



## CORONARY ARTERY DISEASE

Coronary heart disease (CHD) is a narrowing of the small blood vessels that supply blood and oxygen to the heart. CHD is also called coronary artery disease.

### **Causes, incidence, and risk factors**

Coronary heart disease is usually caused by a condition called atherosclerosis, which occurs when fatty material and other substances form a plaque build-up on the walls of your arteries. This causes them to get narrow. As the coronary arteries narrow, blood flow to the heart can slow down or stop. This can cause chest pain (stable angina), shortness of breath, heart attack, and other symptoms, usually when you are active.

Coronary heart disease (CHD) is the leading cause of death in the United States for men and women.

Many things increase your risk for heart disease:

- Men in their 40s have a higher risk of CHD than women. But as women get older (especially after they reach menopause), their risk increases to almost equal that of a man's risk. See: Heart disease and women
- Bad genes (heredity) can increase your risk. You are more likely to develop the condition if someone in your family has a history of heart disease -- especially if they had it before age 50. Your risk for CHD goes up the older you get.
- Diabetes is a strong risk factor for heart disease.
- High blood pressure increases your risks of coronary artery disease and heart failure.
- Abnormal cholesterol levels: your LDL ("bad") cholesterol should be as low as possible, and your HDL ("good") cholesterol should be as high as possible to reduce your risk of CHD.
- Metabolic syndrome refers to high triglyceride levels, high blood pressure, excess body fat around the waist, and increased insulin levels. People with this group of problems have an increased chance of getting heart disease.
- Smokers have a much higher risk of heart disease than nonsmokers.
- Chronic kidney disease can increase your risk.
- Already having atherosclerosis or hardening of the arteries in another part of your body (examples are stroke and abdominal aortic aneurysm) increases your risk of having coronary heart disease.
- Other risk factors include alcohol abuse, not getting enough exercise, and having excessive amounts of stress.

Higher-than-normal levels of inflammation-related substances, such as C-reactive protein and fibrinogen are being studied as possible indicators of an increased risk for heart disease.

Increased levels of a chemical called homocysteine, an amino acid, are also linked to an increased risk of a heart attack.

## **Symptoms**

Symptoms may be very noticeable, but sometimes you can have the disease and not have any symptoms.

Chest pain or discomfort (angina) is the most common symptom. You feel this pain when the heart is not getting enough blood or oxygen. How bad the pain is varies from person to person.

- It may feel heavy or like someone is squeezing your heart. You feel it under your breast bone (sternum), but also in your neck, arms, stomach, or upper back.
- The pain usually occurs with activity or emotion, and goes away with rest or a medicine called nitroglycerin.
- Other symptoms include shortness of breath and fatigue with activity (exertion).

Women, elderly people, and people with diabetes are more likely to have symptoms other than chest pain, such as:

- Fatigue
- Shortness of breath
- Weakness

## **Signs and tests**

Many tests help diagnose CHD. Usually, your doctor will order more than one test before making a definite diagnosis.

Tests may include:

- Coronary angiography/arteriography -- an invasive procedure designed to evaluate the heart arteries under x-ray
- CT angiography -- a noninvasive way to perform coronary angiography
- Echocardiogram
- Electrocardiogram (ECG)
- Electron-beam computed tomography (EBCT) to look for calcium in the lining of the arteries -  
- the more calcium, the higher your chance for CHD
- Exercise stress test
- Magnetic resonance angiography
- Nuclear scan

## **Treatment**

You may be asked to take one or more medicines to treat blood pressure, diabetes, or high cholesterol levels. Follow your doctor's directions closely to help prevent coronary artery disease from getting worse.

Goals for treating these conditions in people who have coronary artery disease:

- Blood pressure less than or equal to 140/90 (even lower for some patients with diabetes, kidney disease, and heart failure)
- Glycosylated hemoglobin (HbA1c) levels less than or equal to 7%
- LDL cholesterol level less than or equal to 100 mg/dL (even lower for some patients)

Treatment depends on your symptoms and how severe the disease is. Your doctor may give you one or more medicines to treat CHD, including:

- ACE inhibitors to lower blood pressure and protect your heart and kidneys
- Aspirin, with or without clopidogrel (Plavix) or prasugrel (Effient) to help prevent blood clots from forming in your arteries and reduce your risk of having a heart attack. Ask your doctor if you should be taking these medications.
- Beta-blockers to lower heart rate, blood pressure, and oxygen use by the heart. These reduce the risk of arrhythmias and improve survival after a heart attack or with heart failure.
- Calcium channel blockers to relax arteries, lower blood pressure, and reduce strain on the heart
- Diuretics to lower blood pressure and treat congestive heart failure
- Nitrates (such as nitroglycerin) to stop chest pain and improve blood supply to the heart
- Statins to lower cholesterol

**NEVER ABRUPTLY STOP TAKING ANY OF THESE DRUGS.** Always talk to your doctor first. Stopping these drugs suddenly can make your angina worse or cause a heart attack.

Procedures and surgeries used to treat CHD include:

- Angioplasty and stent placement, called percutaneous coronary interventions (PCIs)
- Coronary artery bypass surgery
- Minimally invasive heart surgery

Lifestyle changes are very important. Your doctor may tell you to:

- Avoid or reduce the amount of salt (sodium) you eat
- Eat a heart healthy diet -- one that is low in saturated fats, cholesterol, and trans fats
- Get regular exercise and maintain a healthy weight
- Keep your blood sugar strictly under control if you have diabetes
- Stop smoking

### **Expectations (prognosis)**

Everyone recovers differently. Some people can maintain a healthy life by changing their diet, stopping smoking, and taking medications exactly as the doctor prescribes. Others may need medical procedures such as angioplasty or surgery.

Although everyone is different, early detection of CHD generally results in a better outcome.

## Complications

- Heart attack
- Heart failure
- Unstable angina
- Sudden death

## Calling your health care provider

If you have any of the risk factors for CHD, contact your doctor to discuss prevention and possible treatment.

Immediately contact your health care provider, call the local emergency number (such as 911), or go to the emergency room if you have:

- Angina
- Shortness of breath
- Symptoms of a heart attack

## Prevention

See your health care provider regularly.

Tips for preventing CHD or lowering your risk of the disease:

- Avoid or reduce stress as best as you can.
- Don't smoke.
- Eat well-balanced meals that are low in fat and cholesterol and include several daily servings of fruits and vegetables.
- Get regular exercise. If your weight is considered normal, get at least 30 minutes of exercise every day. If you are overweight or obese, experts say you should get 60 - 90 minutes of exercise every day.
- Keep your blood pressure below 130/80 mmHg if you have diabetes or chronic kidney disease, and below 140/90 otherwise
- Keep your cholesterol and blood sugar under control.

Moderate amounts of alcohol (one glass a day for women, two for men) may reduce your risk of cardiovascular problems. However, drinking larger amounts does more harm than good.

If you have one or more risk factors for coronary heart disease, talk to your doctor about possibly taking an [aspirin](#) a day to help prevent a heart attack or stroke. You may be prescribed low-dose [aspirin](#) therapy if the benefit is likely to outweigh the risk of gastrointestinal side effects.

New guidelines no longer recommend hormone replacement therapy, vitamins E or C, antioxidants, or [folic acid](#) to prevent heart disease. The use of hormone replacement therapy in women who are close to menopause or who have finished menopause is controversial at this time.