

HOW WILL WE BEAT HEART FAILURE?



Heart failure is estimated to affect more than 900,000 people in the UK and there are around 200,000 new diagnoses each year. It is most common in older people but can strike at any age. But how much do we know about the condition, how are BHF-funded researchers working to develop treatments – and how can you help? **Caroline Roberts** provides the answers

What is heart failure?

Heat failure means that your heart isn't working effectively, not that it has failed completely. There is currently no cure and it can get worse over time, but with the right treatment and lifestyle changes most people with heart failure can still have a good quality of life.

The main symptoms – fatigue, weakness, shortness of breath, and swelling of the feet and ankles, abdomen and around the small of the back due to water retention – occur because the heart isn't able to pump

blood effectively and deliver enough oxygen to the muscles or to clear excess fluid through the kidneys.

Heart failure has many causes but one of the most common is a heart attack. Heart failure cases are rising because medical advances mean more people are surviving heart attacks but with the residual damage. Other common causes include high blood pressure, cardiomyopathy (disease of the heart muscle), valve disease or a viral infection.

Heart failure is usually treated with drugs to improve symptoms and help

prevent further damage. Some patients may have a pacemaker fitted to help improve the pumping function of the heart. Lifestyle changes, such as maintaining a healthy weight, making changes to your diet and exercising, can help keep heart failure stable.

Using cutting-edge technology, BHF-funded researchers are working hard to improve the lives of people with heart failure, for example by exploring how damaged heart muscle can be regenerated.

A gift in your will can help this life-saving research continue.

'I felt faint and frightened. My pulse was 40. They said I needed a pacemaker'

Born with two holes in her heart, Rachel Milledge knows the importance of the work the BHF funds. Here she tells her story and explains why she has decided to leave a gift to the charity in her will

Rachel Milledge understands the importance of BHF-funded research into heart failure and other heart and circulatory conditions, and just how far research and medical treatment has come during her lifetime. The 58-year-old from Dorset was born with two holes in her heart and this has led to a series of heart problems that she has developed over the years.

Rachel was operated upon to repair the holes in heart when she was just nine. "It was a pretty traumatic experience and I have some very vivid memories from that time," she says. "The surgery was still in its infancy and there were children on the ward at the same time as me who didn't survive."

NEXT STOP: ADULTHOOD
Everything seemed fine following her operation until she was diagnosed with atrial fibrillation, an irregular heart rhythm, 30 years later.

"It was believed to be related to scar tissue within my heart from the original surgery," she says. "There was quite a build-up, and my heart's quite a lot bigger than it should be. Now they'd probably operate at birth but back then they left you until you were nine because it was believed to be optimum age, and in that time the heart had been under a whole lot of strain. Things have changed and improved no end."



'Now they'd probably operate at birth; back then they left you until you were nine'

ENTER HEART FAILURE
Early in 2007 Rachel wasn't feeling herself and tests revealed she had developed heart failure. "One morning I felt really faint and not at all well," she says. "It frightened me a bit because I was on my own. My pulse was very slow at 40 beats per minute and I phoned my consultant, who said he wanted to see me that morning, and to bring a bag. He sat me down and said I needed a pacemaker."

At first, Rachel found it hard to adjust to the idea of a pacemaker as she associated it with elderly people and she was not yet 50. "It took me years before I'd wear a top where you could see the scar," she says. After the pacemaker was implanted, she sank into a deep depression. "It brought up earlier experiences I'd had in hospital as a child that hadn't been dealt with."

HELP IS OUT THERE
Rachel hopes that her story will help others who are going through similar experiences. "You do feel quite alone and when you are struggling you can't reach out," she says. "It gets annoying when people say, 'My neighbour had that and they're fine now'... and then you find out they are 80. To me, it was huge."

As well as contributing to the clinical advances that have benefited Rachel over the course of her condition, the BHF has helped her in other ways too. "The *Heart Matters* magazine is great and the Heart Helpline has been really good too," she says. "You're speaking to a real, living person and you can be honest with them in a way you perhaps can't with your family."

She now wants to help ensure the work can continue through leaving a gift in her will. "I want to help the BHF move things forward." Her husband John and her three daughters are very supportive of her decision. "They've lived my experience as well," she says.

Four out of five heart failure diagnoses are made in hospital, despite 40 per cent of patients having symptoms that should have triggered an earlier assessment



PEOPLE WITH HEART FAILURE ARE TWO TO THREE TIMES MORE LIKELY TO HAVE A STROKE

HOW YOUR HEART WORKS

There are two sides to the heart: the right and the left. Each side has two chambers: a ventricle and an atrium.

- Blood from your body enters the right side of your heart. From here, the heart pumps the blood to the lungs, where the blood takes up oxygen.
- Oxygen-rich blood then enters the left side of the

heart. From here it is pumped through the aorta to all parts of your body.

- There are four valves inside the heart, to make sure that the blood flows in the correct direction. The illustration shows the different parts of the heart, and the arrows show the direction in which the blood flows.



More than 580,000 people in the UK are on their GP's heart failure register, but it is estimated there are as many as 920,000 people living with heart failure



In 2018-19, the British Heart Foundation invested £5.9 million in research related to heart failure



WILL POWER

HOW A GIFT IN YOUR WILL CAN FUND LIFE-SAVING RESEARCH

When people remember the BHF in their wills, they are helping future generations of their and other families



The British Heart Foundation (BHF) was established in 1961 to support research into all heart and circulatory diseases and their risk factors. It now funds around half of the independent cardiovascular research in the UK and plans to invest £1 billion over the next 10 years.

More than one in four of us still die from heart and circulatory diseases in the UK. And nearly a million people are living with the life-changing effects of

heart failure. The problem is growing and urgent. It affects all of us; we're talking about the lives of our mums and dads, siblings, grandparents and friends.

At its outset, more than seven out of 10 heart attacks in the UK were fatal; nowadays at least seven out of 10 people survive. There is no cure for heart failure but the BHF is determined to find a solution, and over the past year it has invested £5.9 million into new research related to the condition. Exciting developments include progress

being made in regenerative medicine, which aims to repair damaged heart muscle, often by using stem cells.

Gifts in Wills provide a vital funding stream for the BHF and help it carry on this work. Rachel Milledge (see story, left) is living with heart failure and has benefited from the huge progress made in treatment and care during her lifetime.

That's why she has decided to leave a gift to the BHF in her will. "I've seen leaps and bounds in treatment," she says. "Holes in hearts in babies are now

done straightaway, even in utero. It's amazing. I want to help support more advances. More people are surviving heart attacks but there's still work to do. When you've had a pacemaker put in or had a heart attack and had surgery, you think you're sorted and tickety-boo, but you might need treatment and care again. If you want the BHF to always be there, you've got to support it."

Why not join Rachel by leaving a gift in your will to the BHF to help fund its work in beating heartbreak for ever?

SOME TREATMENTS FOR HEART FAILURE

Unfortunately, heart failure can't be cured. But with treatment and management of its symptoms and lifestyle changes, many people can lead a full life. Every case is different, but some ways of managing and treating heart failure include:



DIURETICS
Diuretics help the kidneys get rid of excess fluid by making you pass more urine. They can help to relieve shortness of breath, or ankle or leg swelling.



ACE INHIBITORS
ACE inhibitors have a relaxing effect on the arteries. This reduces the work that the heart has to do to pump the blood around the body.



BETA BLOCKERS
Beta blockers prevent the heart from beating too quickly and too forcefully, so they reduce the amount of work it has to do.



PACEMAKERS
Pacemakers and other implants help to improve the heartbeat's strength, rate and rhythm. This can help to improve the heart's pumping mechanism.

WHAT CAUSES HEART FAILURE?

There are many reasons why heart failure may happen. The most common causes are:



A heart attack



High blood pressure



Some types of chemotherapy



An abnormal heart rhythm (arrhythmia)



Problems with the heart valves



Cardiomyopathy (disease of the heart muscle)

OTHER CAUSES

Heart failure can also be caused by: a viral infection affecting the heart muscle; congenital heart problems; some lung diseases; thyroid gland disease; anaemia; alcohol or recreational drugs

What progress is being made?

BHF-funded research, partially funded by Gifts in Wills, holds hope for future patients

To improve treatments for heart failure, we need to find a way of repairing damaged heart muscle. Regenerative medicine, which uses stem cells to grow new tissue, has the potential to do this, but a key problem is keeping the stem cells where they are needed for long enough. Research funded by the BHF is beginning to provide answers. A team at Queen Mary University of London have developed a "plaster" made of bio materials that delivers stem cells and could be applied to the heart during bypass surgery following a heart attack.

Meanwhile, researchers at Imperial College London have developed a way to grow thumb-sized patches of heart tissue containing up to 50million stem cells. These cells have been grown into heart muscle cells that can be seen beating. The BHF hopes that both research projects can be progressed to clinical trials in humans.

BETTER WAYS OF PACING THE HEART

The heart is prompted to beat by electrical signals. In a normal conduction system, the signal travels from the top chambers via a sophisticated network of nerve fibres that transmits it rapidly to the pumping chambers, resulting in an efficient and coordinated pumping action. When heart damage disrupts this system, an electronic pacemaker is sometimes needed. The standard one works by placing a lead on the muscle on the right side of the heart to deliver the electrical signal. While reliable, the method doesn't activate the heart in the natural way and may carry a risk of weakening the heart muscle in the longer term.

Cardiac resynchronisation therapy (CRT), a more sophisticated form of pacemaking developed with contributions from BHF-funded research, is delivered by two leads on either side of the heart. It is designed to help patients with a conduction problem called left bundle branch block, which causes delayed action of the left ventricle, or pumping chamber.

Consultant cardiologist Dr Zachary Whinnett of Imperial College London,

pictured below, is leading on the BHF-funded HOPE-HF trial, which is investigating a new type of pacing, called His bundle pacing (HBP), to help a group of patients with heart failure and a type of conduction problem that can't be treated with CRT. In HBP, leads are placed directly onto the heart's natural conduction system, the His bundle fibres.

"This means the signal travels through these fibres and activates the heart in a more natural manner, leading to a more efficient and coordinated contraction," says Dr Whinnett. "We're looking at whether HBP can improve symptoms, heart function and the ability to exercise. We also have a very specialised way of personalising the pacemaker setting to the patient based on beat-by-beat blood pressure measures."

The BHF supported me to do a training fellowship to develop research skills

The trial is now in the process of following up patients, and if the results of the study are positive they may soon impact clinical practice, leading to more people with heart failure being offered HBP therapy to help treat it.

FINANCIAL BACKING FOR LIFE-SAVING RESEARCH
The BHF makes a huge impact through the many trials it funds, says Dr Whinnett. "I know from speaking to clinicians and researchers in other countries that they can find it extremely difficult to get studies funded." The HOPE-HF study is the world's first randomised controlled trial of HBP and it would be harder to find funding for the trial without the BHF, he adds. Research into relatively low-cost technologies such as this are less attractive for industry than trials, even though clinicians can see the potential benefits. "Having an independent body whose goal is to allow us to develop better treatments really fills that gap."

The charity also invests in the next generation of researchers. As Dr Whinnett says: "It supported me to carry out a training fellowship to develop my research skills. This has allowed me to establish a research programme, which aims to develop more effective treatments, alongside my clinical practice. The UK is a leader in heart research; that's in large part down to the BHF. The more Gifts in Wills it receives, the more work we can do."



Living with heart failure

With the right treatment and lifestyle changes, many people who have been diagnosed with heart failure can live fulfilling lives

TREATMENT PROGRAMMES

Drugs for heart failure include ACE inhibitors and beta blockers. These help reduce the heart's workload and prevent heart failure getting worse. Pacemakers can help some patients as they help improve the pumping function of the heart. The technology has developed over the years and the BHF is funding more research to improve it further. Gifts in Wills help support this important work and mean more patients can benefit in the future.

HOW YOU LIVE YOUR LIFE

Lifestyle changes can help, starting with a healthy diet. It's particularly vital for heart failure patients to reduce their salt intake, as it raises blood pressure and causes fluid

retention. Exercise can also help reduce further deterioration, but the biggest advice to people with heart failure is to talk their doctor about any new or worsening symptoms and to check their weight daily, as sudden weight gain can signal a build-up of fluid. Catching problems early means they can more easily be treated.

ENERGY LEVELS

The fatigue that can come with heart failure can be managed by patients changing the way they work, getting help and breaking tasks down into manageable bits. Talking to people about how they are feeling emotionally as well as physically can help, as can joining a local or online support group.

TO FIND OUT MORE
For more information on how to leave a gift in your will, visit bhf.org.uk/wills

