Health Basics

Heart Health 101

The main function of the heart is to pump blood through the body. Each day, this organ, that's roughly the size of a fist, pushes about 10 pints of blood through the blood vessels in the body. When the heart pumps, the organ pushes blood into the lungs to load up on oxygen and then pumps this oxygen-rich blood through arteries in the blood vessels to all other parts of our bodies. Veins in the blood vessels take blood back to the heart so the organ can pump the blood back to the lungs to, once again, pick up oxygen and repeat the cycle.

As the engine that pumps blood to all parts of the body, a healthy heart is crucial to keeping us alive. But many diseases and conditions put your heart's health at risk.

Those conditions include arrhythmia, high cholesterol levels, congenital heart disease, diabetes, heart attack, heart failure, high blood pressure, kidney disease, metabolic syndrome, obesity, peripheral artery disease (PAD) and stroke, among others. Heart disease, in turn, affects the body in many ways and can trigger other conditions, such as cognitive impairment that can lead to Alzheimer's disease.

Today, cardiovascular disease (CVD)—including heart disease and stroke—is the leading cause of death in the United States. That's the bad news. The good news is that most forms of CVD can be treated and prevented.

Whether you've been diagnosed with a form of CVD or are taking steps to reduce your risk of heart problems, the most important thing is to educate yourself. Become informed about heart health and what you can do to minimize the risk factors involved.

What are the different types of cardiovascular disease?

There are a number of cardiovascular diseases. Some directly affect the heart's structure and ability to function. Others indirectly do so by making it harder for blood to circulate through the blood vessels. Some people are born with heart or blood vessel defects (congenital), but most problems occur as a result of disease, lifestyle or age.

Some of the major cardiovascular diseases and related conditions include:

- Aneurysms: A bulge in the wall of a blood vessel. They can grow over time and eventually burst.

  If this happens, the rupture may cause fatal bleeding inside the body or an equally as deadly

split or dissection in one or more layers of the blood vessel's wall.

- Angina: Chest pain resulting from reduced oxygen to the heart.
- Arrhythmias: An irregular heartbeat. The heart can sometimes beat too slowly (bradycardia) or too quickly (tachycardia), or it can suffer from irregular contractions (fibrillation).
- Cardiomyopathy: Disease or damage to the heart muscle, impairing its ability to pump blood.
- Congestive Heart Failure (CHF): When your heart does not pump as strongly as it should, your body doesn't get the right amount of blood and oxygen. This weakened pumping action can cause fluid to back up in your lungs and other parts of your body.
- Heart Disease: The most common form of heart disease is called coronary artery disease (CAD) or coronary heart disease (CHD) and occurs when fat and scar tissue block arteries in the heart (atherosclerosis), increasing the risk of angina and heart attacks.
- Heart Attack: Also called a myocardial infarction (MI), this injury to the heart muscle is caused by a loss of blood supply. MIs occur when a blood clot blocks the flow of blood through a coronary artery.
- High Blood Pressure (Hypertension): An excessive force of pressure as your blood pumps through the vessels. This can lead to heart attacks, strokes, heart failure and kidney damage.
- Peripheral Arterial Disease (PAD): PAD occurs when the blood vessels in the legs and arms become clogged. This can lead to limb pain and increase the risk of a heart attack or stroke.
- Stroke: Stroke occurs when blood flow to the brain is interrupted, usually by a blood clot (ischemic stroke) or when a blood vessel in the brain ruptures (hemorrhagic stroke). Both can kill brain cells in the affected areas.
- Valve Problems: The heart valves, which open and close in the heart's four chambers, keep blood pumping in and out of the heart in the proper direction. They can become narrowed (stenosis) or unable to close properly (prolapse), or they can leak (regurgitation).

How is cardiovascular disease diagnosed?

There is no one test for cardiovascular disease. In general, doctors start by asking questions about your personal and family medical history. Next, they record any current and past symptoms you may have had. Some of the tests to diagnose or monitor heart disease are basic blood tests that check the level of cholesterol, and lipids, or fats, in your blood, your blood pressure and blood

sugar levels and kidney function. Here's how to interpret the numbers:

- Lipid levels: The amounts of cholesterol and triglycerides (fat-like substances) in your bloodstream. These should be checked regularly, preferably in a fasted state (after at least 8 hours with no food or drinks other than water).
- Total cholesterol: Your total mix of good and bad cholesterol, plus triglycerides. Ideal is less than 200 milligrams per deciliter (mg/dL) of blood. Borderline is 200 to 239 mg/dL. And high is 240 mg/dL and above.
- Low density lipoprotein (LDL) cholesterol: One of the two "bad" types of cholesterol. The ideal level is 100 to 129 mg/dL, 130 to 159 mg/dL is borderline high, 160 to 189 mg/dL is considered high and 190 mg/dL is very high.
- Very low density lipoprotein (VLDL) cholesterol: This is the other "bad" cholesterol. Normal VLDL levels are from 2 to 30 mg/dL.
- High density lipoprotein (HDL) cholesterol: This is the "good" cholesterol. The ideal level is 60 mg/dL or higher. For men, an HDL of less than 40 mg/dL places them at a higher risk of heart attack and stroke. For women, an HDL of less than 50 mg/dL puts them at a higher risk of heart attack and stroke.
- Cholesterol ratio: The cholesterol ratio is determined by dividing the total cholesterol by the HDL cholesterol. For example, if a person has a total cholesterol of 150 mg/dL and an HDL cholesterol of 50 mg/dL, the cholesterol ratio would be 3.0. The goal is to keep the cholesterol ratio below 5 with the ideal cholesterol ratio being 3.5 or lower.
- Triglycerides: Less than 150 mg/dL is ideal, 150 to 199 mg/dL is borderline high, 200 to 499 mg/dL is high and 500 mg/dL is very high.
- Blood pressure: According to the American Heart Association, the top number (systolic) should ideally be less than 120 and the lower number (diastolic) should be less than 80. The higher reading records the pressure when the heart contracts to pump blood to the body. The lower reading registers the pressure when the heart relaxes between beats. (Usually written, for example, as "120/80" and stated as, "120 over 80.") A blood pressure of 140/90 or higher is considered high blood pressure, or hypertension.

- Glucose: Because diabetes seriously increases your risk of developing heart disease and stroke, it's important to test your glucose (blood sugar) levels to know whether or not you are diabetic. A normal amount of glucose (sugar in the blood) is less than 100 mg/dL in a fasting state (not having eaten for 8 hours). Prediabetes is 100 to 125 mg/dL after fasting, and diabetes is 126 mg/dL or higher. Another blood test, the oral glucose tolerance test, calls for having your blood sugar tested while in a fasting state, then drinking a sugary beverage and testing your blood glucose again two hours later. If your blood sugar level is higher than 200, docs would diagnose you as having diabetes.
- Kidney function: Kidney damage can be a cause or an effect of cardiovascular disease. BUN (blood urea nitrogen), creatinine and uric acid are three common blood tests of kidney function.

Your health care provider might order additional tests related to cardiovascular disease. These may include an electrocardiogram (EKG or ECG), an echocardiogram, a chest X-ray, a computerized tomography (CT) scan, a magnetic resonance imaging (MRI) scan of the heart, stress tests or cardiac catheterization.

What are the risk factors for cardiovascular disease?
Many factors can influence your risk for heart disease. Some can be controlled, others can't. Some factors greatly increase the risk of cardiovascular disease, whereas others may exert only a mild influence. Knowing your various risk factors and their combined effect can help you and your health care provider determine your overall risk for cardiovascular disease.

What risk factors can't be controlled?

Both gender and age exert strong effects on cardiovascular health. Generally, men have a greater risk than women and at an earlier age. For men, risk begins to increase by age 45 and continues to grow with each passing year. For women, the risk generally doesn't start to climb until after menopause. By age 65, however, the cardiovascular disease risk in women escalates substantially.

Race also plays a role in heart health, though it isn't entirely clear why. In general, African Americans have a higher risk for health problems such as high blood pressure and diabetes. These two health problems greatly increase a person's risk for cardiovascular disease.

What risk factors can be controlled?

While we can't control our age and family history, we can influence a lot of other cardiovascular disease risk factors.

Lifestyle factors such as diet, exercise and smoking all profoundly influence heart health. Though a healthy diet and regular exercise both contribute greatly to cardiovascular health, smoking is one

of the worst offenders. Aside from blocking arteries and spiking blood pressure, smoking also increases the risk for lung cancer and emphysema.

One very common risk factor is having unhealthy levels of blood fats, also called lipids, such as cholesterol and triglycerides. Specifically, it's dangerous when your total cholesterol, your "bad" (LDL) cholesterol or your triglycerides are too high, and your "good" (HDL) cholesterol is too low. Poor diet, smoking, a sedentary lifestyle and some medications can all contribute to lipid problems. If your levels are abnormal, most doctors will first recommend lifestyle changes-eating healthier, getting exercise and quitting smoking-sometimes combined with drugs designed to reduce cholesterol and triglycerides.

High blood pressure is another risk factor that most people can control. A healthy diet, exercise and quitting smoking can all help control blood pressure. When lifestyle changes don't do the trick, doctors sometimes prescribe drugs to control blood pressure.

Diabetes is also a major risk factor for cardiovascular disease. In particular, every time your blood sugar climbs too high and stays too high, it contributes to cardiovascular disease. If you have diabetes, it's even more important to exercise and eat right-plus, you must also regularly monitor your blood sugar and take your diabetes medication as prescribed.

HIV may also be a risk factor. Studies have shown that HIV-positive people not on antiretroviral (ARV) therapy have lower HDL cholesterol and higher triglycerides than people not living with the virus. Evidence also shows that the body's hyperactive response-inflammation-to the presence of HIV, especially if it is not being treated, can gradually damage the heart and blood vessels, potentially increasing the risk of cardiovascular disease. Although people living with HIV can't (yet) control whether or not they remain infected with the virus, they can help manage many of the health problems that HIV can cause.

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