



Diet and Heart Disease

May 2017

Janice R. Hermann, Ph.D., RD/LD
Nutrition Specialist

Heart Disease

Heart disease is the number one cause of death in the United State. However, there is good news about heart disease. Deaths due to heart disease are decreasing in this country. Improvements in medicine and positive changes in life-style habits account for much of this decrease. It may only take a few simple changes to reduce your risk of heart disease.

What is Atherosclerosis?

Atherosclerosis is a process in which deposits slowly build up in the blood vessel walls. These deposits narrow the blood vessels. Eventually, a blood vessel may be completely closed off, either because the deposits block the vessel, or because a blood clot blocks the narrowed passage.

When a blood vessel is blocked, blood and oxygen are not supplied to nearby tissue; this results in damage to these tissues. If the blockage occurs in a blood vessel serving the heart muscle, a heart attack can occur. If it occurs in a blood vessel serving the brain, a stroke can occur.

Risk Factors for Heart Disease

Many factors increase one's risk of heart disease. The three most important risk factors for heart disease are:

- High blood cholesterol and triglycerides
- High blood pressure
- Cigarette smoking

Most people, including those who have a family history of heart disease, can lower their risk of heart disease. A few simple changes can increase your chances of a longer and healthier life.

Blood Cholesterol and Triglycerides

High blood cholesterol and high blood triglycerides are risk factors for heart disease. Cholesterol is carried in the body by

Oklahoma Cooperative Extension Fact Sheets
are also available on our website at:
<http://osufacts.okstate.edu>

lipoproteins. The main lipoproteins that carry cholesterol are low-density lipoproteins (LDL) and high-density lipoproteins (HDL). Total blood cholesterol includes cholesterol in both the LDL and HDL lipoproteins. Total cholesterol levels below 200 mg/dl are desirable, whereas total cholesterol levels between 200 to 239 mg/dl are considered borderline, and total cholesterol levels equal to or over 240 mg/dl are considered high risk.

However, LDL and HDL-lipoproteins have different functions in the body. The LDL lipoproteins carry cholesterol into the blood vessels from the liver. The HDL lipoproteins carry cholesterol back to the liver to be removed from the body. Higher LDL-cholesterol raises your risk of heart disease. Higher HDL-cholesterol lowers your risk of heart disease. Having your total cholesterol broken down into LDL-cholesterol and HDL-cholesterol will be a better indicator of heart disease risk than just measuring total cholesterol alone. LDL-cholesterol levels below 100 mg/dl are desirable, whereas, LDL-cholesterol levels between 130 to 159 mg/dl are considered borderline, and LDL-cholesterol levels equal to or over 160 mg/dl are considered high risk. HDL-cholesterol levels equal to or above 60 mg/dl are desirable, HDL-cholesterol levels between 59 and 40 mg/dl are considered borderline, and HDL-cholesterol levels below 40 are considered high risk. Exercising, losing excess weight, and not smoking promote higher HDL-cholesterol concentrations.

High triglycerides are also a risk factor for heart disease. Triglycerides refer to the fat in your blood. Fasting triglyceride levels below 150 mg/dl are desirable, whereas triglyceride levels between 150 and 199 mg/dl are borderline, and fasting triglyceride levels over 200 mg/dl are considered high risk.

Total Cholesterol, LDL-cholesterol, HDL-Cholesterol and Triglyceride Levels.

	Total Cholesterol (mg/dl)	LDL-Cholesterol (mg/dl)	HDL-Cholesterol (mg/dl)	Triglycerides (mg/dl)
Desirable	Less than 200	Less than 100	60 or Greater	Less than 150
Borderline	200 - 239	130 - 159	40-59	150 - 199
High Risk	240 or Greater	160 or Greater	Less than 40	200 or Greater



Dietary Recommendations to Help Lower Total Cholesterol, LDL-Cholesterol, and Triglycerides

- Eat a variety of foods.
- Aim for a healthy body weight.
- Choose a diet low in fat, saturated fat, and cholesterol.
- Choose a variety of fruits, vegetables, and grain products (especially whole grains).

Eat a variety of foods: Eating a variety of foods is the best way to get the energy, protein, vitamins, minerals, and fiber you need. No single food can supply all the nutrients in the amounts you need. It is the content of the total diet that counts.

Aim for a healthy body weight: Being overweight can increase total cholesterol, LDL-cholesterol and triglyceride levels. Losing weight can help lower these values.

Choose a diet low in fat, saturated fat and trans fat: High dietary fat, saturated fat and trans fat intakes are associated with increased risk for many diseases.

The Dietary Guidelines recommendations for fat intake are:

- Consume less than 10 percent of calories from saturated fatty acids and keep trans fatty acid consumption as low as possible.
- Keep total fat intake between 20 to 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.
- When selecting and preparing meat, poultry, dry beans, and milk or dairy products, make choices that are lean, low-fat, or fat-free.
- Limit intake of fats and oils high in saturated and/or trans fatty acids, and choose products low in such fats and oils.

Choose a variety of fruits, vegetables, and grain products (especially whole grains): These foods supply important vitamins, minerals, fiber, and complex carbohydrates. They are also generally low in fat. Dietary fiber has been related to many health conditions. Increasing fiber, especially soluble fiber, may be beneficial in lowering blood cholesterol. In the intestine, soluble fiber binds to bile acids that are produced from

cholesterol, thereby helping to remove some cholesterol from the body. It is better to get fiber from foods that contain fiber naturally rather than from supplements. Some of the benefits from a high fiber diet may be from the food that provides the fiber, not from the fiber alone.

Fruits and vegetables are also an important source of antioxidants including beta-carotene and vitamin C. Antioxidants may have a role in preventing heart disease. In addition, many fruits, vegetables, and whole grain products are a source of folate. Folate has a role in lowering homocysteine levels, another possible risk factor for heart disease. Although there is not clear-cut evidence regarding the role antioxidants and folate play in preventing heart disease, fruits, vegetables, and whole grain products are healthy choices.

Control Blood Pressure

High blood pressure increases the risk of heart disease, by putting extra strain on the heart. High blood pressure is less obvious than many other risk factors. In fact, there may not be any symptoms at all. That is why it is important to have your blood pressure checked regularly.

High sodium intake may contribute to high blood pressure in “salt sensitive” individuals. For these individuals, too much salt or sodium may be related to the development of high blood pressure. There is no easy way at the present time to determine who is “salt sensitive.” However, the Dietary Guidelines for Americans recommend that the population as a whole should limit sodium intake to less than 2,300 milligrams a day.



Do Not Smoke

Smoking raises blood pressure and the heart rate, while it lowers HDL-cholesterol. Smoking also increases the tendency for the blood to clot. As a result, smoking increases the risk of heart disease and the risk of sudden cardiac death. In addition, post heart disease survival rates are lower for people who smoke.

Other Measures to Reduce Your Risk

Some other lifestyle changes that can help with high blood pressure are to:

- Keep diabetes in control
- Aim for a healthy weight
- Be physically active each day

Keep diabetes in control: Uncontrolled diabetes increases the risk of heart disease. Increased total blood cholesterol, LDL-cholesterol, and triglyceride levels are complications of uncontrolled diabetes. Maintaining a healthy weight and participating in regular physical activity can lower your risk for developing type 2 diabetes. If you have diabetes, keeping your blood glucose in control can help lower your risk for developing heart disease.

Aim for a healthy weight: Aiming for a healthy weight will decrease your risk for heart disease. Being overweight puts strain on your heart. Being overweight can also lead to other risk factors for heart disease such as high blood pressure, high blood cholesterol, and type 2 diabetes. How your body weight is distributed also makes a difference. People who carry excess weight in their abdomen have a higher risk of heart disease than those who carry it in their hips and thighs.

There are a number of approaches to weight loss. Long-term success usually depends upon physical activity and good eating habits. If you are not physically active, regular exercise may help you lose weight. A moderate decrease in calories, not more than 500 calories per day, may also help. Do not try to lose weight too fast. A steady loss of 1/2 to 2 pounds per week is usually safe. Avoid crash weight loss diets that severely



restrict the variety of foods or calories. Such approaches are not appropriate for weight loss and can be dangerous.

Be physically active each day: Every muscle in your body works better when it gets regular physical activity. Your heart is also a muscle and also needs regular physical activity. People who are physically active have a lower risk of heart disease and a higher chance of post heart-attack survival than people who are not physically active. In addition, regular physical activity can lower total blood cholesterol, LDL-cholesterol, and triglycerides, and increase HDL-cholesterol. Regular physical activity can also lower blood pressure and help with weight loss or maintaining a healthy weight. As a result, regular physical activity may lower your risk for many diseases including heart disease, high blood pressure, diabetes, and obesity.

There are many types of physical activities. A good physical activity program includes a combination of aerobic, strengthening, and flexibility activities. Aerobic activities are the most helpful for endurance and heart health. Aerobic activities are any activities that raise your heart rate and make you breathe harder. For example, walking, jogging, running, cycling, and swimming are all aerobic activities. The Physical Activity Guidelines for Adults is at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity a week.

Check with your physician before starting or increasing your physical activity. Your physician will be able to help you select activities that are right for your age and physical condition. When you start a physical activity program, begin slowly and build up your level of fitness gradually. Injuries are less likely to occur if you begin slowly.

References

- Whitney, E.N. & Rolfes, S.R. (2015). *Understanding Nutrition*, 14th ed., Wadsworth, Cengage Learning, Belmont, CA.
- United States Department of Agriculture. *Dietary Guidelines for Americans 2015-2020*. Accessed at <https://health.gov/dietaryguidelines/2015/guidelines/>
- United States Department of Agriculture. ChooseMyPlate.gov. Accessed at [Hwww.choosemyplate.gov](http://www.choosemyplate.gov)
- United States Department of Health and Human Services. 2018. *Physical Activity Guidelines For Americans*. 2nd ed.

The Oklahoma Cooperative Extension Service

Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
 - It is administered by the land-grant university as designated by the state legislature through an Extension director.
 - Extension programs are nonpolitical, objective, and research-based information.
 - It provides practical, problem-oriented education
- for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
 - It utilizes research from university, government, and other sources to help people make their own decisions.
 - More than a million volunteers help multiply the impact of the Extension professional staff.
 - It dispenses no funds to the public.
 - It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
 - Local programs are developed and carried out in full recognition of national problems and goals.
 - The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
 - Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

Oklahoma State University, as an equal opportunity employer, complies with all applicable federal and state laws regarding non-discrimination and affirmative action. Oklahoma State University is committed to a policy of equal opportunity for all individuals and does not discriminate based on race, religion, age, sex, color, national origin, marital status, sexual orientation, gender identity/ expression, disability, or veteran status with regard to employment, educational programs and activities, and/or admissions. For more information, visit <https://eeo.okstate.edu>.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President for Agricultural Programs and has been prepared and distributed at a cost of 20 cents per copy. Revised 0119 GH.