

Topic Page: [Myocardial infarction](#)

Definition: **myocardial infarction** from *Collins English Dictionary*

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1 destruction of an area of heart muscle as the result of occlusion of a coronary artery Compare coronary thrombosis

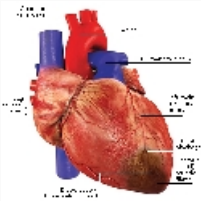


Image from:

[Myocardial infarction When a coronary artery... in *The Human Body Book: An Illustrated Guide to Its Structure, Function and Disorders*](#)

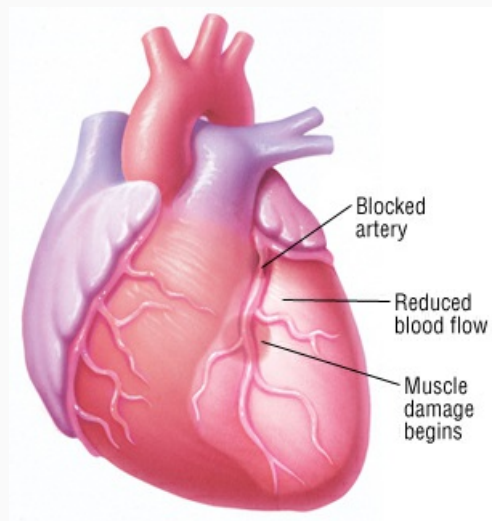
Summary Article: **Heart Attack (Myocardial Infarction)**

From *Harvard Medical School Health Topics A-Z*

What Is It?

A heart attack occurs when one of the heart's coronary arteries is blocked suddenly or has extremely slow blood flow. A heart attack also is called a myocardial infarction.

The usual cause of sudden blockage in a coronary artery is the formation of a blood clot (thrombus). The blood clot typically forms inside a coronary artery that already has been narrowed by atherosclerosis, a condition in which fatty deposits (plaques) build up along the inside walls of blood vessels.



Slow blood flow in a coronary artery can happen when the heart is beating very fast or the person has low blood pressure. If the demand for oxygen is greater than the supply, a heart attack can happen without formation of a blood clot. People with atherosclerosis are also more likely to have this reason for a heart attack.

Each coronary artery supplies blood to a specific part of the heart's muscular wall, so a blocked artery causes pain and malfunction in the area it supplies. Depending on the location and amount of heart muscle involved, this malfunction can seriously interfere with the heart's ability to pump blood. Also, some of the coronary arteries supply areas of the heart that regulate heartbeat, so a blockage sometimes causes potentially fatal abnormal heartbeats, called cardiac arrhythmias.

The pattern of symptoms that develops with each heart attack and the chances of survival are linked to the location and extent of the coronary artery blockage.

Most heart attacks result from atherosclerosis. The risk factors for heart attack and atherosclerosis are basically the same:

An abnormally high level of blood cholesterol (hypercholesterolemia)

An abnormally low level of HDL (high-density lipoprotein), commonly called "good cholesterol"

High blood pressure (hypertension)

Diabetes

Family history of coronary artery disease at an early age

Cigarette smoking

Obesity

Physical inactivity (too little regular exercise)

In early middle age, men have a greater risk of heart attack than women. However, a woman's risk increases once she begins menopause. This could be the result of a menopause-related decrease in levels of estrogen, a female sex hormone that may offer some protection against atherosclerosis.

Although most heart attacks are caused by atherosclerosis, there are rarer cases in which heart attacks result from other medical conditions. These include congenital abnormalities of the coronary arteries, hypercoagulability (an abnormally increased tendency to form blood clots), a collagen vascular disease, such as rheumatoid arthritis or systemic lupus erythematosus (SLE, or lupus), cocaine abuse, a spasm of the coronary artery, or an embolus (small traveling blood clot), which floats into a coronary artery and lodges there.

Symptoms

The most common symptom of a heart attack is chest pain, usually described as crushing, squeezing, pressing, heavy, or occasionally, stabbing or burning. Chest pain tends to be focused either in the center of the chest or just below the center of the rib cage, and it can spread to the arms, abdomen, neck, lower jaw or neck.

Other symptoms can include sudden weakness, sweating, nausea, vomiting, breathlessness, or lightheadedness. Sometimes, when a heart attack causes burning chest pain, nausea and vomiting, a patient may mistake his or her heart symptoms for indigestion.

Diagnosis

Your doctor will ask you to describe your chest pain and any other symptoms. Ideally, a family member or close friend should accompany you when you go for medical treatment. This person can help to provide your doctor with valuable information about your symptoms and medical history if you are unable to do so.

It is also important to give your doctor a list of the names and dosages of the prescription and nonprescription medications that you are taking. If you don't have a list already prepared, just scoop the medicines into a nearby bag or purse and bring them with you to the hospital.

Your doctor will suspect that you are having a heart attack based on your symptoms, your medical

history and your risk factors for cardiovascular disease. To confirm the diagnosis, he or she will do:

An electrocardiogram (EKG)

A physical examination, with special attention to your heart and blood pressure

Blood tests for serum cardiac markers — chemicals that are released into the blood when the heart muscle is damaged. The blood test that doctors order most frequently to diagnose a heart attack is called troponin.

Additional tests may be needed, including:

An echocardiogram — A painless test that uses sound waves to look at the heart muscle and heart valves.



Radionuclide imaging — Scans that use special radioactive isotopes to detect areas of poor blood flow in the heart

Expected Duration

How long heart attack symptoms last varies from person to person. In about 15% of cases, the patient never reaches a hospital for treatment and dies quickly after symptoms begin.

Prevention

You can help to prevent a heart attack by:

Exercising regularly

Eating healthfully

Maintaining a healthy weight

Not using tobacco products

Controlling your blood pressure

Lowering your LDL cholesterol.

Treatment

The treatment of a heart attack depends on how stable the person's condition is and his or her immediate risk of death. As soon as possible, the person will receive an aspirin and often other medicines that help prevent unwanted blood clotting in the coronary arteries.

The person also will be given oxygen to breathe, pain medication (usually morphine) for chest pain,

beta-blockers to reduce the heart's demand for oxygen, nitroglycerin to help blood flow into heart muscle cells, and a cholesterol-lowering statin drug. The person may be started on heparin in addition to aspirin for more potent anti-clotting action.

During the initial evaluation, the person will be considered for reperfusion therapy. The goal is to restore blood flow to the injured heart muscle as soon as possible to limit permanent damage.

Reperfusion is best done mechanically. The patient is taken to the cardiac catheterization laboratory in the hospital. A catheter is threaded through a large blood vessel toward the heart. Dye is injected to locate the blockage in the coronary artery.

The next step is percutaneous transluminal coronary angioplasty (PTCA). In PTCA, a different catheter that has a small deflated balloon is threaded past the blockage, and the balloon is inflated to crush the clot and plaque. Most balloon catheters also have a wire mesh, called a stent, over the balloon. After the balloon is inflated to unclog the blocked artery, the stent remains in place to keep the artery open.

In addition to aspirin, a second anti-platelet drug is given. The ones used most commonly are clopidogrel (Plavix, generic versions), prasugrel (Effient) and ticagrelor (Brilinta).

Reperfusion therapy can also be done with clot-dissolving drugs called thrombolytic agents, such as tissue plasminogen activator (tPA). This drug is used if it would take too long to transfer a patient to a hospital where an angioplasty could be performed.

Much of the additional treatment for heart attack depends on whether the patient developed any complications. For example, additional drugs may be needed to treat dangerous cardiac arrhythmias (abnormal heartbeats), low blood pressure, and congestive heart failure.

While in the hospital, daily medications usually include aspirin, a beta-blocker, an ACE (angiotensin-converting enzyme) inhibitor to help the heart work more efficiently, primarily by lowering blood pressure, a statin and a second anti-clotting drug.

When To Call A Professional

Seek emergency help immediately if you have chest pain, even if you think it is just indigestion or that you are too young to be having a heart attack. Prompt treatment increases your chance of limiting heart muscle damage. That's because reperfusion measures work best if they are started as soon as possible after symptoms start.

Prognosis

Survival from a heart attack has improved dramatically over the last two decades. However, some people experience sudden death and never make it to the hospital. For most people that do reach the hospital soon after the onset of symptoms, the prognosis is very good. Many people leave the hospital feeling well with limited heart damage.

Additional Info

National Heart, Lung, and Blood Institute (NHLBI)

P.O. Box 30105

Bethesda, MD 20824-0105

Phone: (301) 592-8573

TTY: (240) 629-3255

Fax: (301) 592-8563

<http://www.nhlbi.nih.gov/>

American Heart Association (AHA)

7272 Greenville Ave.

Dallas, TX 7523

Toll-Free: (800) 242-8721

<http://www.heart.org/>

Related Articles

Angioplasty, Electrocardiogram (EKG), Coronary Artery Bypass Surgery, Echocardiogram, Angina, Coronary Artery Disease, Cardiac Catheterization, Implantable Cardioverter Defibrillator (ICD)

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Lewine, Howard Ezra

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