MAYO CLINIC

PATIENT EDUCATION

Risk Factors for Heart Disease

BARBARA WOODWARD LIPS
PATIENT EDUCATION CENTER

Contents

Introduction

Risk factors are habits or characteristics that may increase the likelihood of developing heart disease. Some of these habits or characteristics can be changed or treated. By changing these habits or characteristics, you can prevent, and in some cases, slow or reverse the progression of heart disease. This information explains risk factors, how they relate to heart disease, and how you can change some risk factors to stay healthy.

Words in bold are explained in a word list. If you have questions about your risk factors, talk with your health care provider.

Objectives

This material discusses:

- **Risk factors** that you can change
- Risk factors that you cannot change
- The relationship between risk factors and heart disease
- Ways to control your risk factors
- The role of family members in reducing or controlling your risk factors

Any of the risk factors listed below increases your risk of getting **coronary heart** disease or having a **heart attack**. Look over the lists and check those that pertain to you. The order of the items listed does not reflect their importance.

Major risk factors you can change or treat

_____ Tobacco use
_____ Exposure to secondhand smoke
_____ High **lipid** levels (**cholesterol, triglycerides**)
_____ High **blood pressure**
_____ Physical inactivity
_____ Overweight/**obesity**
_____ **Diabetes mellitus**
_____ **Metabolic syndrome**

Major risk factors you cannot change

_____ Increasing age (for women >65 years; for men >55 years)
_____ Sex (male)
_____ Family history of **cardiovascular** disease
_____ Race/ethnicity

Other risk factors or risk indicators (also referred to as "emerging risk factors")
_____ Stress
_____ Alcohol
_____ Depression
_____ Social support
_____ **Homocysteine**
_____ **Lipoprotein (a)**
_____ **C-reactive protein (CRP)**

Other risk factors or risk indicators may be identified. If you have questions about risk factors for cardiovascular disease, talk with your health care provider.

The risk factors you can change are especially important. Heart disease cannot be cured, but its progress may be slowed. Changing your lifestyle may influence the outcome of your heart disease.

Do not become discouraged by the number of risk factors you have checked. You can make changes gradually. Work with your health care team to prioritize changes you need to make. Some of these risk factors took years to develop, and it will take time to change them.

Risk Factors You Can Change

By eliminating or reducing the risk factors you can change, you can help control your heart disease.

Tobacco use

Tobacco use increases significantly the risk of heart disease. Smokers' risks of heart attack are more than twice those of nonsmokers. Cigarette smokers who have a heart attack are younger and more likely to die and die suddenly than are nonsmokers.

Smoking has many unhealthy effects on the heart and circulatory system. The rapid delivery of very high levels of nicotine by smoking causes arteries to constrict and the blood pressure and heart rate to increase. Toxins in smoke also have been related to increased fatty acid content in the bloodstream.

Cigarette smoke has high levels of the toxic gas, carbon monoxide. The red blood cells normally carry oxygen to all parts of your body. Carbon monoxide sticks more easily to the red blood cells than oxygen does. When there is more carbon monoxide in the lungs and bloodstream, more of the carbon monoxide and less of the oxygen circulates to the heart and rest of your body. Thus, the heart muscle may not get enough oxygen and it has to work harder to get oxygen to other parts of your body.

Cigarette smoking and chewing tobacco combined with a family history of heart disease also seem to increase the risk of heart disease. People who smoke cigars or pipes are also at higher risk of death from coronary heart disease and possibly stroke.

The good news: After one year of not using tobacco, the increased risk of heart disease caused by smoking is reduced by one-half. Fifteen years after quitting, the risk is similar to that of people who have never smoked.

Because the nicotine in cigarettes is an addictive drug, many people find it very difficult to quit smoking. Although people usually try to stop on their own, most are not very successful. However, combining medications with even brief counseling can double the chances of quitting. Talk with your health care provider about tobacco cessation methods, medications, and programs and make a plan to quit. Both inpatient and outpatient treatment programs are available.

Secondhand smoke

Secondhand smoke, also called environmental tobacco smoke or passive smoke, is a serious health hazard for nonsmokers. Nonsmokers seem to be more susceptible to the effects of secondhand smoke than smokers. Secondhand smoke contains at least 40 known carcinogens, and even exposure for as little as five minutes has been shown to cause changes in blood vessels and blood flow.

Exposure to tobacco smoke increases the tendency for blood to clot and damages the layer of cells that line the coronary arteries and all other blood vessels. Nonsmokers who have high blood pressure or high cholesterol levels increase their risk of developing heart disease when they are exposed to secondhand smoke.

High lipid levels

Cholesterol

Cholesterol is a fat found in the bloodstream and in all your body's cells. It's an important part of a healthy body, but a high level of cholesterol in the blood — hypercholesterolemia — is a major risk factor for coronary heart disease, which leads to heart attack.

Cholesterol and other fats are carried to and from the body's cells by special carriers called lipoproteins. There are several kinds of lipoproteins, including low density lipoprotein (LDL) and high density lipoprotein (HDL).

- **Low density lipoprotein (LDL)** is often called "bad" cholesterol. A high level of LDL cholesterol reflects an increased risk of heart disease. When someone has too much LDL cholesterol in the blood, the LDL can slowly build up in the walls of the arteries, forming **plaque**, a thick, hard deposit that can clog arteries and lead to **atherosclerosis**, heart attack and stroke.

- High density lipoprotein (HDL) is known as "good" cholesterol because a high level of HDL seems to protect against heart attack, while a low HDL level indicates a greater risk of heart disease. Some experts believe HDL removes excess cholesterol from atherosclerotic plaques and thus slows their growth.

Cholesterol comes from two sources. It's produced in your body, mostly in the liver, and is found in foods that come from animals, such as meats, poultry, fish, seafood and dairy products. Foods from plants (fruits, vegetables, grains, nuts and seeds) do not have cholesterol.

Some cholesterol is removed from the body through the liver. Still, the American Heart Association recommends that you limit your average daily cholesterol intake to less than 300 milligrams although people with very high lipids may need to limit their cholesterol intake even more.

Since cholesterol is present in all foods from animal sources, eat no more than six ounces of lean meat, fish and poultry per day and use low-fat dairy products.

Triglycerides

Triglycerides are another fat that circulates in the blood. High triglycerides are a risk factor for heart disease. Your body makes triglycerides from excess calories regardless of the calorie source (fat, protein, carbohydrates). Triglycerides also are made from excess sugar or alcohol.

To lower triglyceride levels:

- Lose weight and/or maintain desirable body weight
- Participate in daily physical activity
- Decrease or avoid alcohol intake
- Decrease carbohydrate intake from foods that have sugar and refined starches

Lipid Level Goals

Lipids	Goal for most people without heart disease	Ideal for people with coronary heart disease
Total cholesterol	Less than 200 mg/dL	Less than 170 mg/dL
Total triglycerides	Less than 150 mg/dL	Less than 150 mg/dL*
HDL cholesterol	More than 45 mg/dL in men	More than 45 mg/dL* in men
	More than 55 mg/dL in women	More than 55 mg/dL in women
LDL cholesterol	Less than 130 mg/dL**	Less than 70 mg/dL*
Total to HDL ratio	Less than 4.0	Less than 4.0

* In general, the higher your HDL and the lower your triglycerides the better, especially if you have coronary heart disease. Many health care providers would like to see triglycerides under 100, LDL under 70, and the ratio of total to HDL cholesterol less than 3.0.

** Ideal goal may be less than 100 mg/dL for some people with other risk factors for heart disease.

My total cholesterol _____ Date _____

My triglycerides _____ Date _____

My HDL cholesterol _____ Date _____

My LDL cholesterol _____ Date _____

High blood pressure

High blood pressure, or **hypertension**, is persistent, increased pressure in your arteries. Eventually, this increased pressure can cause your arteries to become scarred, thickened, hardened and less elastic, making it harder for your heart to pump blood through your body.

Your blood pressure is considered high when you consistently have either a **systolic pressure** of 130 mm Hg (millimeters of mercury) or higher or a **diastolic pressure** of 80 mm Hg or higher, or both, when taken while visiting your health care provider.

Diagnosing high blood pressure

Category	Systolic pressure	Diastolic pressure
Normal	below 120	and below 80
Elevated	120 to 129	and below 80
High blood pressure	130 or higher	and/or 80 or higher

Based on an average of two or more readings taken at each of two or more visits after an initial screening.

High blood pressure can occur in children or adults but is particularly prevalent in African Americans, middle-aged and elderly people, obese people, heavy drinkers, and women who are taking oral contraceptives. People with diabetes mellitus, gout or kidney disease also have a higher frequency of hypertension.

Other risk factors for high blood pressure may include:

- Being overweight. Even small reductions in your weight may be beneficial.
- Physical inactivity. Regular exercise helps control weight, lower blood pressure, and reduce your risk of heart attack.
- Heavy salt (sodium) consumption increases blood pressure in some people. If you are diagnosed with high blood pressure, your health care provider may start you on a low-salt diet. This means you will have to cut down on use of high-salt foods and the amount of salt you use in cooking and at the table.

If weight loss, exercise, salt reduction and other lifestyle changes do not lower high blood pressure to a desired level, you probably will need to take medication. Many medications are available to lower high blood pressure.

Because there is usually no cure for high blood pressure, treatment generally must be carried out for life. If treatment is stopped, the pressure may rise again and contribute to heart attack and stroke.

Physical inactivity

Physical inactivity is a major risk factor for heart disease. Physical inactivity also contributes to other risk factors including:

- Obesity
- High blood pressure
- Low HDL cholesterol

Regular, moderate-to-vigorous exercise (a brisk walk or bike ride) plays a significant role in preventing heart and blood vessel disease. Also, studies show that people who begin to exercise after a heart attack have better rates of survival. Even modest levels of physical activity are beneficial if done regularly and long term.

For health benefits to the heart, lungs and circulation, do some physical activity at least 30 minutes, five times per week. You can split up the activity into three 10-minute sessions per day if necessary. Physical activity does not need to be strenuous to benefit you. It is important to include activity in your regular routine.

For people who cannot exercise vigorously or who spend a lot of time sitting, evidence also shows that even moderate and low-intensity activities, such as walking, gardening, and housework, can have some long-term health benefits when done every day. They help lower the risk of cardiovascular diseases.

Physical activity benefits the whole body. It builds healthy bones, muscles and joints, and even reduces the risk of colon cancer. Physical activity also may bring other benefits. For example, it reduces feelings of depression and anxiety, improves mood and promotes a feeling of well-being.

However, do not overdo physical activity, and check with your health care provider before starting a new exercise program.

Overweight/ obesity

Overweight is defined as having a body mass index (BMI) between 25 and 30. Obesity is defined as having a BMI of 30 or greater. It is a better measure of your health risks than your weight alone or than weight tables that are based only on your height. However, it has limitations. Some athletes have a high BMI, but their excess weight is muscle, not fat. Some middle-aged people have a "normal" BMI, but are overweight because of their small muscle mass. Ask your health care provider if you need to lose weight.

Body mass index (BMI) table

Body Mass Index Table

	Normal						Overweight					Obese										Extreme Obesity																				
BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Height (inches)	**Body Weight (pounds)**																																			
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295
63	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304
64	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314
65	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
66	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334
67	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344
68	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354
69	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365
70	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376
71	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386
72	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397
73	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408
74	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420
75	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431
76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443

Source: Adapted from Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report.

Where the body fat is found also is important. A larger waist measurement means a higher risk for cardiovascular disease. Waist measurements more than 35 inches for women and 40 inches for men increase the risk for cardiovascular disease.

Obesity alone increases people's risk for heart disease. However, it also contributes to other risk factors — obesity raises blood cholesterol and triglyceride levels, lowers HDL (the "good" cholesterol linked with lower risk), raises blood pressure, and can induce diabetes.

Obesity also has many other harmful effects beyond those on the heart and blood vessel system. It is a major cause of gallstones, and it can worsen joint problems.

Even small amounts of weight loss are helpful. Losing just 10 percent of your current weight is thought to have a positive effect on your health.

If you are unsure of what your BMI or desirable weight is, ask your health care provider.

My BMI is _____
My desirable weight is _____

Diabetes mellitus

Diabetes mellitus is the inability of the body to produce or respond to insulin properly. Insulin allows the body to use glucose (sugar). The two major forms of the disease are Type 1 and Type 2 diabetes. Type 1 diabetes used to be called insulin-dependent or juvenile diabetes because it develops most often in children and teens. Type 2 diabetes (previously known as adult-onset diabetes) is often associated with obesity and may be delayed or controlled with diet and exercise.

Pre-diabetes or insulin resistance, also known as impaired fasting glucose, also increases the risk for heart attack. Pre-diabetes is defined as glucose levels from 100 to 125.

There is no cure for diabetes, and even when diabetes is under control, it seriously increases the risk of heart disease and stroke. Diabetes also can lead to kidney disease, blindness and nerve damage.

Besides controlling their diabetes, people with diabetes may avoid or delay heart and blood vessel disease by controlling these other risk factors:

- It is important to control weight and blood cholesterol with a low-saturated-fat, low-cholesterol diet and regular exercise.
- It's also important to lower high blood pressure.
- Do not smoke and avoid secondhand smoke.

Metabolic syndrome

Metabolic syndrome is a high-risk condition that includes at least three of the following five components:

- High blood pressure
- High blood sugar
- High triglyceride levels
- Low HDL cholesterol
- Abdominal obesity (waist measurement greater than 35 inches for women and 40 inches for men)

If you have at least three of the five components listed, you have metabolic syndrome, and your risk of getting cardiovascular disease and diabetes goes up dramatically. While any one component alone can increase health risks, the combination can be evenmore dangerous to your health.

Treatment for metabolic syndrome involves treating the disorders that make up yourmetabolic syndrome. If you have high blood pressure, high blood sugar, high triglycerides or low HDL cholesterol, talk with your health care provider about treatment. You may need to take medications. Treatment also may involve changes in your lifestyle such as regular exercise, a healthy diet and weight loss.

Risk Factors You Cannot Change

Even though you cannot change these factors, be aware of them because they may increase your chances of heart disease. If you checked any of these, it is even more important that you make lifestyle choices to reduce the risk factors you can change.

Increasing age

Although heart attacks can occur at any age, as you get older, your chances of having a heart attack and coronary artery disease increase. Women who are 65 years old or older and men who are 55 years old or older are at higher risk.

Sex

Cardiovascular disease is the single largest killer of American adults. At this time, the risk increases for men at a younger age. However, prevention is equally important for both women and men. Postmenopausal women have the same rate of heart attacks as men of the same age do.

The reasons for this mounting risk are complex and not entirely understood. The female hormone estrogen may have a protective effect because estrogen tends to raise HDL ("good") cholesterol level and lower LDL ("bad") cholesterol. Even if a woman's total cholesterol level is relatively high, she probably has a higher level of the protective HDL than a man with a similar total cholesterol level. However, after menopause, estrogen production drops drastically and its potentially beneficial effects disappear.

Family history

Heart disease does run in families — this can be explained partly by genetic and partly by environmental factors. If you have close relatives with heart disease, talk with your health care provider about your risk.

Race/ ethnicity

Although heart disease exists in all races and socioeconomic groups, some groups of people have a higher risk of heart disease that is not explained by environmental factors. For example, because African Americans tend to have more severe hypertension than Caucasians, their risk of heart disease is also greater. Heart disease risks also are higher among Mexican Americans, American Indians and native Hawaiians.

However, risks can be reduced greatly by following habits of healthy living and working to lower risk factors that can be changed.

Other Risk Factors or Risk Indicators

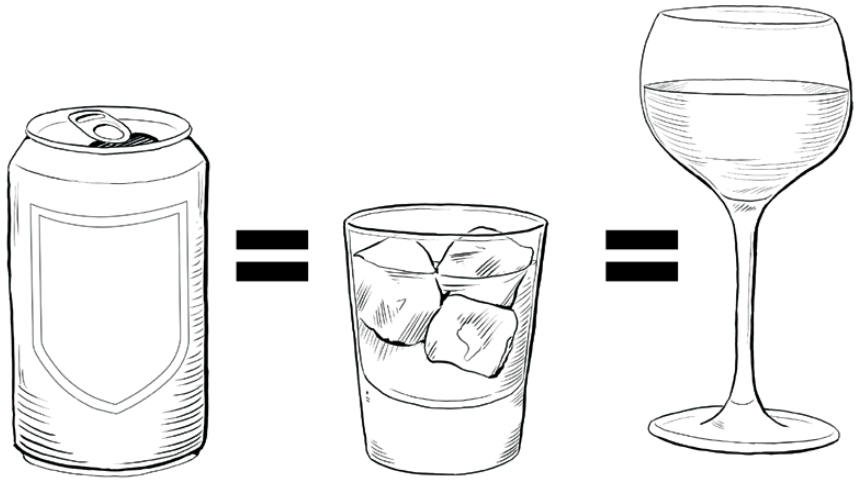
Stress

More and more evidence shows that stress can increase the risk of cardiovascular disease. While stress alone can increase your risk for heart disease, stress also may lead to unhealthy behaviors that increase other risk factors, such as smoking, physical inactivity and overeating. Strategies for coping with stress include increasing your physical activity level, limiting caffeine, avoiding things that upset you (for example, rush hour traffic), and learning to work through anger and other stressful emotions. To learn more about healthy ways to handle stress, talk to your health care provider.

Alcohol

Alcohol, used in excess, can raise the levels of triglycerides in the blood. It also can raise blood pressure (hypertension) and cause heart failure. Constant excessive drinking and binge drinking can lead to stroke.

If you decide to drink alcohol, limit your intake to moderate amounts — an average of one to two drinks per day for men and one drink per day for women. One drink is defined as 1 to 1 1/2 fluid ounces of liquor (bourbon, Scotch, vodka, gin, etc.), 4 to 5 fluid ounces of wine or 12 fluid ounces of beer.



Beer (12 ounces) Liquor (1 to 1 1/2 ounces) Wine (4 to 5 ounces)

Figure 1. Equivalent of one drink

If you don't drink, don't start. If you do drink, drink in moderation. Pregnant women should not drink any alcohol. If you have questions about your alcohol use, talk with your health care provider.

Depression

Depression is a serious illness that increases your risk factors for heart disease and can delay your recovery after a heart attack. Depression can cause changes in memory, thinking, physical well-being and behavior. It can affect how you feel, think, eat, sleep and act. It can be difficult to diagnose, but it needs to be assessed and addressed.

Talk to your health care provider about symptoms and treatment options for depression.

Social support

People with strong social support recover more quickly and do better than people without support. Social support can include family members, supportive spouses, close friends in whom you can confide, and even pets.

Homocysteine

Homocysteine is a substance normally present in the blood. Your body uses it to make protein and to build and maintain tissue. However, high levels of homocysteine in your blood are linked to a higher risk of heart disease. While the exact reason for the increased risk isn't clear, too much homocysteine can cause the linings of your arteries to thicken and scar, which can lead to plaque buildup. High homocysteine levels combined with smoking and high blood pressure can increase your risk for a heart attack or stroke even more.

Lipoprotein (a)

Lipoprotein (a) is another substance normally found in the blood. It helps the blood to clot. However, high levels of lipoprotein (a) increase chances of blood clots and damage the blood vessels, increasing the risk for heart attack and stroke.

C-reactive protein (CRP, sometimes referred to as high sensitivity CRP or HS-CRP)

C-reactive protein (CRP) is a marker of a general inflammatory process in the body. Studies show that high CRP levels are related to increased risk of heart attack or stroke. CRP may help to identify people with cardiovascular disease.

Summary

You can change many of your risk factors for heart attack and heart disease. If you want to lower your risk of heart attack, work with your health care provider to set goals.

Reward yourself for accomplishments, and don't be discouraged by difficulties you may encounter in reaching your goals. You may find that your determination to change your risk factors will influence your family and friends to do the same. Changes are much easier to make if those around you join in the effort.

Action Plan

You can play a key role in managing your heart disease by evaluating your lifestyle and changing things that increase your risk for heart disease.

You can manage or reduce some risk factors. Use the worksheet to identify your heart-healthy goals and to develop a plan for change.

1. Think about the changes you're most motivated to make or that seem the easiest to do.
2. Select the goal you want to start with.
3. Think about the specific actions you can take to work toward your goal. For example, if you decide to make a commitment to eat healthy foods, it's not realistic to think you will immediately change all your eating habits. Instead, make one or two specific changes that will help you reach your goal.
4. Write down the things you are ready to commit to as you work toward your goal. (See the example on the worksheet.)

Work with your health care provider to set realistic goals and make a commitment to a heart-healthy lifestyle.

Goals	**Start Date**	**Action Plan (steps you will take to achieve your goal)**
Sample entry		
Eat healthy foods	November 15	Goal: Eat a healthier breakfast 1. I'll start by adding fruit. 2. I like oranges the best, so I'll buy oranges. 3. I'll eat an orange with my breakfast cereal every week day.
Stop using tobacco		
Avoid tobacco smoke		
Eat healthy foods - Grains - Fruits - Veggies - Dairy - Water		
Exercise regularly		
Manage stress		
Take medication as prescribed		

Date _____

Word List

Atherosclerosis — Hardening of the arteries caused by a buildup of lipids and other substances in the blood vessels. This buildup may interfere with blood flow.

Blood pressure — Measure of the force of blood flowing against the artery walls as it moves through your body.

C-reactive protein (CRP or HS-CRP) — A protein produced by the liver as part of the normal immune system response to injury or infection. It is a marker for inflammation in your body.

Cardiovascular — Referring to the heart and blood vessels.

Cholesterol — Fatlike substance produced by the liver, also present in foods that come from animals or contain animal fat. Cholesterol performs necessary body functions. It makes up much of the fatty deposits that collect on the walls of the arteries in atherosclerosis.

Coronary heart disease — Condition caused by narrowing of the coronary arteries resulting in decreased blood supply to the heart (ischemia). Also called ischemic heart disease.

Diabetes mellitus — Disease characterized by high levels of glucose in the blood caused by a failure of the pancreas to produce enough insulin or by ineffective use ofinsulin in the body.

Diastolic pressure — Lowest pressure reached during the relaxation of your heart. It is the point at which the heartbeat stops. It is recorded as the second or bottom number of your blood pressure.

Heart attack — Inadequate blood supply to the heart, causing death of part of the heart muscle. Also called myocardial infarction or MI.

High density lipoprotein (HDL) — "Good cholesterol"; this type of cholesterol is thought to help protect against atherosclerosis.

Homocysteine — A substance normally present in the blood that is used to build and maintain tissue. High levels are linked to an increased risk of stroke, heart disease and peripheral vascular disease.

Hypercholesterolemia — Excess cholesterol in the blood.

Hypertension — High blood pressure.

Lipid — Fat or fatlike substance found in the blood, such as cholesterol.

Lipoprotein (a) — Type of fat found in the blood. Increased levels are linked with an increased risk of early coronary heart disease, heart attack and stroke.

Low density lipoprotein (LDL) — Type of cholesterol thought to contribute to higher risk of atherosclerosis; also called "bad cholesterol."

Metabolic syndrome — High-risk condition that includes at least three of these components: high blood pressure, high blood sugar, high triglyceride levels, low HDL cholesterol and abdominal obesity. Your risk for cardiovascular disease and diabetes increases dramatically if you have metabolic syndrome.

Obesity — A body mass index (BMI) of 30 or greater, calculated from your weight and height.

Plaque — Deposit of fatty or other materials in the lining of the artery walls. Plaque made up of fatty substances is called an atheroma.

Risk factor — Characteristic that has been shown to increase one's chances for developing a disease or making a disease worse.

Systolic pressure — Highest pressure produced by the contraction of the heart. It is the first heartbeat sound you hear as you deflate the cuff. It is recorded as the first or top number in your blood pressure.

Triglycerides — Form of fat that the body makes from sugar, alcohol or excess calories. All people have them. A high level of triglycerides in the blood may increase the risk of developing atherosclerosis.

Notes

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Mrs. Lips, a resident of San Antonio, Texas, was a loyal patient of Mayo Clinic for more than 40 years. She was a self-made business leader who significantly expanded her family's activities in oil, gas and ranching, even as she assembled a museum-quality collection of antiques and fine art. She was best known by Mayo staff for her patient advocacy and support.

Upon her death in 1995, Mrs. Lips paid the ultimate compliment by leaving her entire estate to Mayo Clinic. Mrs. Lips had a profound appreciation for the care she received at Mayo Clinic. By naming the Barbara Woodward Lips Patient Education Center, Mayo honors her generosity, her love of learning, her belief in patient empowerment and her dedication to high-quality care.

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