

HealthPartners Care Coordination
Clinical Care Planning and Resource Guide
CORONARY ARTERY DISEASE MANAGEMENT

The following Evidence Base Guideline was used in developing this clinical care guide: National Institute of Health (NIH); American Heart Association (AHA)

Documented Health Condition: Coronary Artery Disease, Coronary Heart Disease, Heart Disease

What is Coronary Artery Disease?

Coronary artery disease (CAD) is a disease in which a waxy substance called plaque builds up inside the coronary arteries. These arteries supply oxygen-rich blood to your heart muscle. When plaque builds up in the arteries, the condition is called atherosclerosis (ATH-er-o-skler-O-sis). The buildup of plaque occurs over many years.

Over time, plaque can harden or rupture (break open). Hardened plaque narrows the coronary arteries and reduces the flow of oxygen-rich blood to the heart. If the plaque ruptures, a blood clot can form on its surface. A large blood clot can mostly or completely block blood flow through a coronary artery. Over time, ruptured plaque also hardens and narrows the coronary arteries.

Common Causes of Coronary Artery Disease?

If the flow of oxygen-rich blood to your heart muscle is reduced or blocked, angina or a heart attack can occur.

Angina is chest pain or discomfort. It may feel like pressure or squeezing in your chest. The pain also can occur in your shoulders, arms, neck, jaw, or back. Angina pain may even feel like indigestion.

A heart attack occurs if the flow of oxygen-rich blood to a section of heart muscle is cut off. If blood flow isn't restored quickly, the section of heart muscle begins to die. Without quick treatment, a heart attack can lead to serious health problems or death.

Over time, Coronary artery disease can weaken the heart muscle and lead to heart failure and arrhythmias (ah-RITH-me-ahs). Heart failure is a condition in which your heart can't pump enough blood to meet your body's needs. Arrhythmias are problems with the rate or rhythm of the heartbeat.

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Risk Factors:

- Smoking
- High cholesterol
- High blood pressure
- Diabetes
- Inflamed blood vessels
- Lack of activity
- Overweight
- Unhealthy diet

Other Names for Coronary Artery Disease:

- Atherosclerosis
- Coronary artery disease (CAD)
- Hardening of the arteries
- Heart disease
- Ischemic (is-KE-mik) heart disease
- Narrowing of the arteries

Other conditions that are distinct types of Coronary Artery Disease:

- Heart failure, congestive heart failure, right or left-sided heart failure
- Arrhythmia

Diagnosis and Clinical Indicators:

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Diagnostic tests: Your doctor will diagnose coronary heart disease (CAD) based on your medical and family histories, your risk factors for CAD, a physical exam, and the results from tests and procedures. No single test can diagnose CAD. If your doctor thinks you have CAD, he or she may recommend one or more of the following tests.

- EKG (Electrocardiogram)-An EKG can show signs of heart damage due to CAD and signs of a previous or current heart attack.
- Stress Test- A stress test can show possible signs and symptoms of CAD, such as:
 - Abnormal changes in your heart rate or blood pressure
 - Shortness of breath or chest pain
 - Abnormal changes in your heart rhythm or your heart's electrical activity
- Chest X Ray
- Echocardiography- Echo also can show areas of poor blood flow to the heart, areas of heart muscle that aren't contracting normally, and previous injury to the heart muscle caused by poor blood flow.
- Blood Tests- check the levels of certain fats, cholesterol, sugar, and proteins in your blood.
- Coronary Angiography and Cardiac Catheterization- This test uses dye and special x rays to show the insides of your coronary arteries.

Signs and Symptoms of Coronary Artery Disease:

A common symptom of coronary artery disease (CAD) is angina. Angina is chest pain or discomfort that occurs if an area of your heart muscle doesn't get enough oxygen-rich blood.

Angina may feel like pressure or squeezing in your chest. You also may feel it in your shoulders, arms, neck, jaw, or back. Angina pain may even feel like indigestion. The pain tends to get worse with activity and go away with rest. Emotional stress also can trigger the pain.

Types of Angina

The major types of angina are stable, unstable, variant (Prinzmetal's), and microvascular. Knowing how the types differ is important. This is because they have different symptoms and require different treatments.

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- Stable Angina
Stable angina is the most common type of angina. It occurs when the heart is working harder than usual. Stable angina has a regular pattern. (“Pattern” refers to how often the angina occurs, how severe it is, and what factors trigger it.) If you have stable angina, you can learn its pattern and predict when the pain will occur. The pain usually goes away a few minutes after you rest or take your angina medicine. Stable angina isn't a heart attack, but it suggests that a heart attack is more likely to happen in the future.

- Unstable Angina
Unstable angina doesn't follow a pattern. It may occur more often and be more severe than stable angina. Unstable angina also can occur with or without physical exertion, and rest or medicine may not relieve the pain.
Unstable angina is very dangerous and requires emergency treatment. This type of angina is a sign that a heart attack may happen soon.

- Variant (Prinzmetal's) Angina
Variant angina is rare. A spasm in a coronary artery causes this type of angina. Variant angina usually occurs while you're at rest, and the pain can be severe. It usually happens between midnight and early morning. Medicine can relieve this type of angina.

- Microvascular Angina
Microvascular angina can be more severe and last longer than other types of angina. Medicine may not relieve this type of angina

Another common symptom of CAD is shortness of breath. This symptom occurs if CAD causes heart failure. When you have heart failure, your heart can't pump enough blood to meet your body's needs. Fluid builds up in your lungs, making it hard to breathe. The severity of these symptoms varies. They may get more severe as the buildup of plaque continues to narrow the coronary arteries.

Signs and Symptoms of Heart Problems Related to Coronary Artery Disease

- **Heart Attack**

A heart attack occurs if the flow of oxygen-rich blood to a section of heart muscle is cut off. This can happen if an area of plaque in a coronary artery ruptures (breaks open). Blood cell fragments called platelets stick to the site of the injury and may clump together to form blood clots. If a clot becomes large enough, it can mostly or completely block blood flow through a coronary artery. If the blockage

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isn't treated quickly, the portion of heart muscle fed by the artery begins to die. Healthy heart tissue is replaced with scar tissue. This heart damage may not be obvious, or it may cause severe or long-lasting problems.

- **Heart Failure – see separate Guideline**

Heart failure is a condition in which your heart can't pump enough blood to meet your body's needs. Heart failure doesn't mean that your heart has stopped or is about to stop working. The most common signs and symptoms of heart failure are shortness of breath or trouble breathing; fatigue; sudden weight gain; and swelling in the ankles, feet, legs, stomach, and veins in the neck.

All of these symptoms are the result of fluid buildup in your body. When symptoms start, you may feel tired and short of breath after routine physical effort, like climbing stairs.

- **Arrhythmia– see separate Guideline**

An arrhythmia is a problem with the rate or rhythm of the heartbeat. When you have an arrhythmia, you may notice that your heart is skipping beats or beating too fast. Some people describe arrhythmias as a fluttering feeling in the chest. These feelings are called palpitations.

Some arrhythmias can cause your heart to suddenly stop beating. This condition is called sudden cardiac arrest (SCA) and it usually causes death if it's not treated within minutes.

Treatments and Self Care:

Treatments for coronary artery disease (CAD) include lifestyle changes, medicines, and procedures. Goals may include:

- Relieving symptoms.
- Reducing risk factors in an effort to slow, stop, or reverse the buildup of plaque.
- Lowering the risk of blood clots forming. (Blood clots can cause a heart attack.)
- Widening or bypassing clogged arteries.
- Preventing complications of CAD.

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Procedures and Surgery

You may need a procedure or surgery to treat CAD. Both angioplasty and CABG are used to treat blocked coronary arteries. You and your doctor can discuss which treatment is right for you.

1. Angioplasty

Angioplasty is a nonsurgical procedure that opens blocked or narrowed coronary arteries. This procedure also is called percutaneous transluminal coronary artery angioplasty, or PTCA.

A thin, flexible tube with a balloon or other device on the end is threaded through a blood vessel to the narrowed or blocked coronary artery. Once in place, the balloon is inflated to compress the plaque against the wall of the artery. This restores blood flow through the artery.

During the procedure, the doctor may put a small mesh tube called a stent in the artery. The stent helps prevent blockages in the artery in the months or years after angioplasty.

2. Coronary Artery Bypass Grafting

CABG is a type of surgery. In CABG, arteries or veins from other areas in your body are used to bypass (that is, go around) your narrowed coronary arteries. CABG can improve blood flow to your heart, relieve chest pain, and possibly prevent a heart attack.

3. Cardiac Rehabilitation

Cardiac rehabilitation for angina or after CABG, angioplasty, or a heart attack may be prescribed.

Rehab has two parts:

- Exercise training. This part helps you learn how to exercise safely, strengthen your muscles, and improve your stamina. Your exercise plan will be based on your personal abilities, needs, and interests.
- Education, counseling, and training. This part of rehab helps you understand your heart condition and find ways to reduce your risk for future heart problems. The rehab team will help you learn how to cope with the stress of adjusting to a new lifestyle and deal with your fears about the future.

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Definition of Well Managed:

- No ER or inpatient admissions for exacerbation of CAD symptoms
- Member has a physician recommended plan and follows it:
 - Follows treatment plan for monitoring CAD i.e. BP, medications, diet and exercise recommendations, attends scheduled appointments.
 - Follows through with contacting clinic when symptomatic. For example, elevated BP increased SOB, increased fatigue, chest discomfort or pain.
 - Follows low heart healthy diet recommendations.
- General lack of symptoms as outlined above.

Must Meet The Following Indicators for Well Managed CAD:

- No ER or inpatient admissions for exacerbation of CAD symptoms for last 12 months
- BP control <150/90 or if ≥ 150/90, is within physician recommended target
- No episodes of chest pain (angina) or if has episodes of chest pain (angina), knows what actions to take and has a plan for emergencies.

Chronic Care Guideline Goal from MCG	“As evidenced by” (AEB) example	Suggested care plan education from Coach & Communicate
	As evidenced by patient self-reporting understanding of CAD diagnosis.	Coronary Artery Disease

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Goal: Better understanding of Coronary Artery Disease (CAD) diagnosis	As evidenced by patient self-reporting understanding of concerning CAD symptoms.		
	As evidenced by patient self-reporting comprehension of health education received.		
	As evidenced by patient self-reporting adherence to prescribed CAD plan of care.	Heart Disease: Making Peace with Medications	
Goal: Establishment of Medical Home for continuing patient care	As evidenced by patient/parent successfully following up with cardiologist.		
	As evidenced by patient/parent successfully following up with primary MD.		
Goal: develop, implement and maintain a Coronary Artery Disease self-management plan	As evidenced by patient self-reporting follow up with primary care provider to develop, review, or evaluate for problems with self-management plan.		
	As evidenced by patient self-reporting adherence to medication regimen and lifestyle changes is necessary for reducing risk of complications. (specify)	Heart-Healthy Lifestyle	
	As evidenced by patient self-reporting dietary changes specific to patient needs, such as heart healthy, weight loss, low sodium, or diabetic diet. (specify)	Heart Disease: Starting a Heart Healthy Diet	
	As evidenced by patient self-reporting maintenance of exercise or cardiac rehabilitation program. (specify)	Heart Disease: Exercising for a Healthy Heart	
	As evidenced by patient self-reporting how to check heart rate and rhythm, and what changes should generate a call or visit to the physician.		
	Goal: recognize and understand the management of symptoms for Angina	As evidenced by self-report of signs and symptoms of concern and related follow up recommendations.	Coronary Artery Disease: Symptoms
		As evidenced by self-report of prescribed Nitroglycerin protocol for angina.	Nitrates for Coronary Artery Disease