower your blood pressure, improve the fitness of your heart and blood vessels, and reduce stress.



Maintain a healthy weight.

- People who are overweight tend to have higher blood cholesterol levels than people of a healthy weight.
- If you are overweight, losing even a little weight can help to lower LDL-cholesterol and raise HDL-cholesterol.



Healthy Tips: Meat, Poultry, Fish and Shellfish

- Choose lean cuts of meat (i.e. fish, chicken, turkey).
- Look for meats labeled “lean” or “extra lean.”
- Limit high fat processed meats like bacon, bologna, salami, hot dogs and sausage.
- Choose shellfish occasionally.
- Buy canned fish packed in water, not oil.
- Trim fat from meat and remove skin from poultry before eating.
- Bake, broil, microwave, poach or roast instead of frying.
- When you roast, place the meat on a rack so the fat can drip away.
- Brown ground meat and drain well before adding other ingredients.
- Use fat free ingredients like fruit juice, wine, or defatted broth to baste meats and poultry.



Healthy Tips: Dairy Foods

- Drink nonfat or 1% milk rather than 2% and whole milk.
- When looking for hard cheeses, go for versions that are “fat free,” “reduced fat,” “low fat,” “light,” or “part skim.”
- When shopping for soft cheeses, choose low fat (1%) or nonfat cottage cheese, farmer cheese, or part-skim or “light” ricotta.
- Use low fat or nonfat yogurt; try it in recipes or as a topping.
- Try low fat or nonfat sour cream or cream cheese blends for spreads, toppings or in recipes.
- Try low fat cheese in casseroles, or try a sharp-flavored regular cheese and use less than the recipe calls for.
- Use skim, 1%, or evaporated skim milk for creamed soups or white sauces.



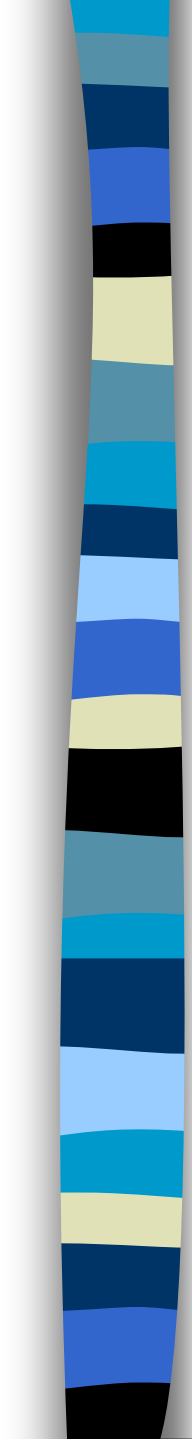
Healthy Tips: Eggs

- Eggs are included in many processed foods and baked goods. Look at the nutrition label to check the cholesterol content.
- Try egg substitutes.
- Egg whites have no cholesterol, so try substituting them for whole eggs in recipes; two egg whites are equal to one whole egg.
 - Whole egg: 75 cal, 6 g protein, 5 g fat (1.5 g sat), 210 mg chol
 - egg yolk: 60 cal, 3 g protein, 5 g fat (1.5 g sat), 210 mg chol
 - egg white: 15 cal, 3 g protein, 0 g fat, 0 mg chol



Healthy Tips: Fruits and Vegetables

- Buy fruits and vegetables often -- fresh, frozen or canned. They have no cholesterol and most are low in saturated fat. Also, most fruits and vegetables, except avocados, coconut, and olives, are low in total fat.
- Use fruits as a snack or dessert.
- Prepare vegetables as snacks, side dishes and salads. Season with herbs, spices, lemon juice, or fat free or low fat mayonnaise. Limit use of regular mayonnaise, salad dressings, and cream, cheese, or other fatty sauces.



Healthy Tips: Breads, Cereals, Pasta, Rice and Other Grains, and Dry Peas and Beans

- Use whole-grain breads, rolls and cereals often.
- Limit baked goods like these that are made with large amounts of fat, especially saturated fat:
 - croissants, biscuits, doughnuts, butter rolls, muffins, coffee cake
- Be aware that some baked goods contain palm, palm kernel, and coconut oils. These oils are high in saturated fats, even though they are vegetable oils.
- Choose ready-to-eat cereals often. Most are low in saturated fat, except for granola, muesli, or oat bran types made with coconut or coconut oil.
- Buy dry peas and beans often.
- Try pasta or rice in soups, or with low fat sauces as main dishes or casseroles.



Healthy Tips: Fats and Oils

- Choose liquid vegetable oils high in unsaturated fat for cooking and in salad dressings. Examples: canola, corn, olive, peanut, safflower, sesame, soybean, sunflower oils
- Buy light or nonfat mayonnaise instead of the regular kinds that are high in fat.
- In cooking, limit butter, lard, and solid vegetable shortenings.
- When using fats and oils, use only small amounts and substitute those high in unsaturated fat for those high in saturated fat.
- For a spread, use tub or liquid margarine, or vegetable oil spread instead of butter.
- Flavor cooked vegetables with herbs or butter-flavored seasoning.



Types of Unsaturated Fats

- Polyunsaturates (corn oil, sunflower seed oil, safflower oil)
 - lower total blood cholesterol levels
- Monounsaturates (olive oil, canola oil)
 - lower LDL levels but leave the beneficial HDL intact



Healthy Tips: Sweets and Snacks

- Choose these low fat sweets for a special treat:
 - “fat free” or “low fat” brownies, cakes, cupcakes and pastries
 - animal crackers, devil’s food cookies, fig and other fruit bars, ginger snaps, graham crackers, and vanilla or lemon wafers
 - frozen low fat or nonfat yogurt, fruit ices, ice milk, popsicles, sherbet, and sorbet
 - gelatin desserts
- Try these low fat snacks:
 - bagels, bread sticks, rice cakes
 - unsweetened, ready-to-eat cereals,
 - fresh fruit, fruit leather, or other dried fruit
 - pretzels, no-oil baked tortilla or potato chips
 - plain, air-popped popcorn



Trans Fatty Acids

- Type of fatty acid that raises LDL cholesterol and lowers HDL.
- Not required on nutrition label by FDA.
 - Scan ingredient labels for “hydrogenated” or “partially hydrogenated” vegetable oils, vegetable shortening or margarine.
 - To calculate the approximate amount of trans fat in foods, add up the number of grams of saturated, polyunsaturated, and monounsaturated fats listed on the label and subtract that from the total fat grams. The remaining number is the amount of trans fat.
- Saturated and trans fat should not exceed 8%-10% of total calories.