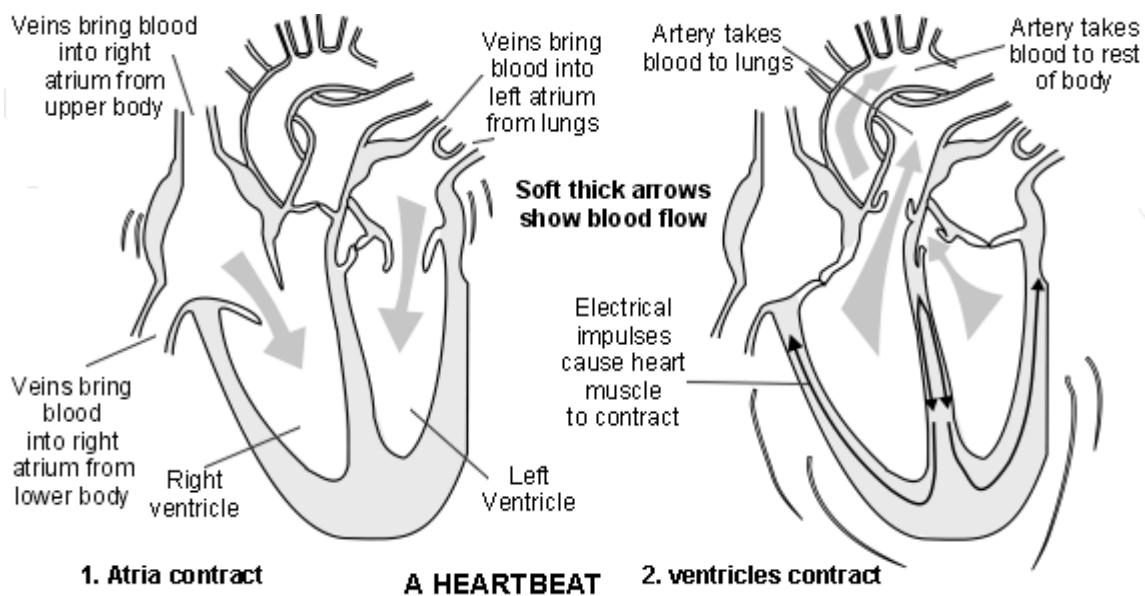


Heart Failure

Heart failure can be caused by various heart conditions. Symptoms include fluid retention, breathlessness, and tiredness. Medication can usually ease symptoms, and can often improve the outlook (prognosis).

How does the heart work?

The heart has four chambers - two atria and two ventricles. The walls of the heart chambers are made mainly of special heart muscle. Each heartbeat starts with a tiny electrical impulse near the top of the heart which spreads through the heart muscle, and makes it contract (squeeze).



The electrical impulse travels first through the walls of the atria, which contract to pump blood into the ventricles. The impulse then travels through to walls of the ventricles, which contract to pump blood into the arteries. (A leaflet called '*How the Heart Works*' gives more detail.)

What is heart failure?

In a normal healthy heart, during each heartbeat a set amount of blood enters the heart and is pumped out again. If you have heart failure your heart cannot cope with pumping the full amount of blood in each heartbeat. Heart failure is divided into various types. The main types are:

- Left ventricular systolic dysfunction. This means that the left ventricle of the heart does not pump as well as it should do during each heartbeat. In some cases there is only a slight reduction in the power of the ventricle which causes mild symptoms. If the power of the pumping action is more reduced then symptoms become more severe.
- Diastolic dysfunction. This means that the left ventricle does not fill up with blood as much as it should when the heart rests between each heartbeat. This may be due to various factors. For example, the muscle in the wall of the ventricle may not relax fully between each heartbeat, or the wall of the ventricle may be more 'stiff' and less easily stretched than it should be due to various conditions.
- A combination of the above two types.

Heart failure does not mean that your heart is going to stop at any minute. Rather, it means that your heart is not functioning as well as it should to pump blood around the body.

How common is heart failure?

Heart failure becomes more common with increasing age. About 1 in 35 people aged 65-74 years have heart failure. This increases to about 1 in 15 of people aged 75-84 years, and to just over 1 in 7 people aged 85 years and above. It is uncommon in younger people.

What causes heart failure?

Heart failure is not an exact diagnosis. Heart failure is a general 'umbrella' term and may develop as a complication of various conditions. Conditions that causes heart failure affect the ability of the heart to function well as a pump. Conditions that may cause heart failure include the following:

Ischaemic Heart Disease (IHD) is the most common cause

Ischaemic Heart Disease is sometimes called 'Coronary Heart Disease, and sometimes just 'Heart Disease'. Some people also call it 'hardening of the arteries' to the heart. In this condition, the blood flow to the heart muscle is reduced by narrowing of the coronary arteries that supply the heart muscle with blood and oxygen. The heart muscle may then not function as well as normal. Other symptoms of IHD may occur such as angina (heart pains). IHD is common in the UK, and heart failure is a complication that occurs in some cases.

In particular, heart failure may develop after a heart attack (myocardial infarction). A heart attack is a complication of IHD and causes part of the heart muscle to die. Following a heart attack, scar tissue forms in the affected part of the heart muscle. The larger the heart attack (and area of scar tissue), the more this may affect the function of the heart and lead to heart failure.

Other causes

Various other conditions can also cause heart failure. For example:

- diseases of the heart muscle (cardiomyopathy).
- high blood pressure.
- diseases of the heart valves.
- diseases of the pericardium - the tissue that surrounds the heart.
- some types of abnormal heart rhythms (arrhythmias).
- drugs or chemicals that may damage the heart muscle. For example, alcohol excess, cocaine, and some types of chemotherapy.
- various non-heart conditions that can affect the function of the heart. For example, severe anaemia, thyroid disease, Paget's disease.

What are the symptoms of heart failure?

Symptoms are mainly due to an accumulation of fluid in the lungs and body. This fluid retention mainly occurs as the heart does not pump blood around the body as well as it should. Symptoms include:

- **Breathlessness (short of breath).** In mild cases, you may only become breathless when you exert yourself. For example, when you walk up a hill. With more severe heart failure you may become breathless whilst resting. Breathlessness when lying flat, for example, when you go to bed, is a fairly typical symptom of heart failure. This is called orthopnoea.
- **Fluid retention in the legs.** Fluid retention in the body mainly affects the legs due to the effect of gravity. At first, you may notice some swelling of your ankles and feet at the end of the day. In time, the swelling may gradually affect the lower parts of the legs, or higher if it is not treated. In many cases there is a gradual build up of fluid. In some cases the fluid retention develops quickly, over a day or so. However, you may not have any fluid retention in your feet or legs if you have mild heart failure.
- **Tiredness.** This can be very variable and can occur even in mild cases.

Depending on the underlying cause for the heart failure, you may also have other symptoms. For example, chest pains if you have angina, palpitations if you have a heart rhythm problem, etc.

The severity of heart failure is often graded into four classes.

- Class 1 (very mild) - ordinary physical activity does not cause breathlessness, fatigue (extreme tiredness), or palpitations. You may not have any symptoms at all, but tests (perhaps done for other reasons) may have detected mild heart failure.
- Class 2 (mild) - you are comfortable at rest. However, ordinary physical activity such as walking may cause some breathlessness, fatigue, or palpitations.
- Class 3 (moderate) - although comfortable at rest, slight physical activity such as dressing yourself will cause breathlessness, fatigue, or palpitations.
- Class 4 (severe) - you are unable to carry out any physical activity without developing breathlessness, fatigue, or palpitations. Symptoms are often present even at rest. With any physical activity you have increased symptoms and discomfort.

How is heart failure diagnosed?

When a doctor examines you, he or she may find signs that occur with heart failure. For example, an enlarged heart, a faster than normal pulse, or signs of fluid retention such as swollen ankles, an enlarged liver, or crackles in the lungs when the chest is examined. However, these signs and the symptoms mentioned above can be due to various conditions other than heart failure. Therefore, if heart failure is suspected, tests are usually done to confirm the diagnosis.

Tests advised include an electrocardiograph (ECG, sometimes called a heart tracing). A blood test to check for a substance called natriuretic peptide may be done as this tends to be raised in people with heart failure. An echocardiogram is also commonly done (an ultrasound scan of the heart). This painless test can usually confirm the presence of heart failure and assess whether it is due to left ventricular systolic dysfunction or due to another heart condition. Other tests such as a chest x-ray, a urine test, or other blood tests may also be advised to rule out other causes of the symptoms.

What is the outlook (prognosis)?

It is difficult to give an outlook (prognosis) for an individual. In general, the more severe the heart failure, the worse the outlook. In many cases, the symptoms remain at a stable level for quite some time (months or years) before becoming worse. In some cases the severity and symptoms become gradually worse over time. Severe heart failure can lead to death.

In many cases, the symptoms of heart failure can be eased with treatment. Treatment not only eases symptoms but can improve prognosis and prolong life.

What can I do to help?

- **Diet.** If you are overweight, try to lose weight to reduce the extra burden on your heart. Do not have too much salt in your diet, as salt may cause water retention. For example, do not add salt to your food at the table and avoid cooking with it.
- **Do not smoke.** The chemicals in tobacco cause blood vessels to narrow (constrict), which can make heart failure worse. Smoking is also likely to make ischaemic heart disease worse.
- **Exercise.** For most people with heart failure, regular exercise is advised. The fitter the heart, the better it will pump. The level of exercise to aim for will vary from person to person. Before you start to increase your exercise, get the 'go-ahead' from your doctor as some people with heart valve problems should not exercise. If you are not used to exercise, you could start by going for a daily walk. Cycling is also good exercises. Exercise may not be possible for some people for various reasons.
- **Immunisation.** You should have an annual 'flu jab, and be immunised against the pneumococcal bacterium. These immunisations protect against some severe chest infections which can be quite serious if you have heart failure.
- **Weigh yourself each morning** if you have moderate to severe heart failure. If you retain fluid rapidly, your weight goes up rapidly too. So, if your weight goes up by more than 2 kg (about 4 lb) over 1-3 days, then contact a doctor. You may need an increase in medication.

- **Alcohol.** Do not drink too much. As a maximum:
 - *Men* should drink no more than 21 units of alcohol per week (and no more than four units in any one day).
 - *Women* should drink no more than 14 units of alcohol per week (and no more than three units in any one day).
 - *If your heart failure is due to excess alcohol*, you should have no alcohol at all.
- A unit of alcohol is 10ml (1cl) by volume (8g by weight) of pure alcohol. This is in about:
- A half-pint of *normal strength* beer, cider, or lager.
 - A pub measure of spirits (25ml), or of fortified wine such as sherry (50ml).
 - A small glass (125ml) of wine containing 8% alcohol by volume.
- Depending on the cause of the heart failure, some people are advised to not drink any alcohol at all.

What drugs are used to treat heart failure?

The following drugs are commonly used to treat heart failure. They will be tailored to the individual person, depending on the cause and severity of the heart failure.

Angiotensin Converting Enzyme Inhibitors (ACE inhibitors)

Most people with heart failure are prescribed an ACE inhibitor. There are several types and brands. These drugs prevent a build up of fluid by interfering with the enzyme angiotensin (a body chemical) which is involved in regulating body fluid. ACE inhibitors also have a protective effect on the heart, and may slow down the progression of heart failure.

Some points to note about ACE inhibitors are below (but read the leaflet that comes in your drug packet for full details).

- After the very first dose, on the first day you start an ACE inhibitor:
 - Stay indoors for about four hours as occasionally some people feel dizzy. This is because the very first dose causes a drop in blood pressure in a few people.
 - If you do feel dizzy, sit or lie down and it will usually ease off.
 - If you become very dizzy, contact your doctor immediately.
- Your body quickly becomes used to the new drug. After the first dose on the first day of treatment, there is no need to take any special precautions.
- A low dose is usually started at first, but built up to a standard dose over 2-4 weeks.
- A blood test is usually done before starting an ACE inhibitor, and about 7-10 days after the first dose. This checks the function of the kidneys. The kidneys are affected in a small number of people who take an ACE inhibitor. A blood test about every six months is then usual.

Drugs in the class of drugs called angiotensin-II receptor antagonists work in a similar way to ACE inhibitors. One may be used instead of an ACE inhibitor if you have problems or side-effects with taking an ACE inhibitor (such as a persistent cough).

Beta-blocker drugs

A beta-blocker such as bisoprolol or carvedilol is usually prescribed in addition to an ACE inhibitor. Like ACE inhibitors, beta-blockers have a protective effect on the heart. A low dose is started at first, and then increased every few weeks until a regular dose is reached. Occasionally, beta-blockers cause an initial worsening of symptoms before the symptoms improve.

Research studies have shown that ACE inhibitors and beta-blockers not only help to ease symptoms, but can improve the outlook and extend life expectancy for people with heart failure. Therefore, even if symptoms go, continue to take these drugs if they are prescribed.

Diuretics ('water tablets')

A diuretic is commonly needed to ease fluid retention. This is taken in addition to an ACE inhibitor and beta-blocker. Diuretics work on the kidneys and make you pass out extra urine. This helps to clear excess body fluid that builds up. There are different types and brands of diuretics. The dose

depends on how bad the fluid retention has become, and can be increased if necessary if fluid retention becomes worse.

Diuretic tablets are normally taken in the morning. This is so the extra toilet trips are during the day, and not at night. (Their effect on making extra urine lasts about six hours.) However, they can be taken at other times. For example, if you plan a morning shopping trip, take the diuretic tablet when you return.

Other drugs

Spironolactone and/or digoxin may be advised *in addition to the drugs described above* if your condition becomes worse. Spironolactone works to help clear the body of excess fluid. Digoxin works by helping the heart muscle to contract more strongly. (It also has another action to regulate the heart rate if you also have an arrhythmia called atrial fibrillation.)

Other treatments

As mentioned above, heart failure is not an exact diagnosis, but develops as a complication of various conditions. Other treatments for the underlying condition may be advised in certain cases. For example:

- Treatment to lower blood pressure if you have high blood pressure.
- Treatments to slow down the progression of ischaemic heart disease if this is the cause of the heart failure. For example, lowering a high cholesterol level.
- Coronary artery bypass surgery may be an option in some cases of ischaemic heart disease.
- Surgery to replace or fix a heart valve may be done if a damaged heart valve is the cause of the heart failure.
- Treatments for arrhythmias (pacemakers, etc) if an arrhythmia is causing heart failure.
- A heart transplant is an option in some cases.

Note: many people with heart failure also develop depression or anxiety. Tell your doctor if you think you are depressed or anxious as treatment is often worthwhile to ease these problems.

Further information and support

British Heart Foundation

14 Fitzhardinge Street, London, W1H 6DH

Heart Information Line 08450 70 80 70. An information service for the public and health professionals on a wide range of issues relating to heart health.

Web: www.bhf.org.uk

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