



IRISH
HEART
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Step by step through

Heart Attack

Step by Step through

Heart attack

Produced by the Irish Heart Foundation

This booklet is one of the publications in our patient information series. For a complete list of patient booklets, see page 20.

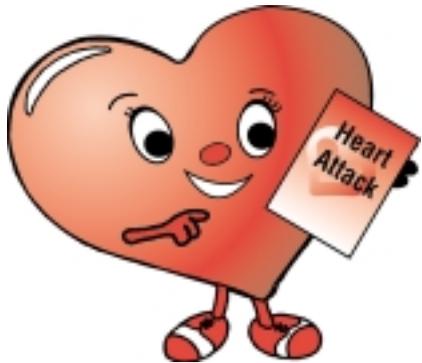
Acknowledgments:

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INTRODUCTION

This booklet will help answer some of the commonly asked questions you or your friends or family have about heart attacks. You will learn how the heart works and what a heart attack means. We have also explained what will happen if you go into hospital, when you come out and the treatments that are used. It will also add to the information you get from your doctor and nurse. However, if you have any further questions they will be more than happy to answer them for you.



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Your Heart



Your heart is a hollow muscular organ, about the size of your fist that is slightly to the left of the centre of your chest. Its main job is to pump blood through arteries to all parts of your body.



There are two sides to your heart, a **right** side and a **left** side, which are separated by a muscular band known as the septum.



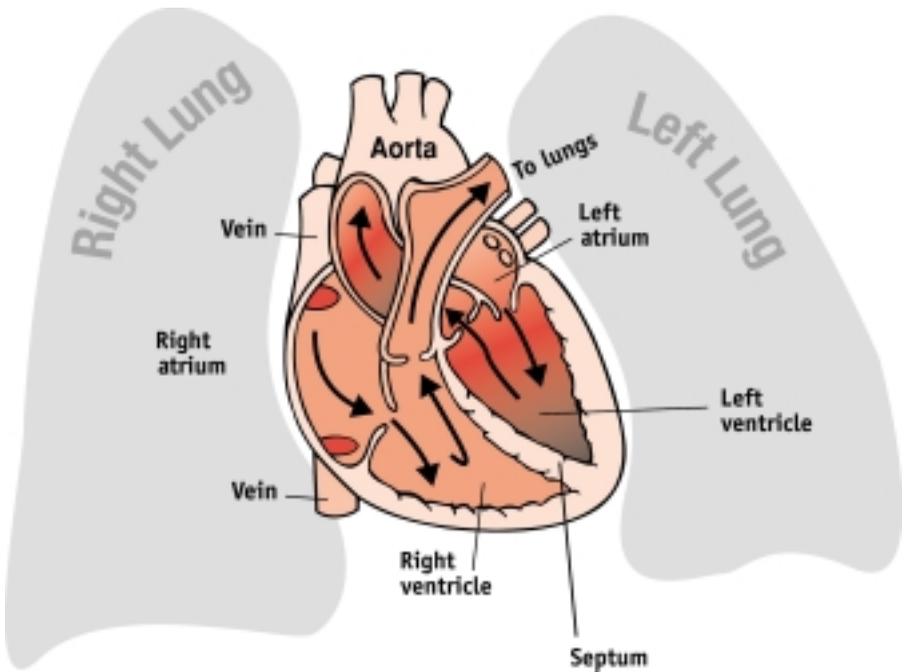
On each side there are two chambers (an **atrium** and a **ventricle**) with a valve separating them.



The chambers collect the blood, the valves keep it flowing in the right direction and the heart's muscular walls squeeze to pump the blood to all parts of your body.

Lets follow the blood flow through the heart to give you a better understanding. (please see diagram on the right)

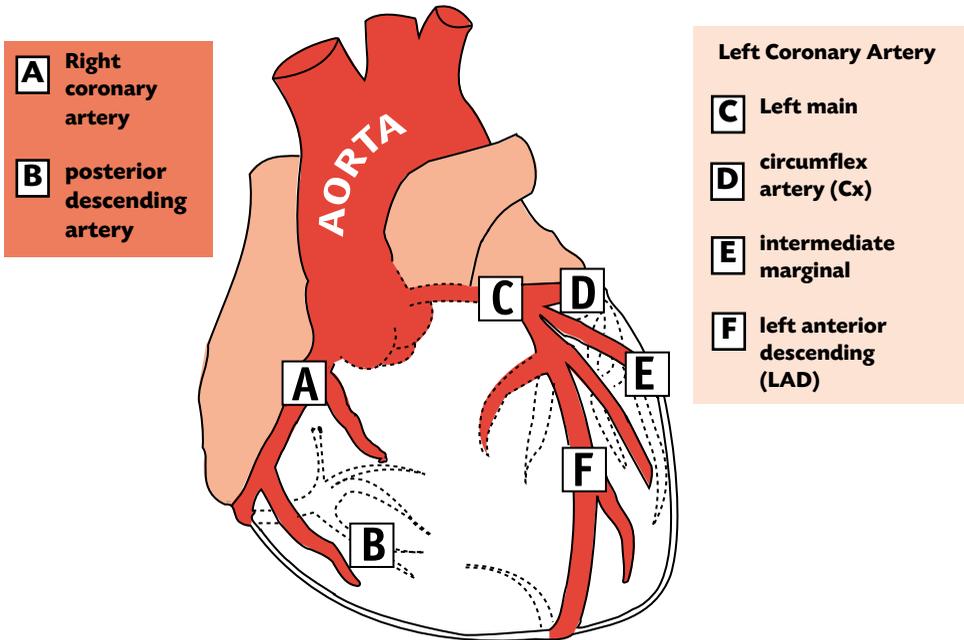
Veins carry blood that has already been pumped around the body and from which some oxygen has been removed. This blood returns to the right side of the heart to the chamber called the **right atrium** and then passes through the **tricuspid valve** into the chamber called the **right ventricle**. The right ventricle then pumps the blood through the **pulmonic valve** into the lungs.



The blood absorbs oxygen in the lungs. From the lungs the blood returns to the left side of the heart to the chamber called the **left atrium**. It passes through the **mitral valve** into the chamber called the **left ventricle**. From here the blood is pumped through the **aortic valve** into the main artery called **the aorta**, which carries the blood to all parts of your body.

The coronary arteries

The heart muscle, like every other muscle in your body, must be supplied with blood that is rich in oxygen and nutrients. So your heart pumps blood to itself through the **coronary arteries**. These arteries come from the aorta and spread out over the surface of the heart like the branches of a tree.



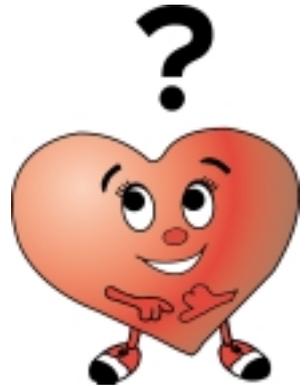
There are two large arteries. The **right coronary artery** mainly supplies blood to the right side and lower surface of the heart. The **left coronary artery** divides into two large branches, the **circumflex** branch, the **left anterior descending** branch. These mainly supply blood to the left side of the heart.

Heart attack

A heart attack occurs when the coronary arteries that supply blood to your heart muscle become blocked off. Medically, it is called a myocardial infarction. If the blood supply is cut off for more than a certain period of time, usually about 20 minutes, the muscle cells may die.

What are the symptoms of a heart attack?

The most common symptom of a heart attack is chest pain. This is usually a crushing or tight pain, which may move to your jaw or your arms particularly on the left side. You may also feel short of breath, sweaty or sick. Some people may feel light-headed or loose consciousness. You may become very anxious or afraid. However 10% – 15% of people have a heart attack may not feel anything. This is more common in older people, especially women and those with diabetes. Sometimes these people may just feel weak, tired, or short of breath. Some elderly patients may simply become confused.



What causes a heart attack?

The coronary arteries which supply blood to the heart muscle may gradually narrow because of a build up of fatty plaque on their inner lining. This build up of plaque is due to a condition called atherosclerosis, which starts in early life. If the plaque breaks, a blood clot occurs at this spot and it may block off the artery completely. A blood clot that develops like this is called a coronary thrombosis and many people refer to a heart attack as simply a coronary.

What is the difference between a heart attack and angina?

As you have just read, a heart attack occurs when there is a sudden complete blockage of blood flow to the heart muscle. You get very prolonged chest pain (usually over 20 minutes) that is not relieved by resting. A portion of your heart muscle dies.

If the blood supply is not completely blocked off but is reduced, the heart muscle can get some blood but this may not be enough for its needs. This may become a problem when you exercise as the heart muscle needs more oxygen rich blood at this time. If you exercise when you have a narrowing in one of your coronary arteries, your heart gives a pain in your chest, arm or jaw to get you to stop exercising. This is to give your heart muscle a rest so that it is not demanding so much extra blood. This pain or discomfort that arises with exercise and goes away at rest is called angina pectoris or just angina for short. It may also be relieved by drugs such as nitrates, which open up your heart's arteries and increase the blood flow to the heart muscle. It is important to know these differences between angina and a heart attack.



If you get angina with very little exercise or even for short periods at rest, you have a condition called unstable angina. This is a warning that you are at risk of a heart attack and you need urgent medical attention.

What is atherosclerosis?

Atherosclerosis comes from the greek words porridge (athero) and hard (sclerosis). This is because the plaque inside the arteries looks like hard lumps of porridge. This plaque start to build up in early life. It grows at different rates depending on whether or not you smoke, eat a lot of fatty food, have high cholesterol or have high blood pressure. Plaque builds up on the inner lining of the artery. If there is a large build up of plaque, it will reduce blood flow to the arteries. If this happens in the coronary arteries, the person may suffer from angina. Atherosclerosis is sometimes called hardening of the arteries. It may develop in various parts of the body including arteries that bring blood to the brain, heart, legs, and kidneys. In the heart, atherosclerosis is referred to as coronary heart disease.

Diagnosing heart attacks

How is a heart attack diagnosed?

Your doctor will make a diagnosis of a heart attack based on a number of factors. It is sometimes a very difficult diagnosis to make and it may take a few days to make sure the diagnosis is correct. First of all, the type of chest pain and how long it lasts is very important information to help make the diagnosis. Secondly, your doctor will look at an image of the electricity going through your heart called an electrocardiogram (ECG). There are certain patterns on the ECG, which suggest a heart attack. Lastly, your doctor will carry out blood tests, which will help confirm the diagnosis.

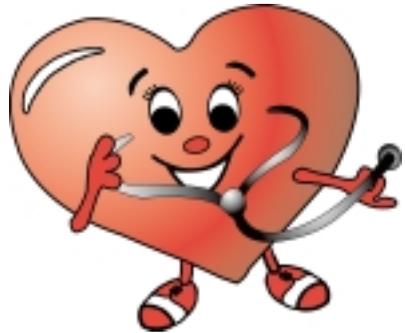
Can a heart attack be treated?

Yes, a heart attack can be treated. Once you arrive in hospital and a heart attack is suspected, an ECG will be performed. In the meantime you will receive oxygen and pain relief. A small plastic tubing is placed in one of your veins so that the doctors and nurses can give you fluids or medicines if needed. If the doctor confirms that you have had a heart attack based on the type of chest pain and the ECG findings, you will be given aspirin and the doctor will then consider if you need other treatments.



The most important decision is to try and open up the blocked artery. This can be done by giving you drugs called thrombolytics, that break down the clot in your artery. These drugs are very powerful and may cause bleeding and bruising. Your doctor will take great care to find out if you are at risk of a major bleed. For this reason these drugs are not given to people with stomach ulcers, people who have had a recent stroke or people who have had surgery.

In certain situations, you may have a direct angioplasty to open the artery which is blocked. This means inserting wires into your arteries and passing a small balloon into the artery that is blocked. The balloon is then inflated so that the clot and plaque that blocked the artery are pushed to the side. A small metal cage called a stent is inserted to keep the artery open. This allows blood to flow back into the portion of the heart muscle that had its blood supply cut off. This may prevent a portion of the heart muscle from dying. Most people who have had a heart attack require two other types of drugs while in the coronary care unit (CCU). These are called heparin and nitrates. Heparin is a drug that thins the blood to prevent more clotting.



Nitrates keep the arteries expanded as much as possible so that more blood gets to the heart muscle. In recent times, drugs to lower cholesterol and drugs called ACE inhibitors have been given shortly after a heart attack. There is also new information that fish oils are useful after heart attack.

What happens after a heart attack?

Once you have been treated with clot dissolving medicine or have had your artery reopened with angioplasty, you will be monitored in a coronary care unit (CCU) for a number of days. This is the period of highest risk. Very fast or very slow heart rates or other complications may develop. During this period you will be examined carefully at least once a day to detect any complications, such as heart failure or a leaking valve. ECG tests are performed regularly and if necessary chest x-rays will be taken. Sometimes it is useful to perform an echocardiogram (ECHO) to find out how well the muscle of the heart is functioning. An ECHO is an ultra sound examination of the heart. Blood tests are carried out regularly to work out how much damage has been caused by the heart attack and also to monitor the effects of drugs such as heparin, which thin the blood. Patients and families are sometimes distressed by the number of monitors and drips that are used to deliver drugs but this is quite normal in a coronary care unit and it should not alarm you.

Why CCU ?

The CCU is a special ward devoted to caring for patients with heart conditions. The nurses and doctors working in this unit are especially trained to deal with patients who have had, or may have a heart attack. Equipment is available to constantly monitor your heart rhythm, blood pressure and other factors. These monitors are programmed to sound an alarm if there are changes which suggest a possible problem.

While in the CCU, your visitors will be restricted to allow you time to rest after your heart attack.



What are the complications, which happen after a heart attack?

Arrhythmias: These are changes to your heart rhythm, which may happen after a heart attack. Your heart may go too fast or too slow. The fast rates are usually controlled by medicines, but if you have a slow heart rate, your doctor may need to insert a temporary pacemaker until your heart recovers.

Heart failure: Although this sounds like an awful condition, it simply means that your heart does not pump blood as well as before and thus you feel more tired or breathless. It happens when a large amount of heart muscle is damaged. This may cause a build-up of fluid in the lungs or swollen ankles. (Some drugs can also cause your legs to swell).

Low blood pressure: Some people may develop very low blood pressures after a heart attack. This may be due to some of the medicines they have received but may also be due to severe heart damage. When the blood pressure is very low, the condition is called shock. This is a life threatening situation and needs urgent attention.

Myocardial rupture: This is when the heart muscle which was damaged by the heart attack tears. This may allow blood to leak out of the heart into its surrounding sac or to leak between different heart chambers. This rarely happens.

Clots: These may develop inside the main pumping chamber of the heart. This is often the case when you have had a large heart attack and a lot of heart muscle is damaged. The main problem is that the clots that form inside your heart may break off and travel as a large clot out of the heart to other areas where they may clog up an artery completely. This may result in a stroke or cut off the blood supply to an arm or leg.

Pericarditis: This is an inflammation of the sac that surrounds your heart. It can cause severe pain that is often similar to a heart attack. However, your doctor will be able to tell the difference with the help of tests and will give you some drugs to relieve the pain.

Angina: Many people feel chest pain after a heart attack. If it is severe and continues despite medication, an angiogram may be carried out to see if you would benefit from angioplasty.

Your stay in hospital after a heart attack.

Most people who have had a heart attack spend about 7 days in hospital. After the first day or two of complete rest, you will be allowed out of bed and go for a short walk.

After that, you will usually be transferred to the general ward. At this stage some tests will have been performed to find out why you had a heart attack, for example high blood cholesterol or newly diagnosed diabetes. You will start receiving treatment for these conditions.

You may then be seen by a member of the cardiac rehabilitation team who will discuss the cardiac rehabilitation programme with you.

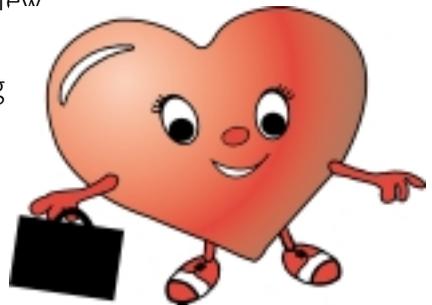
Before you leave hospital you will have an exercise test. This allows the doctor to assess how well you are doing and if you are fit enough to do normal activities at home. If you do poorly in this test you may need an angiogram.

An angiogram is a specialised x-ray procedure that involves injecting dye into the coronary arteries to find out which arteries are affected by atherosclerosis and to what extent. Exercise testing and angiography may be used to estimate the future outcome after a heart attack. Some centres carry out exercise testing 4-6 weeks after you leave hospital.

Going Home: Leaving hospital may make you feel anxious because you feel less safe. Your family may also have these fears. When at home it is important to have a calm, stress-free environment but not to be over protected. Remember your doctor would not have let you go home if they did not think you were fit to do so. It is a good idea to ask your doctor any questions you have before you leave hospital, for example, "When can I get back to work?"

The recovery period after a heart attack will vary depending on the size of the heart attack, your age and if you have any other illnesses. Most people recover in 6–10 weeks.

You may feel extremely anxious or even depressed after your heart attack. This is a normal reaction in most cases. However, if these feelings do not go away after a few weeks or are making your life unbearable, it is worthwhile discussing them with your doctor. We answer more frequently asked questions in the following sections.



At home after your heart attack

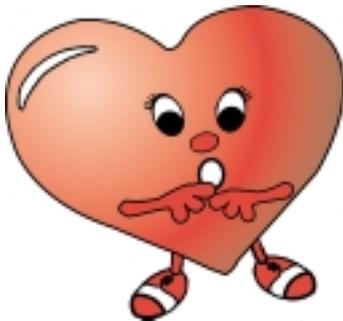
How much can I do at home?

Your level of activity in hospital and your performance in an exercise test will help your doctor decide how much activity is safe for you in the early recovery period. You may feel very tired when you leave hospital, and have to gradually increase your daily activity to get back to normal.

You may find you get short of breath, suffer chest pain or feel light-headed if you do too much. It is important to mention this to your doctor. It is better to start with a little exercise and slowly increase your activity in a controlled manner.

When can I get back to work?

Some people get back to work in 6 weeks or less, while others need longer to recover. If you are a bus driver or have a licence to drive a heavy goods vehicle, you must tell your employers about the heart attack. In certain cases you may not be able to return to your previous job. If your job is very demanding, it is important not to overdo it for the first few weeks. If your job is very stressful, you might need to change how you work or the type of work you do.



When can I drive?

You should not drive for 6 weeks after your heart attack.

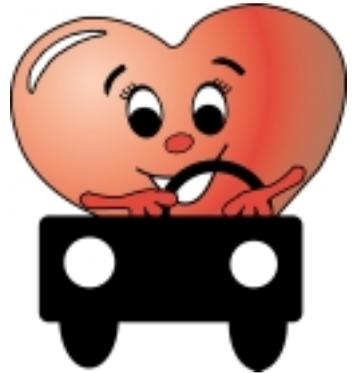
Can I travel?

We do not recommend that you go on long journeys or trips abroad for 6 to 8 weeks after your heart attack. You should travel with someone else and make sure you have an enough medication. Avoid very cold and very hot temperatures, and make sure you drink enough fluids in hot weather. It is always safest to discuss your trip with your doctor before making plans.

When is it safe to have sex?

You can have sex again with your usual partner two to four weeks after your heart attack. However people differ widely in when they feel prepared to start having sex again after a heart attack.

Usually if you are able to walk up two flights of stairs, you should be physically able to make love. Some medications that are used after a heart attack, for example beta blockers, may cause impotence (being unable to achieve and maintain an erection). If this is a problem, it is best to talk to your doctor as a change in medication may solve the problem.



Preventing further heart attacks

What can I do to prevent further heart attacks?

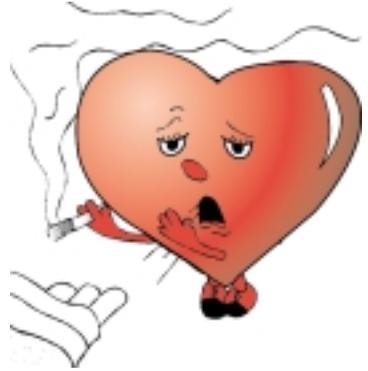
After your heart attack you may need to change your lifestyle to reduce certain risk factors. These factors include smoking, high blood pressure, high cholesterol, diabetes, not being very active or obesity, and being over weight.

Smoking

You must stop smoking. If you continue to smoke after a heart attack you are twice as likely to suffer another one.

High blood pressure

You may have had high blood pressure before your heart attack without knowing it, or you may have been on treatment. It is important to control blood pressure carefully to reduce the risk of another heart attack. This may mean taking tablets for the rest of your life.



High cholesterol

High cholesterol, particularly LDL cholesterol is also associated with a higher risk of heart attack. Eating a low-fat, low cholesterol diet may reduce your cholesterol. However, some people have a genetic reason for having a high cholesterol. It has been proven that lowering cholesterol with medication can significantly reduce the risks associated with high cholesterol levels.

Diabetes

Diabetes may be discovered for the first time at the time of your heart attack, or you may have suffered from it for many years. It is important to control your blood sugars to reduce further complications from diabetes. Sugar can be controlled with tablets or insulin.

Being overweight

You may need to loose weight to be a healthy weight for your height and build. The best way to do this is by eating smaller portions of healthy food regularly. You should also combine this with regular exercise. Avoid crash diets. Losing weight gradually may help control blood pressure and increase the amount of exercise you are able to do. It will also make you feel more confident and contribute to your well-being.

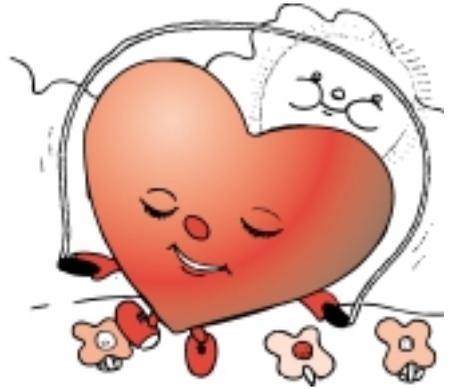
Physical activity

Regular exercise helps keep you fit. It helps you to reduce your weight and blood pressure. It also increases the level of healthy HDL cholesterol, and reduces the unhealthy LDL cholesterol. All of these things reduce the risk of heart attack.

Exercise makes you feel better and reduces stress. So it is well worth including regular exercise in your daily routine as part of a healthy lifestyle. This does not have to involve long runs, or expensive gym membership, walking is a very popular choice for a wide range of people. You can gradually increase how far you walk as you become more fit. Walking is free!, and it can be sociable if you have company. So get on out there to " Sli na Slainte"!

Conclusion

Having a heart attack can be a frightening experience. Improving treatment and medical knowledge means that many people fully recover after their heart attack. Sometimes it simply makes people change to a new healthier lifestyle. If you have any questions after reading this booklet, please ask your doctor. We hope that this booklet will help you to a successful and anxiety free recovery.



Step by Step through angina is an Irish Heart Foundation patient information publication. Other titles in this series are

- Stroke: a guide for those affected by strokes and their carers
- Things you should know about blood pressure
- Things you should know about heart surgery
- Step by step through angina
- Living well with heart failure
- Step by Step through cardiac catheterization and angioplasty
- Inheriting Heart Disease

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Notes

Notes

The Irish Heart Foundation is the only national voluntary organisation dedicated to the reduction of death and disability from heart disease through research, education and community service.

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