

## Coronary Artery Disease

Your heart is a muscle — a very important muscle that your entire body depends on. As with all muscles, the heart is dependent on blood supply to provide necessary nutrients, fuel and oxygen. The heart gets its blood supply from the coronary arteries. The coronary arteries surround the heart. When the coronary arteries become blocked, narrowed or completely obstructed, the heart cannot get the nutrients, fuel and oxygen it needs. This can cause the heart to become weak or stop altogether or cause a heart attack. This blockage, narrowing or obstruction is known as coronary artery disease (CAD).



### Who Gets Coronary Artery Disease?

Worldwide, coronary artery disease is responsible for over one-third of deaths in adults over age 35! Coronary artery disease is also the number one killer in the United States. For persons aged 40 years, the lifetime risk of developing coronary artery disease is 49 percent in men and 32 percent in women. For those reaching age 70 years, the lifetime risk is 35 percent in men and 24 percent in women. For total coronary events, the incidence rises steeply with age, with women lagging behind men by 10 years.

A variety of other factors can increase risk of developing coronary artery disease including:

- Excess fats and cholesterol in the blood
- High blood pressure
- Excess sugar in the blood (high blood glucose, often due to diabetes)
- Early onset of coronary disease in the family history
- Sedentary lifestyle (sitting a lot)
- Poor diet (higher in processed foods, animal-based proteins and fats)

### What are the Symptoms?

Coronary artery disease (CAD) makes it more difficult for oxygen-rich blood to move through arteries supplying the heart. Common symptoms of coronary artery disease include:

- **Angina:** Angina is a supply-demand mismatch where the body is calling for more blood, oxygen and nutrients, and then calls upon the heart to deliver them. If the coronary arteries are partially blocked, the heart muscle itself has trouble with this delivery, and this creates a demand that cannot be met. This usually results in symptoms. Symptoms are often chest discomfort, but really can be any upper body pain or pressure that comes on with activity and resolves with rest. It's usually felt in the chest, but can also be experienced in the back, belly and even the jaw.
- **Shortness of breath:** At National Jewish Health, we see angina many times manifested as shortness of breath (dyspnea) with exertion, or chest tightness, squeezing or burning.

Sometimes CAD has no symptoms, which is called silent coronary artery disease. It can go undiagnosed up until someone has a heart attack, irregular heartbeat or other heart conditions.

## How is Coronary Disease Diagnosed?

Often, symptoms bring a person in to see a cardiologist. A cardiologist is a doctor who specializes in heart disease. The cardiologist will take into account several factors in diagnosing coronary artery disease. They include family history, symptoms and risk factors. In addition, there are several diagnostic tests that are helpful when used together to diagnose the condition.

- **Stress Testing “The Plumbing Evaluation”**: In a stress test, you perform a physical activity, such as jogging on a treadmill, to increase the speed of your heartbeat. This helps determine how well your heart performs. Cardiologists and exercise physiologists will watch your ECG (electrocardiogram) tracings during exercise, looking for changes that indicate a blockage may be present. Often, the stress test is accompanied by either nuclear or echocardiographic imaging. The imaging gives your doctors an idea if the blood flow in your heart is normal or not, or if the heart beats more strongly during exercise or not. As you would imagine, should your heart show decreased blood flow or if it does not beat as strongly, this may indicate there is a coronary artery blockage.
- **Echocardiography “The Pump Evaluation”**: An echocardiogram uses sound waves to produce an image of the heart. This shows how well it's working. It can help determine which areas of the heart are having problems and help identify any damage to the heart.
- **Coronary CT Angiogram “The Anatomic Evaluation”**: During a coronary CT angiogram, pictures are taken of cross sections or slices of the heart. A coronary artery calcium scoring CT can detect and measure the extent of the calcium deposits in the coronary arteries.
- **Cardiac Catheterization “The Gold Standard (Invasive)”**: This is a minimally invasive test. It not only allows visualization of your coronary arteries, but also will allow for possible opening of blockages using a piece of metal scaffolding called a stent.

## How is Coronary Artery Disease Treated?

The key to treating coronary artery disease (CAD) is to prevent it, or at least reduce the risk of serious cardiac events (such as heart attacks). This is usually done through diet, moderate exercise and a healthy, nonsmoking active lifestyle. In addition to several lifestyle changes, your health care provider may recommend various medications, medical procedures or rehabilitation to treat coronary artery disease.

### Healthy Diet and Lifestyle

A mostly whole food, low-fat, plant-based diet is the cornerstone to coronary artery disease prevention. This approach, combined with regular exercise, stress relief and connection/support with/of others, has been proven to actually reverse coronary artery disease. In fact, National Jewish Health | SCL Health offers intensive cardiac rehabilitation ([LINK WORKINGTOGETHER.ORG/ICR](https://www.njhealth.org/workingtogether/ICR)) to help combine all of these facets into one cohesive program after one experiences a stent, bypass, heart attack and a number of other cardiac issues.

The power of coronary disease prevention through a mostly plant-based diet and regular exercise has been much underestimated. It is more powerful than many of the commonly used procedures and medicines that are used in everyday practice. The difficulty comes from changing one's daily living habits. Cardiologists at National Jewish Health can help you achieve your best results by working with you to achieve the optimal lifestyle to reduce or reverse coronary artery disease.

### Medication

Medicines can be important to:

- Relieve the stress on your heart and lessen coronary artery disease symptoms.
- Decrease the risk of heart attack.
- Lower cholesterol levels and decrease blood pressure.

- Prevent harmful blood clots.

Medicines used to treat coronary artery disease include anticoagulants, aspirin, ACE inhibitors/angiotensin receptor blockers, beta blockers, calcium channel blockers, nitroglycerin, glycoprotein IIb-IIIa, statins and fish oil and other supplements high in omega-3 fatty acids.

Believe it or not, intensive **lifestyle as medicine** is the most important of all “medicine” to improve your heart health. Besides being free, regular physical activity (after speaking with your doctor) and eating a more plant-based diet can markedly improve symptoms and reduce comorbid conditions.

## Medical Procedures

Severe cases of coronary artery disease may warrant medical procedures, such as:

- **Angioplasty:** This procedure opens blocked or narrowed coronary arteries. A thin tube with a balloon or other device is threaded through a blood vessel until it reaches the blocked artery. The balloon is then inflated, pushing the plaque against the artery wall, which widens the artery. The procedure helps to restore blood flow to the heart, alleviate chest pain and decrease the chance of a heart attack.
- **CABG (coronary artery bypass graft):** This procedure creates new routes for arteries and veins so they can bypass the clogged coronary arteries and reach the heart.

Important Pearl: Not ALL blockages need to be fixed. In fact, while “fixing” a blockage may produce normal blood flow, depending on where the blockage was, the fix may not improve longevity. Sometimes, fixing a blockage can reduce symptoms, and sometimes the fixed blockage can improve longevity. Be sure to ask your doctor what’s right for your specific case.

## Cardiac Rehabilitation

Cardiac rehabilitation is another treatment option, usually combined with medicine and surgical methods. Cardiac rehabilitation often consists of:

- **Exercise training.** Learning how to exercise safely, building muscle strength and improving stamina can be very important in strengthening your heart and making it healthier. Learn how to exercise safely with heart disease.
- **Education, counseling and training.** Patient and family education seeks to inform you of anything you may want to know about your condition, helping you make the best decisions possible to maintain good health. Counseling is available to help you cope with the stress of the condition and managing lifestyle changes.
- **Check out Denver’s only intensive cardiac rehabilitation program at National Jewish Health | St Joseph Hospital – [workingtogether.org/icr](http://workingtogether.org/icr)** This unique program combines all the key elements for optimal lifestyle in one place.

Visit our website for more information about support groups, clinical trials and lifestyle information.

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