



**Irish Heart**  
Foundation



Step by Step through

**Heart  
Failure**

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## Produced by the Irish Heart Foundation

This booklet is an update of the first edition, which was originally created by St. Vincent's University Hospital in Dublin. The current version has been updated with inputs from the Heart Failure Council of the Irish Heart Foundation, patients, heart failure nurses, cardiologists and many other health professionals with experience in heart failure management.

## The Irish Heart Foundation

The Irish Heart Foundation is Ireland's national heart and stroke charity. We lead the way in researching and developing programmes in schools, communities and workplaces to help people to lead healthier lives and reduce their risk of developing heart disease or having a stroke. We campaign for better heart and stroke services and better Government policies. We support and speak for the many thousands of people living with heart disease and stroke across Ireland. And we are building a nation of lifesavers through professional and community-based CPR training. For more information or to donate, visit our website [www.irishheart.ie](http://www.irishheart.ie).

## Support for people living with heart failure

To support you living well with heart failure, we have support groups around the country. For more information, contact us on [heartfailure@irishheart.ie](mailto:heartfailure@irishheart.ie) or speak to your heart support nurse.

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## Introduction

Your doctor will have told you that you have a condition called heart failure. At this stage you, your family and friends may find the name of this condition both, frightening and dramatic. However, it is important to remember the following important points:

- Heart failure does not mean your heart has stopped working, rather it means your heart is not working as efficiently as it should.
- In most cases, taking your medication as prescribed by your doctor, with lifestyle changes, will help your heart work as efficiently as it can and help you manage your symptoms.
- Most people with heart failure live active and comfortable lives.
- Heart failure is a very common condition, so you are not alone in fighting this problem. Important developments and improvements have been made in controlling heart failure in recent years. Continued research into this condition will help to make treatment even more effective.

**Your symptoms  
may improve with  
suitable treatment.**



We have written this booklet to explain to you, your family and friends, what is meant by heart failure and to give you advice on how to manage your symptoms. It includes information on:

- The causes of heart failure
- The symptoms of heart failure
- Tests your doctor may carry out
- Treatments that may be prescribed
- How this condition affects your day-to-day life
- What you can do to help manage your symptoms
- Where to find further information

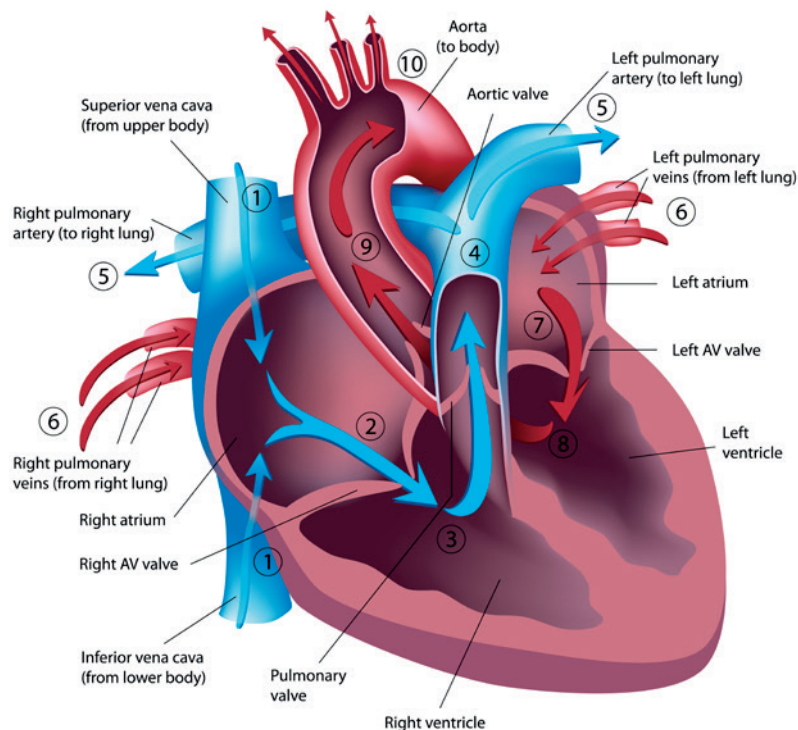
**Most people with heart  
failure lead active and  
comfortable lives.**

## What is the heart?

Your heart is a muscular pump that provides blood to all the other organs in your body so that they can work properly, for example, your brain, kidneys and muscles.

Your heart has two main functions:

1. It squeezes or pumps blood. The pumping function produces your heartbeat. Medically, this is called systole.
2. Between each beat the heart must relax properly so it can fill with blood for the next squeeze. This is the filling function and is known as diastole. If something goes wrong with either the pumping or filling part of your heart's work, you may get heart failure.



## What is heart failure?

Heart failure does not mean your heart has stopped working, rather it means your heart is not working as efficiently as it should. This means that your heart doesn't provide as much blood as the body normally needs to carry out its usual functions.

## What can cause heart failure?

Many different diseases that affect the pumping or filling of your heart can cause heart failure. Your doctor will try to find out what has caused your heart failure, as this can influence the type of treatment or therapy most suitable for you.

### Reduced pump function

Reduced pump function may be caused by the following:

- **Weakened heart muscle caused by a heart attack.** A heart attack can damage some of your heart muscle. This happens when one of the blood vessels supplying blood to your heart becomes blocked. Coronary artery disease causes the blockage to develop. You may not have been aware of having a heart attack in the past. (For more information, see our booklet *Step by Step through Heart Attack*).
- **Long-term high blood pressure that has not been controlled.** This can also weaken your heart muscle and reduce pump function.
- **Weakened heart muscle from leaking or narrowed heart valves.** Heart valves make sure that the blood flows in the correct direction through your heart. If valves stop working properly (as a result of narrowing or leakage), extra strain will be put on your heart muscle, which will eventually weaken the pump function.
- **Alcohol-related damage to the heart muscle.**
- **A viral infection of the heart.**

- **No obvious cause.** This is the case for as many as 20-30% of people with heart failure. In these cases, the cause of heart failure is said to be unknown or idiopathic.
- **Rare causes of heart muscle damage.** Sometimes your doctor will investigate some rare causes of heart failure if your general medical condition suggests that these investigations may be useful.

### Reduced filling function

Reduced filling function can be caused by the following:

- Thickening of the heart muscle can affect the way your heart fills in between heartbeats. Thickening of the heart muscle may be a result of high blood pressure or problems with a heart valve. Depending on your medical history, there are also other rare causes which your doctor may investigate.
- Narrowing of the blood vessels supplying blood to your heart (coronary artery disease) may also affect how your heart fills.
- Do not be worried if your doctor cannot find a cause for your heart failure. This does not mean that there will be any change in outlook. Therapy is the same once the causes listed above have been considered.

### Hereditary heart failure

Some causes of heart failure are based on genetics. Your doctor will investigate this if it is felt to be necessary depending on your medical history.



## What are the symptoms of heart failure?

The main symptoms associated with heart failure are:

- Fluid retention
- Shortness of breath
- Tiredness and loss of energy

### Fluid retention

There are a number of early signs of fluid retention. These include sudden weight gain, swollen feet and ankles, and loss of appetite.

A weight gain of two kilograms or four pounds in two days is an indication that your body may be retaining fluid.

Fluid building up can also cause your ankles or feet to swell up. If you press your leg or foot with your thumb and it leaves an imprint, this is usually a sign of fluid retention.

Fluid can also build up around your tummy and liver and make you feel full, resulting in a loss of appetite. This prevents your body from absorbing your medication properly, and can mean you retain more fluid, starting a vicious cycle.

### Shortness of breath

Fluid building up in your lungs can lead to shortness of breath. You may notice shortness of breath when you are exercising or resting. For example, you may notice that you are not capable of the same level of physical activity as usual because you are feeling short of breath or you may find that you need extra pillows in bed at night to sleep.

### Tiredness and loss of energy

When you retain fluid, your heart has to work harder and this causes you to feel extremely tired.



## Irregular heart rhythms

People with heart failure are more likely to have an irregular heart rhythm. There are a number of different types of irregular heart rhythms and some are more serious than others. If you are experiencing rhythm disturbances, it is important to tell your doctor promptly so that it can be investigated.

As with all of your symptoms, the earlier you report them to your doctor the easier they are to treat.

Occasionally heart rhythm disturbances need to be treated with medicines or devices such as pacemakers or defibrillators (ICDs).

The symptoms of an irregular heart rhythm include:

- Palpitations, i.e. when you feel your heart beating fast in your chest.
- Shortness of breath.
- Dizziness and maybe fainting or blackouts. This happens because irregular heart rhythms can cause your blood pressure to drop.



## Coping with heart failure

Heart failure is a serious chronic disease and even with the best medical care, this condition can get worse over time. How heart failure changes and worsens over time varies from person to person.

Your doctor will explain the cause of your heart failure to you and you will begin a disease management programme. This will include education on the signs and symptoms of heart failure and the best treatment options for your specific condition, enabling you to take a more active role in managing your heart failure. With good heart failure management, you can live very well for a long time.

Your diagnosis of heart failure, your symptoms and your concern for the future may cause you to feel depressed or worried. These feelings are common and perfectly normal.

Low spirits can make you feel sad and tired. You might not feel like eating and find that you wake up much earlier than normal.

When you are worried, you can lose interest in how you look and in doing your normal activities such as hobbies and meeting friends. You may have thoughts like:

- “My memory isn’t working anymore.”
- “I can’t concentrate.”
- “I can’t be bothered doing things.”
- “I can’t do any of the things I used to do before.”
- “I keep thinking my heart is failing and can’t stop worrying about it.”
- “I’d better not do anything just in case I do damage to myself.”
- “I can’t sleep. As soon as I go to bed terrible thoughts come into my mind.”

However, as you begin to actively take charge of your health and make positive changes you may find these feelings start to fade. It is important to learn how to manage these feelings. Try to:

- Get dressed every day.
- Go out for a short walk even if it’s only five minutes.
- Keep up with activities or hobbies you enjoy.
- Share your feelings and thoughts with people you are close to.
- Get a good night’s sleep.
- Listen to your body. You know your limitations better than anyone.
- Focus on following your treatment plan, enabling you to make informed choices on your health now and into your future.

If negative feelings continue to interfere with your ability to enjoy life, talk to your doctor as counselling might help you feel better.

**Share your feelings and thoughts with people you are close to.**





Write down a list of activities that keep you occupied. Activities are connected to your mood. Reading, playing cards or board games, talking to people, phoning friends or walking for short periods, can all help you feel better.

Often there are no real reasons for the gloomy thoughts you have. Write down the thoughts that are making you sad. What evidence is there for each of these thoughts? Thoughts are not always facts. Discuss the list with your nurse or doctor.

Not having accurate information about your condition can set you back. It is important to learn about it, understand it and follow the guidelines given to you.

Heart failure can change how you live. Learning to cope with heart failure can help reduce the stress you may feel about your condition. There are many ways of coping. Many people manage with the help of hospital staff and family to adjust back to normal living. It is very important to talk about your feelings with someone you trust and respect. Discuss your concerns with your family, friends or your GP.

Also remember some of the medicines you are taking can make you feel tired. It is important to take this into account and not be too hard on yourself. However, if these symptoms continue for more than a few weeks or seem to be getting worse, you may be suffering from depression. You should tell your doctor, as you may need further help.

## What will my doctor do to investigate heart failure?

The diagnosis of heart failure is based on the information the doctor gets by asking you questions about your symptoms and examining you. Then your doctor will order certain tests to confirm the diagnosis and to search for the cause of your heart failure.

### Questions

The questions your doctor will ask you will focus on your symptoms, to try and assess how serious these complaints are. For example, if you report feeling breathless, your doctor will ask questions to see how this symptom is interfering with your day-to-day activities. Does the breathlessness prevent you from doing your job, managing your home or going to the shops? Are you breathless even when you don't do strenuous activity such as walking up the stairs?

These questions will assess how serious the symptoms are, as well as acting as a starting point against which the effectiveness of your medical treatment can be assessed. Your doctor will also ask questions to try to establish a cause for your heart failure.

The questions your doctor asks will also include a thorough review of your health in the past and the health of your family, as well as questions on your lifestyle, particularly cigarette smoking and alcohol.

### Examination

The physical examination will start with a check of your blood pressure and pulse rate. The doctor will also examine your ankles for swelling and closely examine your neck as there are blood vessels in the neck which will show signs of congestion. He or she will also listen closely to your heart and lungs to check for valve problems and look for signs of congestion.

### Tests

When the questions and physical examination are complete, your doctor will do several tests to confirm the diagnosis and identify the cause of your heart failure.



The tests can all be performed with little or no risk to you. They provide important information for the people looking after you about how serious your heart failure is and give clues to the cause of the condition.

- **Blood tests**

Basic blood tests will be carried out to check that you aren't anaemic and that your kidneys are working properly. If your kidneys are not working properly, this may be a sign that you have more severe heart failure. This can restrict the use of certain medications. Blood tests to check your liver function will also be carried out. Usually a blood test to measure BNP (B-type natriuretic peptide) will be performed. This can help to inform the doctor or nurse how your condition is progressing.

- **Chest x-ray**

A chest x-ray provides information on the size of your heart (as it can be enlarged in heart failure) and identifies whether there is any lung congestion. It is also useful to check your lungs for some other problem, which could be causing some of your symptoms, especially breathlessness.

- **ECG (Electrocardiogram)**

An electrocardiogram is a recording of the electrical pattern of your heart. It can provide important information about the rhythm of your heart. It can also give clues about any previous history of heart attacks. Not everyone is aware of having had a heart attack in the past.

- **Echocardiogram**

An echocardiogram is an ultrasound scan, which allows your doctor to look at how your heart pumps and fills. It is an important assessment of someone with heart failure for several reasons. This scan is performed by simply placing a probe on your chest (it is a similar test to one used to scan babies before they are born). You may feel pressure on your chest as the technician tries to get the best possible picture.

It will show whether either the pumping or filling function of your heart is abnormal. It will also show whether your heart is enlarged or the heart muscle has increased in thickness.

An echocardiogram is also the best way of looking at the heart valves and may provide important information on valve problems that have been missed or underestimated during an examination.

Like the ECG, it can also provide information on previous heart attacks by showing areas of scarred heart muscle.

- **Dobutamine Stress Echocardiogram (DSE)**

This is essentially the same test as an echocardiogram. During this test, however, a medicine called dobutamine is given through a small plastic tube inserted into one of the veins in your arm. This medication causes your heart to contract faster and more vigorously as it would during exercise. Your blood pressure and heart rate will be monitored. The images of your heart produced during this test show how it performs during exercise-type conditions. This is helpful to determine the cause of heart failure, the need for further tests, and the potential need for stenting or bypass procedures.

- **Exercise stress test**

This is a treadmill or stationary bike test designed to assess your ability to do exercise. It is also used to check for coronary artery disease, one of the causes of heart failure. During this test your heart rhythm will be monitored by an ECG and a technician or doctor will ask you how you are feeling as you exercise.

Occasionally, a more elaborate test will be performed which will look at how your lungs are working during the exercise test. The only difference from the normal exercise test is that you will need to wear a mouthpiece so the doctor can measure how much oxygen you need when you exercise.

- **CT Scan**

Your doctor may want you to have a CT scan of your heart to look for any coronary artery disease. This is a non-invasive test and may avoid the need for you to have an invasive angiogram.

A CT scan may not be suitable for people with irregular heart rhythms or too fast a heart rate as the CT scanner may not get good enough images. If your doctor thinks you probably don't have coronary artery disease, a CT scan will confirm this. If your doctor thinks you are likely to have coronary artery disease, or you are not suitable for a CT scan for other reasons, a coronary angiogram may need to be performed.

- **Cardiac MRI**

A cardiac MRI is a non-invasive test, involving no radiation, which is used to get high-quality pictures of your heart. For people with heart failure, a cardiac MRI helps identify the cause of heart failure, especially in cases where the cause is uncertain. It is also of use to help doctors decide if you would benefit from having a stent or a coronary artery bypass or certain types of pacemaker therapies.

- **Holter monitor**

This is a recording of your heart rhythm over a period of 24 or 48 hours. It is done by attaching a monitor around your waist which is then hooked up to leads placed on your chest. This test can provide important information on rhythm control in your heart. It is often ordered for people with heart failure who have complained about dizzy spells or blackouts where rhythm disturbances are suspected.

- **Blood pressure monitor**

This is often called ABPM (ambulatory blood pressure monitor) and is a recording of your blood pressure over a period of 24 hours. It is done by placing a blood pressure cuff on one arm, which is attached to a monitor placed on a belt at your waist. The blood pressure cuff inflates every half hour for 24 hours. The information is stored in the monitor

and transferred to a computer when the monitor is removed. This test will give your doctors information on how well your blood pressure is being controlled by your medication.

- **Cardiac catheterization or angiogram**

This is a test where fine tubes are inserted into your groin area or arm, after you've been given a local anaesthetic. These tubes are guided, using x-rays, to your heart, dye is injected and the blood vessels supplying blood to your heart can be seen to assess whether any blockages or coronary artery disease could be causing heart failure.

The pumping function of your heart can also be assessed during this test, this is called a ventriculogram. Sometimes the pressure in the right side of your heart is also measured. To do this, a small tube is placed in your vein and guided up to your right heart and lungs. Sometimes you will need to stay in hospital for at least one night after this procedure.

Remember, you will need some or perhaps all of the tests above at some stage to help you manage your condition.



## Treating heart failure

Treatments for heart failure are aimed at:

- Improving your symptoms and maintaining that improvement
- Stabilising your heart function and preventing it from getting worse
- Preventing heart rhythm problems
- Helping you live longer

To achieve these aims, effective therapy needs a good partnership between you, your family or friends, and the heart failure team with the adoption of a comprehensive treatment plan specific for you.

Therapy can be divided into the following three categories:

1. Lifestyle factors
2. Medicines
3. The need for an operation

### Monitoring your symptoms

Whatever your treatment plan, it is very important that you monitor your heart failure symptoms every day and act if you notice any deterioration. Your doctors can then adjust your treatment to improve or stabilise your symptoms.

Your nurse will teach you the important symptoms to look out for. These symptoms are described in this book to help remind you. You can monitor your condition easily by taking note of everyday activities. Some helpful tips for doing this include:

### Recording your weight

Keep your weight book next to the weighing scales in the bathroom. When you wake up each morning, after going to the toilet weigh yourself and write your weight in your booklet. You should always weigh yourself at the same time of day wearing the same amount of clothing.

Take a look back at the earlier recordings to check if you have put on weight. Sudden weight gain (two kilograms or four pounds over two days) can be an early sign of congestion or fluid build-up and should be reported to your nurse or doctor. Treating early congestion is usually quick and easy and prevents more serious symptoms developing.

### Checking for swollen ankles

As you are putting on your socks or tights in the morning, check your ankles as your nurse has shown you. Press your legs with your thumb. If it leaves an imprint or an indentation there may be fluid. Swollen ankles may mean that fluid has built up.

### Measuring your breathing

An easy way to measure your breathing is to notice it when you climb the stairs. If you can normally get to the top of the stairs without having to stop to catch your breath, use this as your measurement. If you find that you have to stop because you are gasping for breath, this may mean that there is some congestion. Remember, treating early congestion is usually quick and easy and prevents more serious symptoms developing.

Alternatively, if you are not able to climb the stairs, you can measure your breathing while you are dressing. If you notice you have to stop and rest while you are getting dressed in the morning, this may mean that fluid is building up.

You can also measure your breathing in bed. If you find that you have to place an extra pillow behind you at night to make your breathing easier, it may be a sign that fluid is building up in your lungs.

It is more serious if your breathing causes you to wake during the night gasping. You should always contact your nurse or doctor the next morning if this happens.

## **Lifestyle Factors**

### **Physical activity and heart failure**

Heart failure not only affects your heart, it also affects your muscles and how the blood is pumped around your body. You may experience fatigue with cramps and tiredness in your muscles. Gradually doing more physical activity will reduce these feelings and help your body to work more efficiently.

If you are exercising, you need to take it slowly at the beginning and build it up as you feel better. These are some guidelines for you to follow:

#### **Frequency**

You should aim to do some physical activity most days of the week. Try not to take two days off together, as it will be harder to return to your activity afterwards.

#### **Intensity**

It is important that you are able to talk while you are exercising or doing any activity. This means your body is able to cope with the activity. If you are not able to talk, it means your body is not working efficiently and your heart has to work a lot harder. Remember that the activity will be harder if it is hot, cold, windy or if you are going up hills. You will need to slow down your activity to cope with this.

#### **Type**

A combination of aerobic exercise and gentle weight training is best. This includes walking, swimming and cycling. It is important that you speak to your doctor about weight training. He or she will tell you what is best for you.

#### **Time**

Ideally you should exercise for 30 minutes continuously every day. Start with just 5 or 10 minutes and gradually increase to 30 minutes in about six to eight weeks. Start off slowly to allow your body to adapt to the new

activity and gradually increase the pace. You should start to slow down gradually for the last 10 minutes. Avoid physical activity after heavy meals when your heart has to use energy to help your body digest food.

### **Points to remember**

If you have heart failure, you will benefit from regular physical activity and regular rest. You should remember the following:

- Avoid sudden bursts of more intense activity.
- Try to find some physical activity you enjoy, as it will be much easier for you to do regularly. If you are not sure about what level of activity you should do, talk to your doctor or nurse who will advise you what level is good for you.
- Do not feel that you have to be active when you are tired.
- Avoid physical activity for one hour after a meal. This allows your body time to digest your food and you will benefit more from the physical activity.
- Combine rest periods during the day with periods of activity. To make sure you get a good night's rest, do not take diuretics (water tablets) at night and don't eat a heavy meal just before bedtime.
- Your doctor or nurse specialist will give you advice about the activities that are suitable for you to do.

### **Sex life**

Heart failure can affect your sex life. Your desire for sex may be reduced, especially during periods when you are not feeling well. Also, some of the medicines prescribed for heart failure can reduce sex drive and cause impotence. If you experience any of these symptoms, you should discuss them with your doctor or nurse specialist. They may be able to adjust your medication or prescribe drugs to help you.

## Healthy eating

A balanced healthy eating plan is an important lifestyle factor for people with heart failure.

It is important to eat a wide variety of foods and to reduce your salt intake. You need to follow a low salt eating plan because the more salt you eat, the more likely it is that fluid will build up in your body, which will make your condition worse and make you feel unwell. Many foods have salt added to them, especially processed foods, and these may worsen your symptoms. See the Irish Heart Foundation booklet, *Time to Cut Down on Salt*, for more information.

The dietitian or heart failure nurse at your hospital can give healthy eating advice suitable for you.

### Helpful tips for a healthy low salt eating plan

- Choose a wide variety of foods.
- Try to follow the advice of your nurse or dietitian.
- Don't add salt when you cook.
- Don't have a salt cellar on the table.
- Flavour your food with pepper, herbs, spices, garlic or lemon juice instead of adding salt.
- Eat plenty of fruit and vegetables - aim for five or more servings every day.
- Try not to eat too many ready-meals, canned, tinned and processed foods.
- Eat oily fish (such as salmon, mackerel, trout or herrings) once or twice a week. Limit the amount of shellfish you eat, as they are high in salt and cholesterol.
- Avoid foods that are high in salt - salty meats, tinned or packet soups, salted snacks such as crisps, ketchups and processed sauces.
- Use low-fat foods as much as possible.
- Always check before using salt substitutes as they can have side effects.



- Check the labels on foods to see how much salt or sodium they contain and choose food that has less salt in it.
- Try to eat as much fresh food as possible.

### Taking your medication

Taking your medicines regularly is very important. Your doctor or nurse may give you some useful advice on how to remember to take your medication.

For example, you can:

- Make an easy-to-follow schedule.
- Keep a copy of this schedule with you at all times, for example, in your wallet or handbag.
- Put a reminder in your mobile phone to remind you to take your medicines.
- Take your medication when you do other daily activities such as having breakfast - make sure you know whether to take your medicines with food, on an empty stomach or at any specific time.
- Know what each pill is, what it does, what it looks like and what you should do if you accidentally miss a dose.
- Make sure you do not take other non-prescribed medicines without telling your doctor. Some medicines can make your heart failure worse, such as anti-inflammatory pain medications (for example ibuprofen) and steroids.
- If you do not feel well when your medicines are adjusted or when you start to take new medicines as part of your care plan, let your heart failure team know as soon as possible as they may need to make further changes.

Your heart failure team will prescribe one or a combination of medicines for you to take. The amount (dose) of each medicine will be changed and improved over time to best help your symptoms. Your heart failure team and GP will assess you from time to time and make changes to your medicines depending on your symptoms, how you respond to your drugs, your blood pressure, your kidney function, and levels of hormones in your blood.

Occasionally people don't suit a certain medication. If you think this is the case, please discuss it with your doctor. It is rare but you could have an allergy to any medicine. If you get a rash after starting a medication, see your doctor. If you suddenly get wheezy or experience facial or throat swelling, seek urgent medical attention. If you get side effects with any medication you are taking, talk to your doctor, pharmacist, or nurse. This includes any possible side effects not listed on the information leaflet that comes in the pack. You can report side effects at [www.hpra.ie](http://www.hpra.ie). By reporting side effects you can help provide more information on the safety of your medication.

### **Common medications used with heart failure**

Most medicines have two names. The name the company gives the medication is called the brand name, while the generic name is the name of the drug itself. Both names are usually on the packet. Common brand names are listed here in brackets.



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

Common forms used: Furosemide (Lasix®, Frumil®), Bumetanide (Burinex®), Bendroflumethiazide (Centyl®)

#### **Why are they used?**

Fluid retention (congestion) is the basis for many of the symptoms of heart failure, whether it involves your lungs making you feel breathless, your abdomen making you feel bloated or your legs causing swollen ankles.

Diuretics reduce congestion in all these areas by increasing the amount of water and salt the kidneys produce and removing this from the body as urine. These pills work very quickly and can make your symptoms better in a few hours or days. As diuretics will make you pass more urine, you should take them at a time of day when you can get to the bathroom easily. Avoid taking diuretics too late at night because the need to go to the toilet will disturb your sleep. Sometimes diuretics can be given as an injection.

#### **Are there any problems to watch out for?**

The most commonly prescribed diuretics cause you to lose potassium. A low potassium level is a cause for concern in heart failure because it can make the rhythm of your heart change. For this reason, your potassium level will be checked two or three days after you start taking diuretics. You may be told to change your diet to include more high-potassium foods, such as bananas and potatoes.

Sometimes, potassium tablets may be prescribed, or diuretics may be combined with other medicines that maintain potassium levels. Frumil® and Centyl K® are examples of diuretics that contain potassium or a substance that keeps your potassium level in balance.

Occasionally diuretics can cause gout, and if you pass urine very often, low blood pressure and dizziness may develop as a result of fluid loss.



### **Angiotensin converting enzyme inhibitors (ACEI)**

Common forms used: Perindopril (Coversyl®), Ramipril (Tritace®, Ramic®, Ramilo®), Lisinopril (Zestril®, Carace®, Lisopress®, Lispril®, Zesger®, Byzestra®), Captopril (Capoten®, Aceomel®, Captor®), Enalapril (Innovace®, Enap®), Quinapril (Accupro®), Trandolapril (Odrik®), Cilazapril (Vasace®), Benazepril (Cibacen®)

#### **Why are they used?**

This class of medicine, most easily referred to as ACEI therapy, has proven very successful in managing heart failure in people whose heart has poor pumping function. People with heart failure live longer as a result of this medication. Symptoms may not improve for several weeks after starting the medication.

ACEI medicines are also used to manage high blood pressure and they may be particularly useful in reducing thickened heart muscle associated with this condition. For this reason, ACEI drug treatment may also be effective in heart failure due to poor filling as a result of high blood pressure.

#### **Are there any problems to watch out for?**

In general, ACEI medicines are very effective. Some people experience dizziness when they first start taking these medicines as a result of a drop in blood pressure. But this problem becomes less of an issue as your body gets used to the medicine. About 5-10% of people on ACEI medicines develop a dry cough. If this becomes a problem, your doctor can switch you to a different type of ACEI drug or a different type of medicine.

### **Angiotensin II receptor blockers (ARB)**

Common forms used: Candesartan (Atacand®, Blopress®), Losartan (Cozaar®), Valsartan (Diovan®), Irbesartan (Aprovel®), Eprosartan (Teveten®), Telmisartan (Micardis®), Olmesartan (Omesar®, Benetor®)

#### **Why are they used?**

These drugs are similar to ACEI medicines and are used in people who cannot take ACEI medicines.

#### **Are there any problems to watch out for?**

Like ACEI medicines, some people experience dizziness when they start taking Angiotensin II receptor blockers (ARB) as a result of a drop in blood pressure. Again, this problem becomes less of an issue as your body gets used to the drug.

### **Angiotensin receptor - neprilysin inhibitors (ARNI)**

Currently the only drug available in this class is the combined pill containing Sacubitril and Valsartan (Entresto®).

#### **Why is this medicine used?**

This is a drug for patients with symptomatic heart failure with reduced ejection fraction. It helps reduce the blood pressure and manage fluid retention. By doing so, it reduces the strain on the heart.

#### **Are there any problems to watch out for?**

Some people may experience dizziness when they start taking this medicine because of a drop in their blood pressure.

These drugs (ACEI, ARB and ARNI) can also increase potassium levels and affect the kidneys so usually a blood test will be done after you start them.

## Beta blockers

Common forms used: Carvedilol (Eucardic®), Bisoprolol (Cardicor®, Emcor®, Bisopine®, Bisocor®, Emcolol®, Soprol®), Metoprolol (Betaloc®, Lopresor®, Metocor®, Metop®), Nebivolol (Nebilet®)

### Why are they used?

Beta blockers are widely used to treat many heart problems including high blood pressure, angina and abnormal heart rhythms. Studies strongly suggest that when started in very small doses and gradually increased, these medicines can improve the symptoms of heart failure and make the heart stronger in the long term. Recent medical trials have shown that people who are given beta blockers live longer. There are many beta blockers available, however, the ones listed above are known to be of benefit in treating heart failure.

### Are there any problems to watch out for?

Sometimes people may complain of dizziness, extreme tiredness, increased breathlessness or wheeze, and reduced energy. However, these effects can often be prevented by reducing the dose of other medicines such as diuretics. These difficulties will normally go away as your body gets used to the medicine. If not, your doctor may decide not to continue with this treatment.

## Cardiac glycosides

Common form used: Digoxin (Lanoxin®, Lanoxin-PG®)

### Why is this medicine used?

This is an old medicine which isn't used very often anymore. It works by increasing the strength of contraction of weakened heart muscle. The other role of digoxin in heart failure is when the condition is complicated by heart rhythm problems. Digoxin can prevent the heart from beating too quickly.



### Are there any problems to watch out for?

Too much digoxin in your body can make you feel sick. Occasionally your doctor may take a blood sample to monitor how much digoxin is in your blood.

## Nitrates and hydralazine

Common forms used: Isosorbide Mononitrate (Imdur®, Elantan®), Glyceryl Trinitrate (Transiderm Nitro®, Glytrin® spray, Nitrolingual® spray), Hydralazine (Apresoline®)

### Why are they used?

These medicines make the blood vessels in the heart and elsewhere relax, allowing blood to be pumped more easily around the body. This medicine is known to improve heart failure symptoms. Nitrates are also effective in treating angina. Angina can be an accompanying symptom if your heart failure is caused by coronary artery disease. In these cases, nitrates may be used to treat heart failure. Nitrates can be given in tablet form or as a patch applied to your skin. They can also be taken as a spray under your tongue for immediate relief of angina symptoms.



### **Are there any problems to watch out for?**

Nitrates can cause a headache and flushing which often goes away after a few days. These problems usually get better as you continue to take the medicine.

### **Aldosterone antagonists**

Common forms used: Spironolactone (Aldactone®), Eplerenone (Inspra®)

### **Why are they used?**

Aldosterone antagonists block the effects of hormones that can increase heart failure symptoms. By doing this they also cause increased production of urine, and so act like a weak diuretic. This medicine is used to improve heart failure symptoms. It is used most often in people with worsening heart failure or in people who have had a recent heart attack. This medicine has proven to be very successful in managing heart failure in people with poor pumping function of the heart, much like ACEI. It is often used along with ACEI therapy or occasionally in place of ACEI, if the person is intolerant of ACEI. People with heart failure can live longer as a result of this medicine.

### **Are there any problems to watch out for?**

Aldosterone antagonists may cause an increase in the potassium level in your body. This will be monitored by a blood test after you start taking the medicine and at regular intervals afterwards. Spironolactone can cause a painful enlargement of the breasts in about 10% of patients. This is normally reversible when spironolactone is discontinued.



### **Sinoatrial current inhibitors**

Common form used: Ivabradine (Procoralan®)

### **Why is this medicine used?**

Ivabradine is used to treat people who have heart failure or angina. For people with a regular heart rhythm, Ivabradine works by slowing their heart rate, enabling the heart to beat more efficiently and pump the blood all around the body, without affecting blood pressure. Lower heart rates are better for people with heart failure. Ivabradine is known to improve heart failure symptoms and recent medical trials have shown that people who are on Ivabradine have improved outcomes, are less likely to be hospitalised for heart failure and have an improved quality of life. It should be prescribed for symptomatic patients who have a high heart rate despite taking a beta blocker or for those who cannot tolerate beta blockers.

### **Are there any problems to watch out for?**

Your doctor will monitor your heart rate when you start this medicine or if the dose is increased, because in a small number of people Ivabradine may lower the heart rate too much. Some people taking Ivabradine may experience mild vision problems - brief moments of increased brightness. If this occurs the effect will typically resolve itself during treatment or when treatment with Ivabradine is stopped.

## Blood thinners (antiplatelet and anticoagulant medicines)

Common forms used:

- Aspirin (Nuseals Aspirin®), Clopidogrel (Plavix®) and Prasgruel (Effient®) are antiplatelet drugs.
- Warfarin (Warfant®) and Dabigatran (Pradaxa®) are anticoagulant medicines.
- Rivaroxaban (Xarelto®), Apixaban (Eliquis®), Edoxaban (Lixiana®) are drugs that may be used, usually to reduce the risk of clots if you have an irregular heart rate (atrial fibrillation).

### Why are they used?

Antiplatelet drugs reduce platelet stickiness and are mainly used in patients with narrowing in the coronary arteries, after heart attacks and/ or after stenting. Anticoagulants thin the blood in a different way and are used to reduce the risk of clots developing if you have an irregular heart rate (atrial fibrillation) or sometimes if there has been a clot to the lung or legs. Warfarin is also used if you have a metal valve replacement.

Some patients with heart failure have an increased risk of blood clots or stroke. If your heart failure team think you are at increased risk (for example if you have already had a stroke or if you have an irregular heartbeat), they may recommend blood thinners. Some people will have had a heart attack or coronary stents. The exact type of blood thinner used will vary according to your condition.

### Are there any problems to watch out for?

If you have serious bleeding (particularly internal) you should seek urgent medical attention. If you get a nosebleed or a minor cut, the bleeding should stop when you put pressure on it. **Do not stop taking your blood thinners, or any medicine, without talking to your doctor.**

## Vaccinations

People with heart failure are more prone to getting chest infections and other respiratory illnesses such as the flu. They are also more likely to get much more sick with the flu compared to people without heart failure. It is essential that anyone living with heart failure gets the flu vaccine every year (a new one comes out each autumn). They should also get a vaccine against pneumonia at least once in their lifetime. This is called the pneumococcal vaccine. People under 65 or with other medical conditions may need to get the vaccine more than once during their life.

You may be taking medicines that are not listed above. As always, you should ask your doctor or pharmacist for information on these and all your medicines. Remember, never hesitate to ask questions.

## Operations and procedures for heart failure

### Coronary artery bypass surgery and angioplasty

Both of these procedures are used to manage narrowed or blocked blood vessels around your heart caused by coronary artery disease. This disease is the most common cause of heart failure. Your doctor may recommend either of these procedures, if tests such as exercise stress testing and an angiogram (cardiac catheterization) show that you would benefit from having your blood supply restored.

### Valve surgery

If one of your heart valves is seriously narrowed or leaking (or both), replacing the damaged valve may improve your heart failure. Newer, less invasive ways of treating heart failure are being developed for patients with valve disease. Feel free to ask your heart failure team about these to see if you may be suitable.

### Heart transplant

If you are not responding to medication or other treatments, your doctor may consider whether you need a heart transplant.

## Other treatments

### Cardiac device therapies

Cardiac devices are metal devices (boxes) which are placed under your skin, with one or more wires leading to your heart. These devices include pacemakers, to treat slow heartbeats, and implantable cardioverter defibrillators (ICDs), to monitor and treat dangerously fast heartbeats. A special type of pacemaker, called a bi-ventricular pacemaker, can improve the pumping function of your heart.

### Intra-aortic balloon pump

This is a plastic balloon which is put into your heart's main blood vessel, the aorta, through a very small puncture in your leg. The balloon is inflated by an external pump and helps your heart to deliver blood around the body. It is inserted in hospital and you must stay in bed while it is in. It is used to help heart failure patients while they are waiting for more effective treatments.

### Ventricular assist devices

These are pumps that are put inside the body and are designed for people with very weak hearts who are waiting for a heart transplant. Patients can get up, walk around and take exercise after they are implanted. This is a very rare procedure.



## Research developments in heart failure

There are a number of promising developments on the horizon for managing heart failure. Your doctor may ask you to think about taking part in a research study. Do not feel that you have to take part. However, it is through patient research that more effective treatment strategies are developed, such as the ones you are now receiving.

### What if I am not getting better?

Heart failure generally responds very well to a combination of lifestyle changes and medicines. Some people may need operations or pacemakers or similar devices.

Despite this, some people may not get better and their heart failure may worsen.

Though rare, it is important to understand that the progression of heart failure can be unpredictable and varies from person to person. Many people when diagnosed with heart failure will choose to make a will.

Some people, towards the end of their disease, need palliative care and may wish to let their families know in advance what they would like to be done if they become very ill and no longer respond to any treatment. More information on this topic can be found online at [www.heartfailurematters.org](http://www.heartfailurematters.org) or [www.hospicefoundation.ie](http://www.hospicefoundation.ie).



## **An explanation of medical terms used in this booklet**

### **Angina**

Angina is chest pain or chest discomfort. It happens when not enough oxygen-rich blood gets to your heart muscle.

### **Angiogram**

This is another name for cardiac catheterization. An angiogram is a test using dye and x-ray to see if you have any problems in your arteries, valves or the chambers of your heart.

### **Angioplasty**

Angioplasty is a treatment to unblock your arteries and increase the blood flow to your heart muscle. A small device like a balloon is put into your artery and inflated to flatten the blockage against your artery wall.

### **Arrhythmia**

Arrhythmia is an abnormal heart rhythm; it may be fast or slow and/or irregular.

### **Blood pressure**

Blood pressure shows the amount of work that your heart has to do to pump blood around the body. The two numbers in your reading shows the level of your blood pressure. One number records blood pressure when the pressure is at its highest as the heart muscle squeezes out the blood from the heart - this is called systolic pressure. Then the heart relaxes, which allows the blood to flow back into the heart - this is called diastolic pressure. The normal level of blood pressure is usually about 120 (systolic) over 80 (diastolic). If you have been told that your blood pressure is higher than 140 over 90, you should discuss this with your family doctor.

### **BNP blood test**

A B-Type natriuretic peptide (BNP) is a substance that your body produces

when your heart is under a certain type of stress such as that caused by fluid retention due to heart failure. BNP levels are higher than normal when you have heart failure.

### **Chronic disease**

A health problem that is persistent and long-lasting.

### **Congestion**

A build-up of fluid in your lungs and other organs.

### **Coronary artery bypass surgery**

A healthy artery or vein is used to bypass a blocked segment of a coronary artery creating a new channel for blood to flow through enabling oxygen to be supplied to the heart muscle.

### **Coronary artery disease**

Heart problems caused by narrowed arteries. When arteries are narrowed, less blood and oxygen reach your heart muscle.

### **Electrocardiogram (ECG)**

An ECG test measures the rhythm and electrical activity of your heart. Small sticky pads are put on your body connected to wires that link up to the ECG machine. The machine reads and records the electrical signals from your heart.

### **Gout**

Gout is a form of arthritis caused by a build-up of uric acid in your blood that leads to joint inflammation. Some diuretic medicines can increase the amount of uric acid in the blood.

### **Heart attack (Myocardial infarction - MI)**

Heart attack is when blood cannot get to part of your heart muscle and the muscle dies or is permanently damaged.

## Heart valves

Heart valves control how blood flows between the different chambers of your heart.

## Palpitations

A feeling that your heart is beating very fast in your chest.

## Paroxysmal nocturnal dyspnoea (PND)

Severe breathing difficulties experienced while you are sleeping or lying down. If this happens, you should go to hospital or see a doctor as soon as possible.

## Stent

A stent is a piece of wire mesh used to keep part of your coronary artery open. Some stents release medicine into your bloodstream to prevent clots forming on the stent. These are called drug-eluting stents.



## More information

### Useful websites:

Irish Heart Foundation:  
[www.irishheart.ie](http://www.irishheart.ie)

Pumping Marvellous for Heart Failure Patients:  
[www.pumpingmarvellous.org](http://www.pumpingmarvellous.org)

Heart Failure Matters:  
[www.heartfailurematters.org](http://www.heartfailurematters.org)

HSE:  
[www.hse.ie](http://www.hse.ie)

Irish Association of Cardiac Rehabilitation:  
[www.iacronline.ie](http://www.iacronline.ie)

British Heart Foundation:  
[www.bhf.org.uk](http://www.bhf.org.uk)

Irish Hospice Foundation:  
[www.hospicefoundation.ie](http://www.hospicefoundation.ie)





# Irish Heart Foundation

The Irish Heart Foundation is Ireland's national heart and stroke charity. We lead the way in researching and developing programmes in schools, communities and workplaces to help people to lead healthier lives and reduce their risk of developing heart disease or having a stroke. We campaign for better heart and stroke services and better Government policies. We support and speak for the many thousands of people living with heart disease and stroke across Ireland. And we are building a nation of lifesavers through professional and community based CPR training.

## Irish Heart Foundation

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