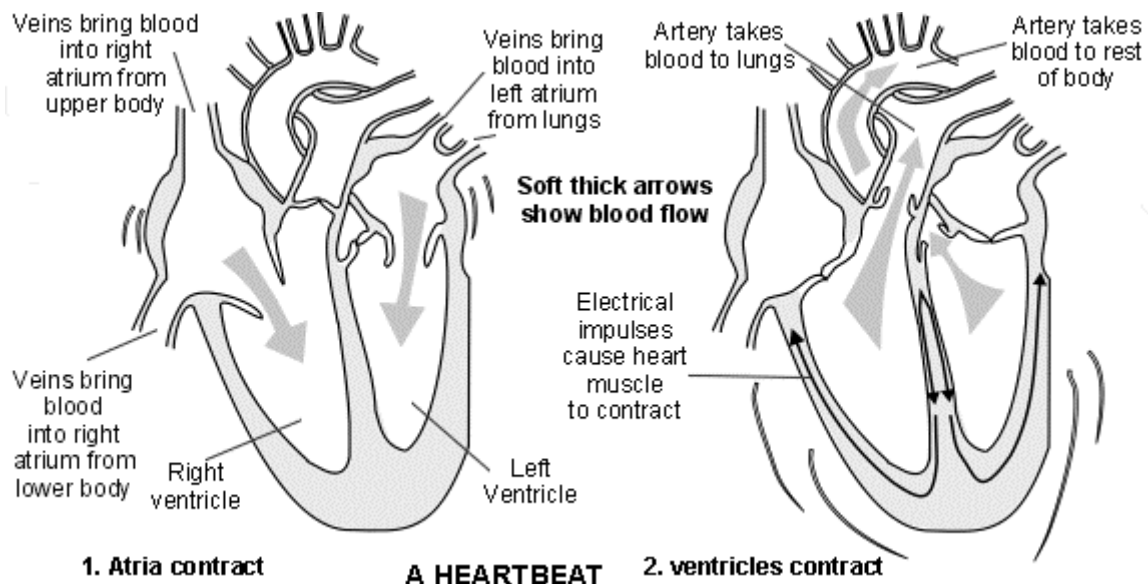


## Heart Failure

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

### 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 atria, which contract to pump blood into the ventricles. The impulse then travels through to the ventricles, which contract to pump blood into the arteries. (Another leaflet called 'How the Heart Works' gives more detail.)

### What is heart failure?

In a normal healthy heart, all the blood that comes into the heart is easily pumped out again. If you have heart failure, your heart cannot cope with pumping the full amount of blood, or it tires more easily than normal. Some 'power' of the heart is lost.

Heart failure does not mean that your heart is going to stop at any minute. It simply means that your heart does not pump as well as it used to do.

The amount of 'power' that is lost from the heart varies from person to person. In many cases, heart failure is mild or moderate. Symptoms can often be treated. In some cases, the power of the heart becomes very low, and the symptoms become severe.

## How common is heart failure?

Heart failure becomes more common with increasing age. At least one in a hundred 55 year olds, and one in ten 80 year olds have some degree of heart failure. It is uncommon in younger people.

## What causes heart failure?

Heart failure is not an exact diagnosis. It is a complication of a heart condition. Various heart conditions can affect the ability of the heart to pump well.

**Ischemic Heart Disease (IHD) is the most common cause.** This is sometimes just called 'Heart Disease', and some people 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 heart (coronary) arteries. 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 complication that occurs in some cases.

**A variety of other heart problems can also cause heart failure.** For example:

- Diseases of the heart muscle (cardiomyopathy).
- High blood pressure.
- Alcohol excess (which can damage heart muscle).
- Diseases of the heart valves.
- Abnormal heartbeats (arrhythmias).

## How serious is heart failure?

The severity of heart failure ranges from mild to severe. It often depends on how bad the underlying heart condition has become. In many cases, the symptoms of heart failure can be eased with treatment. However, symptoms tend to become gradually worse over time.

## What are the symptoms of heart failure?

Symptoms are mainly due to a 'backlog' of fluid in the lungs and body, as the heart does not pump 100% efficiently. Symptoms include the following.

- **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 or lying flat.
- **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 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. You may not have any fluid retention in your feet or legs with mild heart failure.

- **Tiredness.** This can be very variable.

Depending on any underlying heart condition, you may also have other symptoms. For example, chest pains if you have angina, palpitations if you have a heartbeat problem (arrhythmias), etc.

## How is heart failure diagnosed?

The symptoms above can be due to various conditions. Therefore, tests are usually done to confirm heart failure, and to rule out other causes of breathlessness, etc. Tests may include a cardiograph (ECG), chest x-ray, and an echocardiograph (a special ultrasound scan of the heart).

## What can I do to help?

- **Diet.** Try to lose weight if you are overweight 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, don't add extra salt to food once it's on the table, and reduce the amount used in cooking.
- **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 ischemic 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. Swimming and cycling are also good exercises. Exercise may not be possible for some people for various reasons.
- **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 4 units in any one day).
  - *Women* should drink no more than 14 units of alcohol per week (and no more than 3 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.
- **Immunization.** You should have an annual 'flu jab, and be immunized against the pneumococcal bacterium. These immunizations protect against some severe chest infections, which can be quite serious if you have heart failure.
- **Fluid intake.** If you need a high dose of diuretics (see below) to clear fluid from your body, then try not to drink more than 2 liters of fluid a day. (You will need to drink more than this if you have diarrhea, vomiting, fever, or live in hot climates.)
- **Monitor your weight.** Particularly 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 seek advice from a doctor. You may need an increase in medication.

## What medicines are used to treat 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 medicines 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 with your medicine for full details).

- Lie or sit down for 2-4 hours after the very first dose on the first day of treatment. This is because, in a few people, the very first dose causes a drop in blood pressure, and you may faint.
- Your body quickly becomes used to the new medicine. 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 at least every year is then usual.

### **Diuretics ('water tablets')**

A diuretic is commonly needed in addition to an ACE inhibitor. 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 diuretic. The dose depends on how bad the symptoms are, 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 6 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.

### **Beta-blockers**

A beta-blocker medicine, such as bisoprolol or carvedilol, is often prescribed in addition to an ACE inhibitor and diuretic. Beta-blockers have a protective effect on the heart muscle. A low dose is started at first, and then increased every few weeks until a regular dose is reached.

### **Other medicines**

Spironolactone and/or digoxin may be advised *in addition to the medicines described above* if you have moderate or severe heart failure. 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 atrial fibrillation.)

### **Other treatments**

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

- Coronary artery bypass surgery may be an option in some cases of ischemic heart disease.
- Surgery to replace or fix a heart valve may be done if a damaged heart valve causes heart failure.
- A heart transplant is an option in some cases.