Coronary Artery Disease
(CAD; Coronary Atherosclerosis; Silent MI; Coronary Heart Disease; Ischemic Heart Disease; Atherosclerosis of the Coronary Arteries)

Definition

Coronary arteries bring oxygen rich blood to the heart muscle. Coronary artery disease (CAD) is narrowing of these arteries. If the blockage is complete, areas of the heart muscle may be damaged. In a severe case, the heart muscle dies. This can lead to a heart attack, also known as a myocardial infarction (MI).

Causes

Causes include:

- Thickening of the walls of the arteries that feed the heart muscle
- Build up of fatty plaques within the coronary arteries
- Sudden spasm of a coronary artery
- Narrowing of the coronary arteries
- Inflammation within the coronary arteries
- Development of a blood clot within the coronary arteries that blocks blood flow
**Risk Factors**

Men, especially those who are over 45 years of age, are at increased risk. Women who are over 55 years of age are also at increased risk.

Factors that may increase your risk of CAD include:

- Strong family history of heart disease
- **Obesity** and being overweight
- **Smoking**
- **High blood pressure**
- Inactive lifestyle
- **High cholesterol**—specifically, high LDL cholesterol and triglycerides, and low HDL cholesterol
- **Diabetes**
- **Metabolic syndrome**—a combination of elevated blood pressure and cholesterol, abdominal obesity, and insulin resistance

Other risk factors may include:

- Chronic stress, fatigue, or disinterest can lead you to make poor decisions about your health
- **Excessive alcohol use**
- Psychological disorders, such as **depression** and **anxiety**.
- A diet that is high in saturated fat, trans fat, cholesterol, and/or calories
- Drinking sugary beverages on a regular basis

**Symptoms**

CAD may progress without any symptoms.

**Angina** is chest pain that comes and goes. It often has a squeezing or pressure-like quality. It may radiate into the shoulder(s), arm(s), or jaw. Angina usually lasts for about 2-10 minutes. It is often relieved with rest. Angina can be triggered by:

- Exercise or exertion
- Emotional stress
- Cold weather
- A large meal

Chest pain may indicate more serious unstable angina or a heart attack if it includes the following:

- It is unrelieved by rest or nitroglycerin
- Severe angina
- Angina that begins at rest
- Angina that lasts more than 15 minutes

Accompanying symptoms may include:

- Shortness of breath
- Sweating
- Nausea
- Weakness

Immediate medical attention is needed for unstable angina. CAD in women may not cause typical symptoms. It is likely to start with shortness of breath and fatigue.
Diagnosis

If you go to the emergency room with chest pain, some tests will be done right away. The tests will attempt to see if you are having angina or a heart attack. If you have a stable pattern of angina, other tests may be done to determine the severity of your disease.

You will be asked about your symptoms and medical history. A physical exam will be done.

You may need to have your bodily fluids tested. This can be done with blood tests.

You may need to have pictures taken of your heart. This can be done with:

- Echocardiogram
- Coronary calcium scoring—done by CT scan
- Coronary angiography

You may need to have your heart function tested. This can be done with:

- ECG
- Exercise stress test
- Nuclear stress test

Treatment

Treatment may include:

Nitroglycerin

This medication is usually given during an attack of angina. It can be given as a tablet that dissolves under the tongue or as a spray. Longer-lasting types can be used to prevent angina before an activity known to cause it. These may be given as pills or applied as patches or ointments.

Blood-Thinning Medications

A small, daily dose of aspirin has been shown to decrease the risk of heart attack. Ask your doctor before taking aspirin daily.

Other blood-thinning medications may be prescribed.

Beta-Blockers, Calcium-Channel Blockers, and ACE-Inhibitors

These may help prevent angina. In some cases, they may lower the risk of heart attack.

Medications to Lower Cholesterol

Medications, like statins, are often prescribed to people who have CAD. Statins lower cholesterol levels, which can help to prevent CAD events.

Revascularization

Patients with severe blockages in their coronary arteries may benefit from procedures to immediately improve blood flow to the heart muscle:

- Percutaneous coronary interventions (PCI)—such as balloon angioplasty, in some cases, a wire mesh stent is placed to hold the artery open
• **Coronary artery bypass grafting** (CABG)—segments of vessels are taken from other areas of the body and are sewn into the heart arteries to reroute blood flow around blockages

**Options for Refractory Angina**

For patients who are not candidates for revascularization procedures, but have continued angina despite medication, options include:

• Enhanced external counterpulsation (EECP)—large air bags are inflated around the legs in tune with the heart beat. The patient receives 5 1-hour treatments per week for 7 weeks. This has been shown to reduce angina and may improve symptom-free exercise duration.
• Transmyocardial revascularization (TMR)—surgical procedure done with laser to reduce chest pain

**Prevention**

To reduce your risk of CAD:

• Maintain a healthy weight.
• Eat a [heart healthy diet](#) that is low in [saturated fat](#), red meat and processed meats, and rich in whole [grains](#), [fruits](#), [vegetables](#), and [nuts](#).
• Begin a safe exercise program with the advice of your doctor.
• If you smoke, talk to your doctor about ways to [quit](#).
• Treat your high blood pressure and/or diabetes.
• Treat high cholesterol or triglycerides.
• Ask your doctor about taking a low-dose aspirin every day.
• Find ways to reduce stress.

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