

Royal Berkshire  
NHS Foundation Trust



Department of Cardiology  
Royal Berkshire Hospital

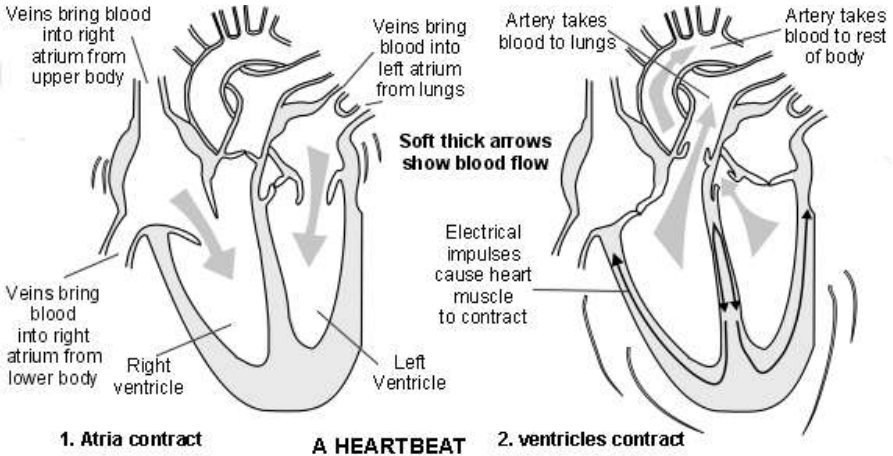


# Heart Failure

Information for patients

# Introduction

Heart failure can be caused by various heart conditions, which can be treated in different ways, to suit each individual's case. This booklet gives both a brief overview (pages 2-5) and more detailed information (pages 6-12).



## Heart failure – an overview

Heart failure is the expression used by doctors to describe the combination of breathlessness, swollen ankles and fatigue caused by weakened heart muscles. With modern treatment, patients are able to survive with a good quality of life for many years. Sometimes, the treatment will need fine-tuning and occasionally admissions to hospital are required to get the best possible drug treatment.

## Causes of heart failure

Heart failure is due to weakened heart muscle. This can be caused by raised blood pressure, by disease of the valves in the heart, or by disease of the arteries bringing oxygen and energy to the heart muscle. Other causes include virus

infections of the heart. Sometimes we are unable to find precisely what has caused the weakened heart muscle.

## **Symptoms**

The symptoms of heart failure are mainly tiredness, shortness of breath and swollen ankles. These are due to a combination of not enough blood being pumped around the body and a build-up of fluid behind the heart and the lungs causing breathlessness and in the body causing swollen ankles.

## **Diagnosis**

The diagnosis of heart failure is made by the doctor detecting an overloaded circulation. Doctors in particular look for ankle swelling and congestion behind the heart with filling of the veins in the neck. The doctor will listen for crackles in the lungs due to congestion. The diagnosis is confirmed by chest x-ray, electrocardiogram and an ultrasound scan of the heart or echocardiogram. The echocardiogram enables a television picture to be taken of the heart muscles, chambers and valves which indicate the underlying cause and severity of the problem.

## **Common sense and advice**

Patients with heart failure must listen to the signals their body sends them. They should be encouraged to take exercise regularly up to the point at which symptoms commence. On the whole 'movement' exercise such as bicycling is better than 'grunting' exercise such as weight lifting.

There are two important things about diet. The first is not to add salt to the cooking or plate as this encourages fluid retention. The second is to avoid having more than one or two drinks a day as alcohol is bad for heart muscle.

Non-steroidal anti-inflammatory drugs such as ibuprofen (Brufen) and diclofenac (Voltarol) may cause fluid retention and should be avoided if possible. Simple painkillers such as paracetamol and codeine are preferable but consult your doctor if these do not meet your need.

So far as employment is concerned, we would like to discuss this with individual patients. Heavy manual activity is always going to be difficult.

## **Drug treatment**

The mainstays in treatment of heart failure are ACE inhibitors and Beta-blockers in conjunction with water tablets (diuretics).

ACE inhibitors (Ramipril, Lisinopril, Enalapril) work by dilating blood vessels around the body and giving the heart less work to do. They can cause a cough and if you notice this please report it to the doctor. Patients on ACE inhibitors need to have blood tests to start with to make sure the kidney function is not upset.

Beta-blockers (Bisoprolol, Atenolol, Metoprolol, Carvedilol) work by slowing your heart rate so that the heart muscle can work more efficiently. Side-effects include low blood pressure and fluid retention.

Water tablets (Frusemide, Bumetanide, Spironolactone, Bendrofluazide, Metolazone) are usually taken in the morning but can be left until the afternoon if a morning excursion is planned. Patients should weigh themselves regularly at home and note that unexpected weight gain or loss is usually a sign that the dose of the water tablet needs to be changed.

Other drugs used in the treatment of heart failure include Digoxin which strengthens the heart muscle, Warfarin anticoagulation which thins the blood.

## **Surgical treatment**

Very occasionally, surgery may be necessary for heart failure. Heart valve replacement in the case of damaged valves and/or coronary bypass surgery in the case of narrowed or blocked heart arteries, can lead to great benefit. Appropriate for only a very small minority of patients with heart failure there remains the option of heart transplantation.

## **Follow up**

Patients with heart failure need to take tablets indefinitely and regular visits to the family doctor or hospital clinic are important to detect changes in the heart's action which need fine-tuning of the tablets.

If having read this leaflet, you have any significant questions to ask, please do not hesitate to do so in the outpatients or by contacting one of our Cardiac Support Nurses on 0118 322 6638.

## **Heart failure – detailed information**

Heart failure is the expression used by doctors to describe the clinical condition characterised by breathlessness, swollen ankles and fatigue, which is caused by the inability of the heart muscles to keep up with the demands made on them. The heart output therefore falls and fluid builds up in the lungs and around the body. Heart failure is a most negative term that has been allowed to creep into medical terminology. When patients have angina due to narrowing of the arteries supplying the heart muscle, we talk about coronary artery disease and not coronary artery failure. Likewise, we talk about valvular heart disease but for some reason heart muscle disease has come to be called heart failure.

### **Causes**

There are many causes of heart failure. Heart failure may be the end result of high blood pressure overloading the heart muscle, disease of the heart valves or disease of the coronary arteries causing repeated heart attacks. Heart failure may be the end result of a virus infection of the heart muscle (myocarditis). All too often though, we are unable to find a precise cause to heart failure and the expression dilated cardiomyopathy or congestive cardiomyopathy is used. There are specific causes of dilated cardiomyopathy, including thyroid disease and alcohol. Occasionally, dilated cardiomyopathy runs in families and is caused by a gene defect.

## **Symptoms**

The symptoms of heart failure are predominantly fatigue, breathlessness and swollen ankles. Fatigue is noticeable in that exertion produces unaccustomed tiredness. Severe fatigue, present all the day and at rest, is unlikely to be due to heart failure unless the latter is uncontrolled and accompanied by marked breathlessness and swollen ankles.

Breathlessness is due to a build up of fluid in the lungs resulting from increased pressure behind the left side of the heart. In severe cases the lungs will become flooded with fluid, causing pulmonary oedema (swelling) which is visible on x-ray. This is a rare and an emergency situation requiring immediate attention. Much more commonly, patients experience an unusual degree of breathlessness on mild or moderate exertion. Often, the first sign of heart failure is a dry tickly cough caused by pulmonary congestion. Thus, patients attending their family doctor are often thought initially to have a chest infection.

Swollen ankles are the result of congestion building up behind the right side of the heart causing fluid retention. It would be very unusual in heart failure to have swollen ankles without considerable fatigue and breathlessness as well.

## **Why the symptoms of heart failure?**

We believe that the system of circulatory reflexes and control mechanisms which look after heart rate and cardiac output are the end result of millions of years of evolution. The main purpose of these primitive reflexes is to ensure that we do not succumb from unavoidable blood loss or dehydration.

Therefore, whenever the control mechanisms in the circulation detect an impairment of the heart's action, the assumption is made that it is blood loss or dehydration which is responsible. A cascade of adjustments then takes place in the circulation to

expand the blood volume. The same mechanisms also activate constriction of blood vessels around the body thus diminishing the volume of circulating space to be filled. It is this retention of fluid which gives rise to breathlessness or ankle swelling. It is the constriction of the blood vessels around the body which further impair the heart function by inappropriately giving it more work to do. In treating heart failure the main drugs work by causing increased salt and water excretion in the urine and dilatation of the blood vessels around the body.

## **Diagnosis**

The diagnosis of heart disease failure is established by the physical signs detectable on examination of an overloaded circulation. The doctors in particular will look for evidence of swelling of the ankles and congestion behind the heart and the veins of the neck (jugular venous pressure). The heart sounds reveal evidence of overload. When listened to, the lung bases crackle, due to congestion. There are nearly always abnormalities present on the electrocardiogram and chest x-ray in heart failure but these may be very non-specific. An ultrasound scan of the heart or echocardiogram is the principal diagnostic tool which not only identifies the presence of heart failure but often gives an accurate diagnosis as to the underlying cause and categorises the heart failure according to severity.

Sometimes, significant heart rhythm disturbances play a part in the symptoms of heart failure and we quite often perform outpatient 24-hour ambulatory electrocardiograms. If doubts persist as to the cause of heart failure, pictures of the coronary arteries can show whether or not coronary artery disease is the main problem. These pictures are obtained by passing tiny tubes from an artery in the leg and injecting dye down the coronary arteries.



## **Common sense advice**

Patients with heart failure must listen carefully to the signals their body sends them. If breathlessness is only present on significant exertion, then the patient should be encouraged to take exercise regularly up to a point at which symptoms commence and then back off and exercise to a lower level. We now know that regular exercise improves the performance of the heart in heart failure. Dynamic or movement exercise is much better for the circulation than isometric or grunting exercise: so gently bicycling, walking or swimming are sensible; weight lifting and press ups are not. If patients become breathless at rest and develop swollen ankles, then a period of enforced rest is sensible.

With regards to diet there is really only evidence about two components. The first is that it is not sensible to add salt either to the cooking or on the plate as this will give water tablets more work to do. Alcohol is not only an identifiable cause of heart failure but is also known to cause impairment of heart function in patients with heart failure due to other causes. Patients with established heart failure should not drink regularly more than 14 units of alcohol per week (1 unit = half a pint of beer, one measure of spirits or one glass of wine); this should be taken, if desired, spread out throughout the week and not in one or two binges!

Patients who are in employment will always need to know about whether or not to return to work. We would like to discuss this with individual patients, taking into account individual factors, but in general there is no reason why patients with treated heart failure should not follow a desk job. Heavy manual activity will always be difficult.

## Drug treatment

The mainstays of treatment of heart failure are ACE inhibitors which inhibit many of the circulatory reflexes responsible for the symptoms of heart failure, Beta-blockers which reduce the heart rate and make the heart muscle work more efficiently, and diuretics which encourage the excretion of salt and water. With regards to diuretics these may be short acting or loop diuretics such as Frusemide or longer acting diuretics such as Bendrofluazide. Patients usually need to take diuretics every day and most people get used to taking them in the morning. The effect only lasts for two to three hours and diuretics should be taken later in the day if a morning excursion is planned.

It is sensible for patients with heart failure to weigh themselves regularly on the same scales at home. If the weight is going up unexpectedly and ankle swelling develops, or if the weight is going down and patients are becoming unusually skinny then the dose of diuretics needs adjusting. The action of loop diuretics is inhibited by painkillers given for arthritis (non steroidal anti inflammatory drugs) and these should be taken with care particularly in patients taking short acting diuretics.

The discovery that ACE inhibitors lead to a dramatic decrease in symptoms and increase in survival in patients with heart failure has been the main advance in the treatment of heart failure over the last ten years. It has been demonstrated quite clearly that even patients with no symptoms whatsoever, who have been shown to have abnormal heart muscle on echocardiography, benefit from ACE inhibitors. A few patients are unable to take ACE inhibitors due to abnormalities in the kidney circulation detected by kidney function impairment. In these patients, the next best option is to take drugs that cause vasodilatation by another mechanism. ACE inhibitors are very well tolerated in heart failure and rarely cause side-effects. The principle side-effect to watch out for is a dry cough and then substitute drugs of a similar class are available. When we start

patients on ACE inhibitors we always check the baseline kidney function and repeat the test two or three weeks later to make sure that ACE inhibitors are not compromising kidney function. ACE inhibitors in heart failure need to be taken twice per day, about 12 hours apart. Ramipril is the ACE inhibitor most commonly used in our department at present, Losartan is the most commonly used substitute drug.

Beta-blockers maximise exercise tolerance and reduce mortality in patients with heart failure. They work by slowing your heart rate down so that it may work more efficiently. They must be started at a low dose and increased gradually over the coming weeks while monitoring your heart rate and blood pressure. This may require admission to hospital, usually as a day case.

Improvement in symptoms may not be evident for 2-3 months and, even if not evident, beta-blockers should be continued, if tolerated, as they reduce the risk of future cardiac events. Abrupt withdrawal of treatment with a beta-blocker should be avoided. Patients who develop significant fluid retention may require reduction in dose or discontinuation until stabilised.

Beta-blockers are only started in patients with heart failure when fluid status is optimal and, in general, are not given to patients with asthma/bronchitis or a slow heart rate. Side-effects of beta blockers include a slow heart rate, low blood pressure, fluid retention, wheeze and impotence.

Other drugs used in the treatment of heart failure include the old fashioned heart remedy Digoxin. This was discovered by William Withering 200 years ago to be effective in the relief of dropsy (swollen ankles). We now use it regularly in patients with an irregular heart beat (atrial fibrillation) and also in any patient whose symptoms of heart failure, particularly fatigue or breathlessness, are not adequately controlled on standard

regimes. The standard dose of Digoxin - 250 micrograms - should only very rarely need to be exceeded and always needs to be significantly reduced in patients over the age of 70 or patients with renal impairment.

One final other drug treatment which is currently being investigated is anticoagulation with Warfarin. This is certainly a benefit in patients with an irregular heart beat (atrial fibrillation) but may also be a benefit in patients with a regular heart action.

## **Surgical options**

There are occasionally surgical options in the treatment of heart failure. This will be so in some patients with severe valvular heart disease, coronary artery disease and sometimes in patients with extensive scarring of the heart and localised bulging. Specialised pacemakers benefit some patients with heart failure that is resistant to medical therapy.

Finally, and only applicable in a very small minority of patients with heart failure there remains the option of heart transplantation.

## **Follow up**

Patients with heart failure need to be carefully followed up either in the clinic or by their family doctor. We monitor their clinical state together with regular blood tests looking at kidney function and potassium disturbance. Occasionally, serial echocardiograms are useful. Signs that patients with heart failure should look out for include unexpected gain in weight which is often due to fluid retention. Ankle swelling is a relatively late sign of fluid retention. Increased breathlessness or unaccountable fatigue are also signs of deterioration.

## **The future**

In times past, the diagnosis of heart failure was a recipe for increasingly severe symptoms, curtailment of activities and reduction of life expectancy. This is no longer so. With modern treatment strategies, patients are able to survive with relatively normal quality of life for many years. Sometimes, the treatment will need fine-tuning and occasionally, admissions to hospital are required to optimise the drug regime.

If having read this leaflet you still have significant questions to ask, please do not hesitate to do so in the outpatients or by contacting one of our cardiac support nurses.

## **Useful contacts**

Royal Berkshire Hospital	0118 322 5111
Cardiac Reception Enquiries	0118 322 6573
Cardiac Appointments	0118 322 5425
Cardiac Support Nurses	0118 322 6638
Cardiac Care Unit	0118 322 6684
Trust website:	<a href="http://www.royalberkshire.nhs.uk">www.royalberkshire.nhs.uk</a>
NHS Direct:	0845 4647
NHS Direct website:	<a href="http://www.nhsdirect.nhs.uk">www.nhsdirect.nhs.uk</a>
British Heart Foundation:	<a href="http://www.bhf.org.uk">www.bhf.org.uk</a>

West Berkshire Heart Support Group – ‘Heartbeats’

The local heart support group hold regular monthly meetings in Reading, Earley and Newbury. For details see Heartbeats magazine, posters or ask nursing staff for details.

Heartbeats website: [www.heartbeats.btinternet.co.uk](http://www.heartbeats.btinternet.co.uk)

**Notes:**

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This leaflet is printed privately for the Cardiac Fund. It was set up in 1976 for the purpose of providing cardiac services that would otherwise not be available through National Health resources. Our Cardiac Laboratory was largely equipped through the fund and many other areas in the Department have also benefited from equipment and staff training.

*If you would like to contribute, cheques should be made payable to: The Cardiac Fund, and sent to one of us.*

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Dr Will Orr MRCP, Dr Charlie McKenna BSc MD FRCP  
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