CONDITION

Heart attack

A heart attack happens when blocked blood flow causes part of the heart muscle to die.

WHAT IT IS
Death of heart muscle from suddenly blocked blood flow

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Chest pressure, breathlessness, sweating, nausea

WHAT CAUSES IT
Usually blood clot over ruptured artery plaque

HOW IT IS DIAGNOSED
ECG and repeat cardiac troponin blood tests

MAIN TREATMENT
Urgent blood-flow restoration, medicines, and cardiac rehabilitation

CAN IT BE CURED?
No - dead heart muscle cannot regrow

IS IT AN EMERGENCY?
Yes - suspected symptoms need immediate emergency care

LONG-TERM OUTLOOK
Many recover well; heart damage raises future risk

Overview

A heart attack happens when part of the heart muscle suddenly loses its blood supply. Without enough oxygen, heart muscle cells begin to die. The medical name is myocardial infarction, often shortened to MI.

Most heart attacks are caused by a blood clot inside a coronary artery. These arteries carry blood to the heart muscle. The clot usually forms where a fatty deposit in the artery wall has broken open.

A heart attack is not the same as cardiac arrest. During a heart attack, the heart is usually still beating. Cardiac arrest means the heart has stopped pumping blood effectively. A heart attack can sometimes cause cardiac arrest.

Treatment is most effective when it starts quickly. Restoring blood flow can limit heart

damage and improve the chance of recovery. Do not wait to see whether possible heart attack symptoms settle on their own.

Symptoms

Chest discomfort is the most common symptom. It may feel like pressure, squeezing, heaviness, tightness, burning, or an ache. Some people describe it as indigestion rather than pain.

The discomfort may spread to one or both arms, the shoulders, neck, jaw, back, or upper abdomen. It may last more than a few minutes or go away and return.

Other possible symptoms include:

Symptoms are not always severe or sudden. Some heart attacks begin with mild or changing discomfort. Older adults, people with diabetes, and some women are more likely to have less typical symptoms, such as breathlessness, nausea, back or jaw discomfort, or unusual exhaustion. However, anyone can have symptoms without obvious chest pain.

A "silent" heart attack causes few symptoms or symptoms that were not recognised at the time. It still damages heart muscle and may be found later during testing.

- Shortness of breath
- Cold sweating or clammy skin
- Nausea or vomiting
- Dizziness, weakness, or feeling faint
- Sudden unusual tiredness
- A fast or irregular heartbeat
- A strong sense that something is wrong

Causes and risk factors

The usual underlying cause is coronary artery disease. In this condition, cholesterol-rich material called plaque builds up in the coronary artery walls. If a plaque tears or erodes, the body may form a blood clot over it. A large clot can suddenly block blood flow.

Less common causes include a severe spasm of a coronary artery, a tear in the artery wall, or a clot that travelled from elsewhere. A heart attack can also occur when the heart needs more oxygen than the blood can supply, such as during severe anaemia, very low blood pressure, or a

prolonged fast heart rhythm.

Factors that raise the likelihood of coronary artery disease and heart attack include:

Having a risk factor does not mean that a heart attack is certain. Some people have a heart attack without previously knowing that they have coronary artery disease.

- Smoking or exposure to tobacco smoke
- High blood pressure
- High LDL cholesterol
- Diabetes
- Older age
- A close family history of early heart disease
- Chronic kidney disease
- Limited physical activity
- Excess body weight
- Previous heart attack, stroke, or artery disease

Diagnosis

Emergency clinicians first consider your symptoms, medical history, vital signs, and physical examination. Testing begins promptly because treatment may need to start before every result is available.

An electrocardiogram, or ECG, records the heart's electrical activity. Certain ECG changes can show that a coronary artery is blocked. A heart attack with a particular pattern of ECG changes is called a STEMI. One without that pattern is called an NSTEMI. Both require urgent hospital care.

Blood tests measure cardiac troponin, a protein released when heart muscle is injured. Troponin may not rise immediately, so the test is often repeated. A changing troponin level, together with evidence that the heart lacked blood flow, helps confirm a heart attack.

Coronary angiography uses contrast dye and X-rays to show the coronary arteries. It can locate a blockage and may lead directly to treatment. An echocardiogram, which is an ultrasound scan of the heart, can show how well the heart pumps and which areas have been damaged.

Other conditions can cause similar symptoms. These include severe indigestion, inflammation

around the heart, a blood clot in the lungs, and a tear in the body's main artery. Emergency assessment is needed to tell them apart.

Treatment and management

Immediate treatment aims to restore blood flow and prevent the clot from growing. Emergency staff may give antiplatelet medicines, which make blood cells called platelets less likely to stick together. Other medicines may reduce clotting, ease symptoms, or lower the heart's workload.

For many people, blood flow is restored with percutaneous coronary intervention, or PCI. A clinician guides a thin tube through an artery to the blockage, inflates a small balloon, and usually places a mesh tube called a stent to hold the artery open.

If timely PCI is not available, a clot-dissolving medicine may be used for some STEMI heart attacks. It is not suitable for every person or every type of heart attack. Coronary artery bypass surgery may be needed when several arteries are severely narrowed or PCI is not appropriate.

After the emergency phase, medicines commonly address clotting, cholesterol, blood pressure, and the heart's workload. The exact combination is based on the type of heart attack, treatment received, heart function, and other health conditions. Do not stop prescribed antiplatelet medicine without medical advice, especially after a stent, because stopping can allow a dangerous clot to form.

Cardiac rehabilitation is an important part of recovery. It combines supervised activity, education, help with risk factors, and emotional support. It can help you return to daily life safely and lower the risk of another cardiovascular event.

Complications

The amount and location of heart damage affect the risk of complications. Some happen during the first hours or days, while others develop later.

Possible complications include:

Hospital monitoring helps the care team recognise and treat early complications. Later tests may measure the heart's pumping strength and guide ongoing treatment.

- Abnormal heart rhythms
- Cardiac arrest

- Heart failure, when the heart cannot pump well enough
- Cardiogenic shock, when the heart cannot maintain blood flow to organs
- Problems with a heart valve
- Inflammation around the heart
- A blood clot inside a damaged heart chamber
- Another heart attack

Prevention

Not every heart attack can be prevented. Age, family history, and some uncommon artery problems cannot be changed. However, managing coronary artery disease and its risk factors can lower the chance of a first or repeat heart attack.

Helpful measures include not smoking, staying physically active, eating a heart-supportive diet, and working toward a weight that is healthy for you. Blood pressure, cholesterol, diabetes, kidney disease, and sleep problems may also need treatment.

After a heart attack, taking prescribed medicines and attending cardiac rehabilitation are central parts of prevention. Keep follow-up appointments so your symptoms, heart function, medicines, and recovery can be reviewed.

Do not begin daily aspirin on your own for prevention. Its benefits and bleeding risks are not the same for everyone.

Living with it and what to expect

Recovery is different for each person. It is influenced by how much heart muscle was damaged, how quickly blood flow was restored, whether complications occurred, and your health before the event.

During the first days, care focuses on monitoring the heart and beginning medicines and gentle movement. Tiredness, reduced stamina, poor sleep, and worry are common during the first weeks. Activity is usually increased step by step through an individual recovery plan.

Some heart muscle may recover if it was injured but did not die. Muscle that died is replaced by scar tissue and does not return to normal. Even so, the remaining heart muscle can often continue to pump effectively. Other people develop lasting weakness of the heart and need ongoing treatment for heart failure.

Many people return to work, exercise, driving, travel, and sexual activity. The timing is based on recovery, symptoms, heart function, and the type of work or activity. Cardiac rehabilitation can provide practical guidance.

Fear of another attack, low mood, or depression can affect recovery. Tell your healthcare team if these feelings persist, interfere with sleep or daily life, or make it difficult to take part in rehabilitation.

Long-term follow-up usually includes reviewing symptoms, blood pressure, cholesterol, medicines, activity, and smoking status. Some people also need repeat imaging or further artery treatment.

When to get medical help

Call your local emergency number immediately if you develop possible heart attack symptoms, especially chest pressure, squeezing, or heaviness that lasts more than a few minutes or returns. Call even if the discomfort is mild or you are unsure.

Do not drive yourself to hospital. Emergency medical teams can assess you, begin treatment, and respond if your condition changes. If you have prescribed nitroglycerin, use it as you were instructed, but do not let this delay the emergency call. An emergency dispatcher may advise you about aspirin.

If someone collapses, is unresponsive, and is not breathing normally, call emergency services. Begin CPR if you can and use an automated external defibrillator, or AED, if one is available.

After a heart attack, recurrent chest discomfort, sudden breathlessness, fainting, or a new fast or irregular heartbeat also need urgent assessment. Call emergency services rather than waiting for a routine appointment.

For non-emergency concerns, contact your usual healthcare team. Examples include gradually increasing ankle swelling, ongoing tiredness, low mood, possible medicine side effects, or questions about returning to work and activity.

Common questions

Can a heart attack go away on its own?

Symptoms may ease if a blockage shifts or blood begins flowing again, but this does not mean the danger has passed. Heart damage or an unstable artery may remain. Possible symptoms still need emergency assessment.

Is a heart attack the same as cardiac arrest?

No. A heart attack is a blood-flow problem that damages heart muscle. Cardiac arrest is an electrical problem that stops the heart from pumping effectively. A heart attack can trigger cardiac arrest, but most heart attacks do not begin that way.

Can I have a heart attack without chest pain?

Yes. Breathlessness, nausea, sweating, weakness, jaw or back discomfort, and unusual tiredness can occur without clear chest pain. New unexplained symptoms may still require emergency assessment.

How long does recovery take?

Early recovery often takes several weeks, but there is no single timetable. The extent of heart damage, complications, general health, work demands, and progress in cardiac rehabilitation all affect recovery.

Can I exercise after a heart attack?

Physical activity is usually encouraged as part of recovery, but it needs to increase gradually. Cardiac rehabilitation provides a structured and monitored way to rebuild strength. Follow the activity plan given after your hospital assessment.

Can another heart attack be prevented?

The risk cannot be removed completely, but it can often be reduced. Prescribed medicines, cardiac rehabilitation, not smoking, and managing cholesterol, blood pressure, diabetes, activity, and diet all contribute.

Sources

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