

# ANGINA

## Patient Information Fact Sheet

### ›What is angina?

Angina is a heart condition that causes temporary pain or an uncomfortable feeling in the chest. It often occurs during exercise but can also be triggered by anxiety, stress, eating a large meal, or by cold or windy weather. An angina attack usually lasts from 1 to 10 minutes and may be relieved by resting. Angina is more common in men than in women and incidence increases with age. Angina is the most common form of coronary heart disease and is thought to affect around 17 million people in the U.S. overall. Angina is more common in people from the Indian subcontinent and in people with diabetes.

### ›What causes angina?

Angina is caused by an imbalance between the amount of oxygen supplied to the heart and the amount needed. There are four types of angina: stable angina, unstable angina, variant (Prinzmetal's) angina, and microvascular angina. In all types of angina the pain is caused by the heart muscle becoming short of oxygen. This may be the result of narrowed arteries (as in stable angina), or as a result of a coronary artery spasm (as may occur in unstable angina or variant angina). Narrowing of the arteries also occurs in unstable angina and often in variant angina. Microvascular angina is caused by spasms within the walls of small arterial blood vessels causing reduced blood flow to the heart muscle.

Narrowing of the arteries is caused by atherosclerosis, which is the gradual buildup of fatty deposits, such as cholesterol, within the arteries. This buildup tends to happen with age and there are many risk factors that can increase the likelihood of this occurring, including smoking, high cholesterol, high blood pressure, diabetes, and being overweight. Some people develop angina without having any of these risk factors. If you have a close family member who has had angina or a heart attack at an early age, you may also be at increased risk.

### ›What are the symptoms of angina?

As mentioned above, angina causes temporary pain or an uncomfortable feeling in the chest. In stable angina, the pain is predictable and usually occurs at the same level of exercise or activity each time. Angina is described as unstable when it occurs with increasing frequency and severity. Unstable angina can occur at any time, often during exercise but also at rest. The pain caused by unstable angina is more prolonged than in stable angina and is not quickly relieved by nitrates (see "What treatment is available?"). This condition can deteriorate rapidly. Variant angina is a rare form of angina caused by a coronary artery spasm. It is unpredictable and can occur at rest. Microvascular angina may be a symptom of coronary microvascular disease (MVD). Chest pain can last greater than 30 minutes and may be more severe than other types of angina pain. Chest pain can also be caused by anxiety and tension but is a different kind of pain than that experienced in angina. Your doctor will be able to determine what is causing your chest pain.

Usually, angina subsides with rest but you may be prescribed a spray or tablet containing nitroglycerin to ease the pain. If the pain does not settle within 5 minutes, you should take another tablet or more sprays. The dose can be repeated a third time if the pain persists for a total of three doses in

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15 minutes. If the pain still does not settle, then you should seek immediate medical attention. The symptoms of a heart attack are usually stronger than those of angina. The pain is more severe and does not go away, and may be accompanied by sweating, nausea, shortness of breath, fatigue, and severe anxiety. Do not hesitate to seek help right away if you think you may be having a heart attack.

### ›What tests confirm a diagnosis of angina?

Your doctor may order tests to see if you have any other heart problems and to determine the cause of the angina. You may undergo an electrocardiogram (ECG) in which two or more electrodes will be placed on your skin (one on your chest). The electrodes will then be connected to an electrocardiograph, which will produce a tracing of the electrical activity of your heart. This will help the doctors to identify the problem. As angina is often triggered by exercise, an ECG may be carried out while you are exercising. High cholesterol is a risk factor for angina and can increase atherosclerosis. A blood test will show if your cholesterol levels are high. A procedure called coronary angiography may be carried out if other procedures such as angioplasty or coronary artery surgery are being considered. Your doctor will explain these procedures to you if necessary.

### ›How is angina treated?

There are several different drugs available to treat angina. These drugs cannot cure angina but can relieve the discomfort of an attack or help to prevent an attack. There are two main types of drugs: those that increase the blood supply to the heart and those that reduce the workload of the heart. Tablets that dissolve under the tongue (sublingual tablets) or sublingual sprays can be used to treat angina attacks. Drugs used to prevent attacks may be given as tablets or as patches or ointment applied to the skin.

**Nitrates** relieve both stable and unstable angina by dilating the blood vessels. This dilation eases the workload of the heart and also widens the coronary arteries. Nitrates can be given to prevent an attack at night or prior to exercise. Nitroglycerin is a short-acting nitrate that is often used when an attack occurs. It is available as sublingual tablets, which are dissolved under the tongue, or as a sublingual spray. Slow-release forms of nitroglycerin are also available and can be used to treat and prevent attacks. Nitroglycerin is also available in patches that are applied directly to the skin to prevent an attack and also as an ointment.

**Isosorbide dinitrate** (Dilatrate-SR, Isordil Titradose), and **isosorbide mononitrate** (Monoket) are longer-acting nitrates that are used mainly to prevent attacks. Isosorbide dinitrate is available as slow-release tablets to prevent angina attacks and as immediate-release tablets to treat and prevent of angina attacks. Isosorbide mononitrate is used to prevent an attack and is available as slow-release tablets or immediate-release tablets. For stable angina, commonly brought on by exercise, **beta-blockers** may be prescribed. These work by slowing down the heart rate, which in turn reduces the workload of the heart. When taken regularly, they can reduce the frequency of angina attacks. Beta-blockers include **acebutolol** (Sectral), **atenolol** (Tenormin), **bisoprolol** (Ziac), **carvedilol** (Coreg), **labetalol** (Trandate), **metoprolol** (Lopressor, Toprol-XL), **nadolol** (Corgard), **pindolol**, **propranolol** (Inderal) and **timolol**.

**Calcium-channel blockers** can also reduce the frequency of angina attacks. These drugs act by causing relaxation of the coronary arteries and also the heart muscle, thereby lowering blood pressure and reducing the workload of the heart. Calcium channel blockers include **amlodipine** (Norvasc), **diltiazem** (Cardizem), **felodipine** (Plendil), **nicardipine**, **nifedipine** (Procardia), **nisoldipine** (Sular) and **verapamil** (Calan, Covera-HS).

**Ranolazine** (Ranexa) is a drug that may be added to treatment for stable angina if other anti-anginal drugs are not working well enough or if you are intolerant of other drugs. The exact way in which this drug works is not known, but it is thought to improve relaxation of the heart muscle.

You may be given a combination of drugs depending on the cause of your angina and whether you have additional medical problems. For very severe angina, surgery or angioplasty may be recommended. Angioplasty is a procedure used to widen arteries that have become narrowed by atherosclerosis. A “balloon catheter” is inserted through the skin into the affected blood vessel; the balloon is then inflated, flattening the fatty deposit that is narrowing the artery against the artery wall. This procedure is used in people who have short lengths of narrowed arteries. If angina cannot be relieved by medicines or angioplasty or if the arteries are severely narrowed, then a coronary artery bypass graft (CABG) may be necessary. In this procedure, a vein from elsewhere in the body, usually from one of your legs, is grafted into the heart to bypass the blocked or narrowed arteries.

### ›Self-help measures:

- If you smoke, try to stop. This is very important because smoking is a major cause of coronary artery narrowing and the most important risk factor for angina.
- Reduce your fat intake to reduce cholesterol levels. Changes in your diet can also lessen the risk of your arteries becoming narrowed due to build-up of fatty deposits.
- Reduce the amount of salt in your diet to help lower your blood pressure, which in turn reduces the workload of the heart.
- Begin an exercise program to strengthen your heart and enable it to deal with oxygen more efficiently. Check with your doctor before starting any exercise regimen.
- Keep your weight at a healthy level—if you are overweight, your heart has to work harder to pump blood around your body.

### ›Further information:

American Heart Association: [www.americanheart.org](http://www.americanheart.org)

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