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Diseases and Conditions

Angina

By Mayo Clinic Staff

Angina is a term used for chest pain caused by reduced blood flow to the heart muscle. Angina (an-JIE-nuh or AN-juh-nuh) is a symptom of coronary artery disease. Angina is typically described as squeezing, pressure, heaviness, tightness or pain in your chest.

Angina, also called angina pectoris, can be a recurring problem or a sudden, acute health concern.

Angina is relatively common but can be hard to distinguish from other types of chest pain, such as the pain or discomfort of indigestion. If you have unexplained chest pain, seek medical attention right away.

Symptoms associated with angina include:

- Chest pain or discomfort
- Pain in your arms, neck, jaw, shoulder or back accompanying chest pain
- Nausea
- Fatigue
- Shortness of breath
- Sweating
- Dizziness

The chest pain and discomfort common with angina may be described as pressure, squeezing, fullness or pain in the center of your chest. Some people with angina symptoms describe angina as feeling like a vise is squeezing their chest or feeling like a heavy weight has been placed on their chest. For others, it may feel like indigestion.

The severity, duration and type of angina can vary. It's important to recognize if you have new or changing chest discomfort. New or different symptoms may signal a more dangerous form of angina (unstable angina) or a heart attack.

Stable angina is the most common form of angina, and it typically occurs with exertion and goes away with rest. If chest discomfort is a new symptom for you, it's important to see your doctor to find out what's causing your chest pain and to get proper treatment. If your stable angina gets worse or changes, seek medical attention immediately.

Characteristics of stable angina

- Develops when your heart works harder, such as when you exercise or climb stairs
- Can usually be predicted and the pain is usually similar to previous types of chest pain you've had
- Lasts a short time, perhaps five minutes or less
- Disappears sooner if you rest or use your angina medication

Characteristics of unstable angina (a medical emergency)

- Occurs even at rest
- Is a change in your usual pattern of angina
- Is unexpected
- Is usually more severe and lasts longer than stable angina, maybe as long as 30 minutes
- May not disappear with rest or use of angina medication
- Might signal a heart attack

Angina in women

A woman's angina symptoms can be different from the classic angina symptoms. For example, women often experience symptoms such as nausea, shortness of breath, abdominal pain or extreme fatigue, with or without chest pain. Or a woman may feel discomfort in her neck, jaw or back or stabbing pain instead of the more typical chest pressure. These differences may lead to delays in seeking treatment.

When to see a doctor

If your chest pain lasts longer than a few minutes and doesn't go away when you rest or take your angina medications, it may be a sign you're having a heart attack. Call 911 or emergency medical help. Arrange for transportation. Only drive yourself to the hospital as a last resort.

Angina is caused by reduced blood flow to your heart muscle. Your blood carries oxygen, which your heart muscle needs to survive. When your heart muscle isn't getting enough oxygen, it causes a condition called ischemia.

The most common cause of reduced blood flow to your heart muscle is coronary artery disease (CAD). Your heart (coronary) arteries can become narrowed by deposits called plaques. This is

called atherosclerosis.

This reduced blood flow is a supply problem — your heart is not getting enough oxygen-rich blood. You may wonder why you don't always have angina if your heart arteries are narrowed due to fatty buildup. This is because during times of low oxygen demand — when you're resting, for example — your heart muscle may be able to get by on the reduced amount of blood flow without triggering angina symptoms. But when you increase the demand for oxygen, such as when you exercise, this can cause angina.

- **Stable angina.** Stable angina is usually triggered by physical exertion. When you climb stairs, exercise or walk, your heart demands more blood, but it's harder for the muscle to get enough blood when your arteries are narrowed. Besides physical activity, other factors, such as emotional stress, cold temperatures, heavy meals and smoking, also can narrow arteries and trigger angina.
- **Unstable angina.** If fat-containing deposits (plaques) in a blood vessel rupture and a blood clot forms, it can quickly block or reduce flow through a narrowed artery, suddenly and severely decreasing blood flow to your heart muscle. Unstable angina can also be caused by blood clots that block or partially block your heart's blood vessels.

  Unstable angina worsens and is not relieved by rest or your usual medications. If the blood flow doesn't improve, heart muscle deprived of oxygen dies — a heart attack. Unstable angina is dangerous and requires emergency treatment.
- **Variant angina.** Variant angina, also called Prinzmetal's angina, is caused by a spasm in a coronary artery in which the artery temporarily narrows. This narrowing reduces blood flow to your heart, causing chest pain. Variant angina can occur even when you're at rest, and is often severe. It can be relieved with medications.

The following risk factors increase your risk of coronary artery disease and angina:

- **Tobacco use.** Chewing tobacco, smoking and long-term exposure to secondhand smoke damage the interior walls of arteries — including arteries to your heart — allowing deposits of cholesterol to collect and block blood flow.
- **Diabetes.** Diabetes is the inability of your body to produce enough insulin or respond to insulin properly. Insulin, a hormone secreted by your pancreas, allows your body to use glucose, which is a form of sugar from foods. Diabetes increases the risk of coronary artery disease, which leads to angina and heart attacks by speeding up atherosclerosis.
- **High blood pressure.** Blood pressure is determined by the amount of blood your heart pumps and the amount of resistance to blood flow in your arteries. Over time, high blood pressure damages arteries.
- **High blood cholesterol or triglyceride levels.** Cholesterol is a major part of the deposits that can narrow arteries throughout your body, including those that supply your heart. A high level of the wrong kind of cholesterol, known as low-density lipoprotein (LDL) cholesterol

(the "bad" cholesterol), increases your risk of angina and heart attacks. A high level of triglycerides, a type of blood fat related to your diet, also is undesirable.

- **History of heart disease.** If you have coronary artery disease or if you've had a heart attack, you're at a greater risk of developing angina.
- **Older age.** Men older than 45 and women older than 55 have a greater risk than do younger adults.
- **Lack of exercise.** An inactive lifestyle contributes to high cholesterol, high blood pressure, type 2 diabetes and obesity. However, it is important to talk with your doctor before starting an exercise program.
- **Obesity.** Obesity raises the risk of angina and heart disease because it's associated with high blood cholesterol levels, high blood pressure and diabetes. Also, your heart has to work harder to supply blood to the excess tissue.
- **Stress.** Stress can increase your risk of angina and heart attacks. Too much stress, as well as anger, can also raise your blood pressure. Surges of hormones produced during stress can narrow your arteries and worsen angina.

The chest pain that can occur with angina can make some normal activities, such as walking, uncomfortable. However, the most dangerous complication to be concerned about with angina is a heart attack.

Common signs and symptoms of a heart attack include:

- Pressure, fullness or a squeezing pain in the center of your chest that lasts for more than a few minutes
- Pain extending beyond your chest to your shoulder, arm, back, or even to your teeth and jaw
- Increasing episodes of chest pain
- Prolonged pain in the upper abdomen
- Shortness of breath
- Sweating
- Impending sense of doom
- Fainting
- Nausea and vomiting

If you're having sudden chest pain (unstable angina), call 911 or your local emergency number right away.

If you think you may have recurring angina because your symptoms are brief and only occur during exercise, or you're worried about your angina risk because of a strong family history, make an appointment with your family doctor. If angina is found early, your treatment may be easier and more effective.

Because appointments can be brief, and because there's often a lot of ground to cover, it's a good idea to be prepared for your appointment. Here's some information to help you get ready for your appointment and what to expect from your doctor.

What you can do

- **Be aware of any pre-appointment restrictions.** At the time you make the appointment, be sure to ask if there's anything you need to do in advance, such as restrict your diet. For a blood test to check indicators of heart disease, for example, you may need to fast for a period of time beforehand.
- **Write down any symptoms you're experiencing,** including any that may seem unrelated to angina.
- **Write down key personal information,** including any family history of angina, chest pain, heart disease, stroke, high blood pressure or diabetes and any major stresses or recent life changes.
- **Make a list of all medications,** vitamins or supplements you're taking.
- **Take a family member or friend along,** if possible. Sometimes it can be difficult to remember all of the information provided to you during an appointment. Someone who accompanies you may remember something that you missed or forgot.
- **Be prepared to discuss** your diet and exercise habits. If you don't already follow a diet or exercise routine, be ready to talk to your doctor about any challenges you might face in getting started.
- **Write down questions to ask** your doctor.

Your time with your doctor is limited, so preparing a list of questions will help you make the most of your time together. List your questions from most important to least important in case time runs out. For angina, some basic questions to ask your doctor include:

- What's the most likely cause of my symptoms?
- Are there any other possible causes?
- What kinds of tests will I need? How do I need to prepare for these tests?
- What treatments are available, and what do you recommend?
- What foods should I eat or avoid?
- What's an appropriate level of physical activity?
- I have other health conditions. How can I best manage these conditions together?
- How often do I need to follow up with you about my angina?
- Is there a generic alternative to the medicine you're prescribing me?
- Are there any brochures or other printed material that I can take home with me? What websites do you recommend visiting?

In addition to the questions that you've prepared to ask your doctor, don't hesitate to ask questions during your appointment.

What to expect from your doctor

Your doctor is likely to ask you a number of questions. Being ready to answer them may reserve time to go over any points you want to spend more time on. Your doctor may ask:

- When did you first begin experiencing symptoms?
- Is it pain? Discomfort? Tightness? Pressure? Sharp? Stabbing?
- Where is the pain located? Is it in a specific area or more generalized?
- Does the pain spread to your neck and arms? How and when did the pain start? Did something specific seem to trigger the pain? Does it start gradually and build up or start suddenly?
- How long does it last?
- What makes it worse? Activity? Breathing? Body movement?
- What makes it feel better? Rest? Deep breaths? Sitting up?
- Do you have other symptoms with the pain, such as nausea or dizziness?
- Do you have trouble swallowing?
- Do you often have heartburn? (Heartburn can mimic the feeling of angina.)

What you can do in the meantime

It's never too early to make healthy lifestyle changes, such as quitting smoking, eating healthy foods and becoming more physically active. These are primary lines of defense against angina and its complications, including heart attack and stroke.

To diagnose angina, your doctor will start by doing a physical exam and asking about your symptoms. You'll also be asked about any risk factors, including whether you have a family history of heart disease.

There are several tests your doctor may order to help confirm whether you have angina:

- **Electrocardiogram (ECG or EKG).** An electrocardiogram traces the electrical signals that cause your heart to beat as they travel through your heart. Your doctor can look for patterns among these heartbeats to see if the blood flow through your heart has been slowed, interrupted or if you're having a heart attack.
- **Stress test.** Sometimes angina is easier to diagnose when your heart is working harder. During a stress test, you exercise by walking on a treadmill or pedaling a stationary bicycle. While exercising, your blood pressure is monitored and your ECG readings are watched. If you're unable to exercise, you may be given drugs that cause your heart to work harder to

simulate exercising.

- **Echocardiogram.** An echocardiogram uses sound waves to produce images of the heart. Your doctor can use these images to identify whether there are areas of your heart muscle that have been damaged by poor blood flow — a cause of angina. An echocardiogram is sometimes given during a stress test.
- **Nuclear stress test.** A nuclear stress test helps measure blood flow to your heart muscle at rest and during stress. It is similar to a routine stress test, but during a nuclear stress test, a radioactive substance is injected into your bloodstream. This substance mixes with your blood and travels to your heart. A special scanner — which detects the radioactive material in your heart — creates images of your heart muscle. Inadequate blood flow to any part of your heart will show up as a light spot on the images.
- **Chest X-ray.** This test takes images of your heart and lungs. This is to look for other conditions that might explain your symptoms and to see if you have an enlarged heart.
- **Blood tests.** Certain heart enzymes slowly leak out into your blood if your heart has been damaged by a heart attack. Samples of your blood can be tested for the presence of these enzymes.
- **Coronary angiography.** Coronary angiography uses X-ray imaging to examine the inside of your heart's blood vessels. It's part of a general group of procedures known as cardiac catheterization. During coronary angiography, a type of dye that's visible by X-ray machine is injected into the blood vessels of your heart. The X-ray machine rapidly takes a series of images (angiograms), offering a detailed look at your blood vessels.
- **Cardiac computerized tomography (CT) scan.** In a cardiac CT scan, you lie on a table inside a doughnut-shaped machine. An X-ray tube inside the machine rotates around your body and collects images of your heart and chest, which can show if any of your heart's arteries are narrowed or if your heart is enlarged.

There are many options for angina treatment, including lifestyle changes, medications, angioplasty and stenting, or coronary bypass surgery. The goals of treatment are to reduce the frequency and severity of your symptoms and to lower your risk of heart attack and death.

However, if you have unstable angina or angina pain that's different from what you usually have, such as occurring when you're at rest, you need immediate treatment in a hospital.

Lifestyle changes

If your angina is mild, lifestyle changes may be all you need to do. Even if your angina is severe, making lifestyle changes can still help. These changes include the following:

- If you smoke, stop smoking. Avoid exposure to secondhand smoke.
- If you're overweight, talk to your doctor about weight-loss options.
- If you have diabetes, make sure that it is well-controlled and that you're following an optimal

diet and exercise plan.

- Because angina is often brought on by exertion, it's helpful to pace yourself and take rest breaks.
- Avoid large meals.
- Avoiding stress is easier said than done, but try to find ways to relax. Talk with your doctor about stress-reduction techniques.
- Eat a healthy diet with lots of whole grains, many fruits and vegetables, and limited amounts of saturated fat.
- Talk to your doctor about starting a safe exercise plan.

Medications

If lifestyle changes alone don't help your angina, you may need to take medications. These may include:

- **Nitrates.** Nitrates are often used to treat angina. Nitrates relax and widen your blood vessels, allowing more blood to flow to your heart muscle. You might take a nitrate when you have angina-related chest discomfort, before doing something that normally triggers angina (such as physical exertion), or on a long-term preventive basis. The most common form of nitrate used to treat angina is with nitroglycerin tablets put under your tongue.
- **Aspirin.** Aspirin reduces the ability of your blood to clot, making it easier for blood to flow through narrowed heart arteries. Preventing blood clots can also reduce your risk of a heart attack. But don't start taking a daily aspirin without talking to your doctor first.
- **Clot-preventing drugs.** Certain medications, such as clopidogrel (Plavix), prasugrel (Effient) and ticagrelor (Brilinta), can help prevent blood clots from forming by making your blood platelets less likely to stick together.
- **Beta blockers.** Beta blockers work by blocking the effects of the hormone epinephrine, also known as adrenaline. As a result, the heart beats more slowly and with less force, thereby reducing blood pressure. Beta blockers also help blood vessels relax and open up to improve blood flow, thus reducing or preventing angina.
- **Statins.** Statins are drugs used to lower blood cholesterol. They work by blocking a substance your body needs to make cholesterol. They may also help your body reabsorb cholesterol that has accumulated in plaques in your artery walls, helping prevent further blockage in your blood vessels. Statins also have many other beneficial effects on your heart arteries.
- **Calcium channel blockers.** Calcium channel blockers, also called calcium antagonists, relax and widen blood vessels by affecting the muscle cells in the arterial walls. This increases blood flow in your heart, reducing or preventing angina.
- **Ranolazine (Ranexa).** Ranexa can be used alone or with other angina medications, such as

calcium channel blockers, beta blockers or nitroglycerin. Unlike some other angina medications, Ranexa can be used if you're taking oral erectile dysfunction medications.

Medical procedures and surgery

Lifestyle changes and medications are frequently used to treat stable angina. But procedures, such as angioplasty, stenting and coronary artery bypass surgery, also are used to treat angina.

- **Angioplasty and stenting.** During an angioplasty — also called a percutaneous coronary intervention (PCI) — a tiny balloon is inserted into your narrowed artery. The balloon is inflated to widen the artery, and then a small wire mesh coil (stent) is usually inserted to keep the artery open. This procedure improves blood flow in your heart, reducing or eliminating angina. Angioplasty and stenting is a good treatment option if you have unstable angina or if lifestyle changes and medications don't effectively treat your chronic, stable angina.
- **Coronary artery bypass surgery.** During coronary artery bypass surgery, a vein or artery from somewhere else in your body is used to bypass a blocked or narrowed heart artery. Bypass surgery increases blood flow to your heart and reduces or eliminates angina. It's a treatment option for both unstable angina and stable angina that has not responded to other treatments.

Because heart disease is often the cause of most forms of angina, you can reduce or prevent angina by working on reducing your heart disease risk factors. Making lifestyle changes is the most important step you can take.

- If you smoke, stop smoking.
- Eat a healthy diet with limited amounts of saturated fat, lots of whole grains, and many fruits and vegetables.
- Talk to your doctor about starting a safe exercise plan.
- If you're overweight, talk to your doctor about weight-loss options.
- Take anti-angina medications as prescribed and follow your doctor's directions.
- Treat diseases or conditions that can increase your risk of angina, such as diabetes, high blood pressure and high blood cholesterol.
- Because angina is often brought on by exertion, pace yourself and take rest breaks.
- Avoid large meals that make you feel overly full.
- Try to find ways to relax. Talk with your doctor about stress-reduction techniques.

You can help prevent angina by making the same lifestyle changes that might improve your symptoms if you already have angina. These include:

- Quitting smoking

- Monitoring and controlling other health conditions, such as high blood pressure, high cholesterol and diabetes
- Eating a healthy diet
- Increasing your physical activity after you get your doctor's OK
- Maintaining a healthy weight
- Reducing your stress level

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