Heart Matters

Inspiration | Information | Support

Autumn 2022

Facing it together

Becky and Paul share how they've dealt with her heart problems

Genetic cure

The astonishing research that could cure some heart muscle diseases

Eat well, for less

How to eat healthily on a budget

Live better

Five science-backed ways to change your habits

British Heart Foundation

Contents

Autumn 2022

Have your say on Heart Matters
Go to bhf.org.uk/heartsurvey to tell us what you thought of this issue. You could win a £50 John Lewis or Amazon voucher! Or post comments to Editor Sarah Brealey at the address on page 5. Our last survey winner was Keith Bishop, from St Neots, Cambridgeshire. He said: "It was a fantastic surprise to win the survey prize. Since my heart attack I've been an avid reader of Heart Matters. I chose the Amazon gift voucher as I'm saving up for a new iPad."

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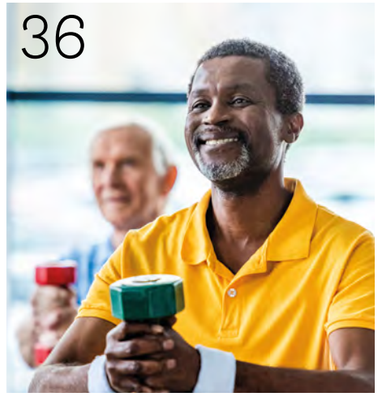
Registered with FUNDRAISING REGULATOR

Gary's story of his transition and heart bypass

Healthy, hearty autumn recipes



How to exercise with confidence

How to manage any side effects from medicines

Becky and Paul: dealing with a tough diagnosis together

Front cover photography by Ollie Holder

Content you can trust

We put together every issue of Heart Matters with the help of experts, such as doctors, cardiologists, psychologists and specialist nurses.

Everything in the magazine is checked three times over by our specialist cardiac nurses and senior dietitian, as well as by research and statistics experts.

So you can feel confident that what you're reading is accurate and up-to-date.

Editor's letter

For me, running is a way to keep fit, get fresh air, de-stress, and get a bit closer to the natural world (even if it's just the birds and flowers in my local park).

This Sunday (2 October), tens of thousands of runners are doing much more than that, as they take part in the TCS London Marathon. It's an event with a unique mixture of history, an iconic setting, and fundraising for great causes – not to mention a fair bit of sweat (and sometimes blood and tears), from those taking part.

One of this year's superheroes is Professor Sanjay Sinha, who is running the marathon to support BHF-funded research to repair damaged hearts. That includes his own team's work to bring a Heart Healing Patch closer to reality – research that could change the lives of millions in future. Don't miss our fascinating interview with him on page 28.

I'll be on the sidelines this Sunday, cheering on Sanjay and the other dedicated runners. If you'd like to support our researchers, visit bhf.org.uk/runsanjay, or send a cheque payable to British Heart Foundation addressed to BHF, 2300 The Crescent, Birmingham, B37 7YE (please mention Heart Matters with your cheque).

I know that running isn't for everyone, and there are lots of other equally good ways to exercise. Don't miss the helpful guide to which types might suit you best if you have a heart condition on page 36.

This issue we're also featuring our most ambitious ever research project. The winner of our international Big Beat Challenge will be funded with £30 million to research a cure for inherited heart muscle diseases – read more on page 9. These diseases can be life-changing, as Becky and Paul have found – read about their experience on page 12.

Sarah B

Sarah Brealey, Editor

What we've learned this issue

Every issue of Heart Matters opens our eyes to new things. Here are some of the facts we found fascinating and useful this issue

Women who struggle to get pregnant may have a higher risk of developing heart disease. But it's not clear whether the same applies to men who experience infertility.

Ask the expert, page 35

Collagen – sometimes sold as a skin supplement – is what your body's connective tissue is made of. And it's being used as a scaffold to help new heart cells line up and grow, in the Heart Healing Patch that BHF-funded scientists are trying to make a reality.

Day in the life: Professor Sanjay Sinha, page 28

Bad news for beer or cider drinkers: these drinks add almost as much sugar to the average person's diet as chocolate. Chocolate makes up 8% of the sugar in the UK diet, with beer and cider contributing 7%.

Sugar sources in our diet, page 22

If you do just one thing...

There's now a new and very simple way to tell if you are a healthy weight – keep your waist size to less than half your height. Get a tape measure, or even a long piece of string, and check yours today.

Ask the expert, page 24

You don't need a gym membership or expensive equipment to build strength. You can use your own body weight, for example moving from sitting to standing, or doing press-ups.

Which exercises are best, page 36

If you want to make a change in your life, then writing down what you do at the moment (like keeping a food diary, or exercise diary) is a surprisingly effective way to start. Evidence shows that people who practise self-monitoring are more successful at changing their behaviour. The more accurate they are, the better they get at changing their habits.

Five science-backed ways to break out of bad habits, page 40

Your letters

We love to read your emails, letters and tips, so keep writing: **HMeditor@bhf.org.uk** or **Heart Matters, British Heart Foundation, 180 Hampstead Road, London NW1 7AW**

Defibrillator dilemma

My children and I want to purchase a defibrillator but are at somewhat of a loss to know how to choose the right one, as after an online search there are quite a number on the market. I would quite understand if your clinicians weren't able to suggest a few options, but I thought I would write in any event.
Robert Allan, Woburn Sands, Milton Keynes

Sarah Brealey, Heart Matters Editor, says: It's great to hear that you're getting a defibrillator, as investing in one could be the difference between life and death. The BHF sells a range of Automated External Defibrillators (AEDs) from leading brands, and you can talk to our defibrillator advisers on 0300 330 3322 (option 6) Monday-Friday, 9am-5pm, or visit giftshop.bhf.org.uk/defibrillators.

Balancing health conditions

I really appreciated Prakash sharing his story with your readers [Summer 2022, page 33]. It reminded me of the need to balance the priorities of different health conditions, which can be conflicting. I was inspired by his calm approach to all the medication and injections he needed each day. It helped me to remember all my blessings.
Clare Hamon, Exeter

Heart valve research

I was very interested to read the article about Professor Moggridge and heart valve research [Autumn 2021, page 34], especially since I've had my heart valves replaced. I was 92 years old when I had the operation, so I really am lucky to be so old and still able to enjoy life. My husband is my sole carer and without him I really would be lost. Keep up the very good work.
Betty Tissington, Inverness

Clean eating

I wanted to comment on your article about 'good' or 'bad' foods [Summer 2022, page 16]. I was not aware that there was a clean eating movement, but I have used the term 'clean foods' for the past 40 years.

I don't label foods good or bad but do recognise the effect that processed food has on me – a takeaway meal makes me thirsty all night, and makes me feel sluggish and bloated. I make cakes and scones and eat them, but not too often. I make my own wholemeal bread. I guess my mantra is "eat food that hasn't been messed about with too much".

I know that you are trying to encourage people to eat healthier. Perhaps you could do an article about highly processed foods and the impact on our bodies?
Carolyn Drew, Babbacombe, Devon

Help us improve Heart Matters

We'd like your feedback on this issue of the magazine, with a short survey that should take no more than 15 minutes to complete, and will help us make the magazine better for readers. As a thank you, all replies received by December 20 2022 will be entered into a prize draw to win a £50 voucher to spend either at John Lewis or Amazon.

WIN a £50 voucher to spend either at John Lewis or Amazon

Our latest winner, Keith Bishop, from Cambridgeshire, says: "It was a fantastic surprise to win the survey prize. Since my heart attack I've been an avid reader of Heart Matters. I chose the Amazon gift voucher as I'm saving up for a new iPad."
Take the survey at bhf.org.uk/heartsurvey.

Injectable gel could repair damage from a heart attack

BHF-funded researchers have developed a gel that helps new heart muscle cells to grow, and could form a new generation of treatments to repair damage caused by a heart attack.

The heart has a limited ability to repair itself, which means that heart damage can lead to heart failure. Scientists have been trying to find a way to introduce new cells into damaged hearts for years. But so far, when cells have been injected directly into the heart in trials in animals, only one per cent of cells survived.

Now, researchers have developed a new gel that they hope could be safely injected into someone's heart to act as a scaffold for cells to grow new tissue.

The researchers added blood vessel cells and heart muscle cells (which were grown from stem cells) into the gel. They found that the blood vessel cells were able to grow and begin to form small vessels in the gel, which is important as heart muscle needs a good blood supply. They also found that heart muscle cells grown in the gel began to beat, showing that the gel can also encourage the growth of normal heart muscle tissue. Scientists have also shown that the gel is safe when given to mice.

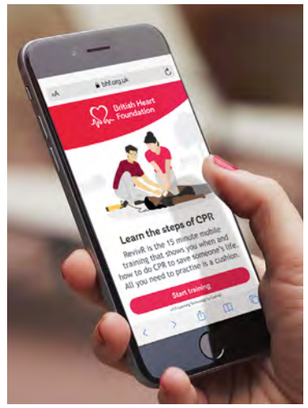
The gel doesn't stay in the body permanently but is naturally broken down after two weeks (which, it's hoped, should be long enough to give the new heart cells a good start).

Katharine King, a PhD student we fund at the University of Manchester, led this research. She said: "While it's still early days, the potential this new technology has in helping to repair failing hearts after a heart attack is huge."

The researchers hope their gel will become a key part of future treatments for damaged hearts.

• Read more about research to repair damaged hearts on page 28.

Learn CPR in just 15 minutes



The British Heart Foundation's new, first-of-its-kind CPR training tool can help you save a life. RevivR is easy, quick and free. Anyone can gain the skills to save a life through the RevivR tool – all you need is a mobile phone and a firm cushion. In just 15 minutes, the tool teaches you how to recognise a cardiac arrest, and learn what to do, giving anyone the confidence to step in and save a life in the event of the ultimate medical emergency.

- Learn lifesaving CPR or brush up on your skills: visit bhf.org.uk/revivr.

Alzheimer's disease breakthrough

A breakthrough in our understanding of Alzheimer's disease has revealed changes to blood vessels in the brain, thanks to BHF-funded research. This could help us find ways to develop new drugs to fight the disease.

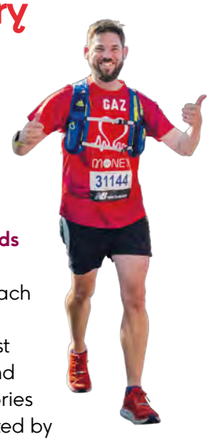
Alzheimer's is traditionally thought of as a disease of the brain cells, but there is growing evidence that the blood supply to the brain is also affected.

It was previously unknown how this happens, but researchers at the University of Manchester have found that a smaller version of the protein that forms plaques in the brain cells of people with Alzheimer's builds up in the small arteries of the brain, reducing blood flow.

If these arteries become narrowed for too long, the brain can't get enough nutrients. This is one of the causes of memory loss in people with the disease.

Dr Adam Greenstein, BHF-funded researcher and Clinical Senior Lecturer in Cardiovascular Sciences at the University of Manchester, led this research. He said: "By showing exactly how Alzheimer's disease affects the small blood vessels, we have opened the door to new avenues of research to find an effective treatment."

Dates for your diary



2 October
TCS London Marathon. Turn to the back page to find out more.

October onwards
Live & Ticking: online events. Each one-hour event reveals the latest BHF science, and the personal stories of people affected by it. Book your place at bhf.org.uk/liventicking.

2 April
2023 Brighton Marathon. Run while enjoying the coastal scenery of Brighton. Sign up at bhf.org.uk/brightonmarathon or call 0300 222 5719.

16 April
2023 Manchester Marathon. Take part in the UK's fastest, flattest and friendliest major marathon. You can sign up now at bhf.org.uk/manchestermarathon or call 0300 222 5719.

News bites

Get heart help from Tesco pharmacists
Tesco pharmacy staff have been given training by the BHF, Cancer Research UK and Diabetes UK, to help them better support people living with heart and circulatory diseases, cancer or type 2 diabetes, or who are at risk of developing these conditions.

The 'Let's Talk' pharmacy service offers free support with symptoms, medicines and lifestyle changes. Find a list of participating pharmacies at tesco.com/pharmacy or ask your local Tesco pharmacy if they're offering the Let's Talk service.

Understanding Takotsubo syndrome
Takotsubo syndrome, a form of sudden severe heart failure sometimes called 'broken heart syndrome', causes symptoms similar to a heart attack and is currently little understood.

Now BHF-funded research has discovered that people with the condition have changes in areas of the brain responsible for thinking, emotions, language and controlling the heart.

The researchers, from the University of Aberdeen, will next try to find out whether Takotsubo causes changes to the brain, or whether the brain changes cause Takotsubo syndrome.

Become a BHF Ambassador
We're looking for people to help raise awareness about volunteering for the BHF in your local community. You might be an existing volunteer who wishes to develop into this role or someone new to volunteering, who is passionate about the BHF and making a difference in their community. This could include getting the message out in the local media, engaging with local community groups, and using your own initiative to find new ways to promote volunteering.

- Find out about the Volunteer Ambassador role by emailing us at VAadvice@bhf.org.uk or call 0300 330 3322.

Behind the headlines

Daily Mail, 8 August 2022

"Sunshine really IS good for you: Getting the daily recommended dose of vitamin D from natural light can reduce the risk of diabetes and heart disease, study finds"

Having a vitamin D deficiency can cause inflammation, which could in turn contribute to heart and circulatory disease, says a study published in the International Journal of Epidemiology.

We already know from previous studies that low vitamin D levels are linked with high blood levels of C-reactive protein (CRP), a sign of inflammation. Researchers wanted to find out whether low levels of vitamin D caused high levels of CRP, or whether it's the other way round.

They looked at blood samples from just under 300,000 people aged 37-73. They then used a statistical method which can help to show which way round an association happens, called bidirectional Mendelian randomisation.

They found that low levels of vitamin D are likely to cause high levels of CRP, not the other way round. However, vitamin D levels only make a difference to CRP when they are low enough to be classed as vitamin D deficiency.

While the Mail article was mostly accurate, the headline was misleading. Sunshine is one way our bodies get vitamin D, but this study didn't look at different sources of vitamin D. In fact, we know that at some times of year, sunlight levels in the UK aren't enough to meet our vitamin D requirements and we should consider taking vitamin D supplements.

THE BHF VERDICT

From April to September in the UK, sunlight and a healthy balanced diet is enough for most people to get the vitamin D they need. But from October to March, when sunlight levels aren't as strong, a supplement of 10mcg of vitamin D a day can be helpful.

You should take a vitamin D supplement year round if any of these apply:

- you have dark skin (for example, if you have an African, African-Caribbean, or south Asian background)
- you don't spend much time outdoors
- you cover most of your skin when outdoors
- you are a child aged one to four.

The Guardian, 22 July 2022

"Bananas and salmon help counter effect of salt in women's diet"

People who eat more potassium-rich foods have a lower risk of heart attack or stroke. A potassium-rich diet is also linked with lower blood pressure in women who eat a lot of salt, says a study published in the European Heart Journal. Researchers took blood pressure and urine samples from around 25,000 people aged 40-79. They were followed for an average of just under 20 years to see whether they had a heart attack or stroke.

While the Guardian coverage was mostly accurate, The Daily Mail misleadingly said, "Scientists say potassium-rich foods keep heart healthy (but only for women!)" The study found benefits for both sexes. Women with the highest amount of potassium had an 11 per cent lower risk of having a heart attack or stroke, compared to those with the lowest. For men with the highest amount, the risk was 7 per cent lower. Also, the more potassium people consumed per day, the lower their blood pressure. However, when the researchers looked at how age and salt intake affect this relationship, they found higher potassium levels were only linked with lower blood pressure in women eating the highest levels of salt, not in men.

THE BHF VERDICT

Cutting down on salt and eating more potassium-rich foods (such as fruit and veg, pulses, fish, seeds, nuts, milk) can be the recipe for a healthier heart. Too much potassium can seriously affect the heart and its rhythm, so don't take potassium supplements unless prescribed by your doctor. Some drugs may lead to raised potassium levels: ask your GP or pharmacist if you're not sure, and don't follow a potassium-restricted diet without checking with your doctor.

BHF Professor Hugh Watkins from the University of Oxford is one of the leaders of the groundbreaking CureHeart project

A genetic cure for killer heart muscle diseases

Curing inherited heart muscle diseases was until recently considered impossible. Now our single biggest research grant is trying to achieve just that

Our Big Beat Challenge competition offered the most ambitious research grant in our history: £30m for one project offering a transformational solution to a significant problem for people with heart and circulatory diseases.

The winning project, CureHeart, aims to develop the first cures for inherited heart muscle diseases. It's led by two world-class scientists: BHF Professor Hugh Watkins from the University of Oxford and Dr Christine Seidman from Harvard Medical School in the USA. They will work with an expert team to develop revolutionary gene therapy technologies to target the genetic faults that can cause these conditions.

> **"Cardiomyopathies devastate families.**

Inherited heart muscle diseases, also known as genetic cardiomyopathies, are a group of conditions which affect the heart muscle. They include most cases of hypertrophic cardiomyopathy and arrhythmogenic cardiomyopathy, and some cases of dilated cardiomyopathy. The therapies the CureHeart team are developing will be ▸

designed to tackle cardiomyopathies in people with a positive genetic test, as they will be tailored to their specific genetic faults.

Inherited cardiomyopathies affect around one in 250 people worldwide. That amounts to 260,000 people in the UK.

Many live with these conditions without knowing. Some people have no symptoms. But others can experience life-changing symptoms including shortness of breath, palpitations, and chest pain. Sometimes these conditions can be deadly, with some people dying suddenly from cardiac arrest. Or they can lead to heart failure, and in severe cases people may need a heart transplant. As Professor Watkins says: "Cardiomyopathies devastate families."

Currently we can help to relieve symptoms or protect against cardiac arrest. But there are no treatments that stop or reverse the progressive damage to the heart, and no cure.

Gene therapy and its challenges

Supported for decades by our funding, Professor Watkins has made important discoveries about hypertrophic cardiomyopathy and the genes that cause it. He also established the UK's first testing service for the condition. But, he says: "Diagnosis without effective treatment is not enough."

Developing gene therapies for genetic cardiomyopathies is more complex than for other conditions, and the CureHeart team will face many challenges.

We have two copies of nearly every gene in our body – one inherited from each of our parents. Genes contain instructions that tell our cells which proteins to make. Together, these proteins form the building blocks of every tissue and organ in our body. Gene mutations are like spelling mistakes in the gene: they affect the proteins that are built and can stop parts of our body working as they're supposed to.

For some other genetic conditions, it's possible to introduce healthy copies of a faulty gene into the body to help things work normally. But many of the gene mutations that cause cardiomyopathies cause an abnormally shaped protein to be built (dominant negative mutations), and this stops proteins produced by the healthy copy of the gene working – so adding more healthy copies of the gene generally won't help.

In other cases (haploinsufficient mutations), gene mutations stop the faulty gene working properly, and while the healthy copy of the gene still makes protein, this isn't enough. Techniques do exist to put healthy copies of genes inside cells, which could work in theory for this type of mutation. But many of the genes that cause genetic cardiomyopathies are too large to fit in the genetic tools (vectors) that are used to carry the new DNA into cells.

The team will have to ensure that the gene therapies only affect heart cells and don't affect any other cells in the body. They will also need to find a simple way for these to be delivered, for example as an injection into the arm, rather than through a more complicated procedure directly on the heart.

At the cutting edge of science

The team will need to take different approaches to treat the different types of mutation. One option they are testing for dominant negative mutations is gene silencing – "turning off" the faulty copy of a gene, allowing the unaffected copy to take over. But research shows gene silencing only lasts for around six months, meaning patients would need regular injections or medications to keep their faulty gene silenced.

So, the CureHeart team want to develop a one-time gene editing treatment, to correct or permanently switch off faulty genes.

To do this they will be using a revolutionary new technology, developed in 2016 by Professor David Liu at the Broad Institute. Professor Liu, a member of the CureHeart team, developed base editors – tiny molecular machines capable of identifying and correcting a single mutation in the genetic code.

These editors could be used to precisely correct the disease-causing mutation in a patient. But there are thousands of mutations that can cause genetic cardiomyopathies and developing base editor technology for all of these might not be efficient. So, they will also investigate using base editors to permanently turn off the faulty copy of the gene, allowing the remaining healthy copy to take over.

For haploinsufficient mutations, the researchers are investigating ways to help the one healthy gene produce more protein. They will target sections of the gene's code that act like dimmer switches, increasing or decreasing the amount of protein it makes.

The CureHeart project will run for five years. During that time the team will develop and test their genetic therapies. By the end of the project the team want to have one or more potential treatments that are ready to move into trials in patients.

There are still ethical concerns and regulatory challenges around gene therapies, which the team will spend time addressing. The team know from their work on CureHeart that people with genetic cardiomyopathies are overwhelmingly in support of gene therapies, and patients with these conditions are a key part of the team.

> "This is our once-in-a-generation opportunity."

> "It's only a matter of time until these treatments become a reality."

To balance the potential risks, early clinical trials will involve people with the most advanced conditions (whose health is very poor, so any benefits will be valuable). Once they have shown that these treatments are safe and effective, the CureHeart team want to roll them out to people at earlier stages where it will be easier to reverse damage and cure their condition. If used early enough, the team believe they could stop people with these faulty genes ever developing heart symptoms.

The results of these therapies won't be passed on to any children the recipients go on to have, as the treatment will only affect heart muscle cells. This will help to address some of the ethical concerns about the treatments. But it means that the recipients still have a chance of passing the faulty gene to their children, who later might need to receive this treatment themselves.

If successful, this could pave the way for a new generation of treatments for heart diseases, as scientists will be able to use the same methods to correct gene defects that cause other diseases.

Professor Watkins says: "There are numerous genes that we know are involved in other heart and circulatory diseases. If we can get this approach to work, it would usher in a new era of treating people by targeting genes."

In the meantime, he is optimistic about finding a way to end the suffering genetic cardiomyopathies can cause. "It's only a matter of time until these treatments become a reality.

"This funding is our once-in-a-generation opportunity. It could change everything for affected families."

- Turn over to read Becky's story about living with an inherited cardiomyopathy. Read more about CureHeart at bhf.org.uk/cureheart.

Professor Watkins (pictured with Research Assistant Violetta Steeples) hopes this treatment will help to end the suffering caused by genetic cardiomyopathies

TWO SIDES TO A STORY

How Becky and Paul faced her diagnosis together

A heart condition doesn't only affect the person who has it. Loved ones live through the experience too. In our new series, we tell the story from both points of view: starting with Becky and Paul, who have lived through Becky's life-changing diagnosis

Photography by Ollie Holder

Becky's story

"It all happened when I went for a run one day in January 2017. I was breathless and I could feel my heart racing. I was hot and dizzy but I had an audition that day (Paul and I are both actors and comedians). So I went on the train, although on the way there I felt sick and thought I might pass out.

When I got back, Paul said I had gone a funny colour. We called 111, who advised going to A&E. In hospital they found my heart rate was dangerously fast. They tried to bring it down with medication, but it didn't work, so they used a defibrillator to shock it back to a normal rhythm. The whole thing was quite difficult to come to terms with.

I was in hospital for 11 days and I was diagnosed with arrhythmogenic cardiomyopathy or ACM (also known as arrhythmogenic right ventricular cardiomyopathy, or ARVC). It's a rare genetic disease of the heart muscle. In my case, I was found to be at high risk of having a cardiac arrest, so I was fitted with an ICD (an internal defibrillator). If my heart goes into a dangerous rhythm, it will shock it back to a normal rhythm.

A different life

One day in hospital I was reading through one of the leaflets about living with an ICD and I just burst into tears. It was describing something day to day, like household appliances that I needed to be aware of with the ICD, but I was only 34 and it dawned on me that life was going to change.

I've stopped doing vigorous exercise because it would be too much strain on my heart. Before I got my diagnosis I had been training for a half-marathon, but now I walk and do yoga. I have found a regular yoga class and it's perfect because it's in a little garden, it's calming and healing. I am in pretty good condition physically, so I am lucky.

When I first heard about my condition, I was worried about the limits it was going to put on our lives. But in some ways it's been good for us because we are more conscious of our health, like going to bed at a reasonable time! I've slowed down, which is not a bad thing.

Paul and I do a comedy act together, called Short and Curly. It's quite physical, but we've carried on with it. When I have appointments to check my ICD, if it ever shows my heart going a bit faster it has always been when I am on stage. But they say it's OK. Being able to carry on was crucial to me because it's part of my identity. It's who I am and what I love.

My condition can be inherited, so my family had genetic tests. My mum and two sisters were clear. I'd inherited the faulty gene from my dad, although he never developed the condition.

Starting a family

The year I got my diagnosis Paul and I had been planning to try for a baby, but there was so much to take in that we put it off until last year. We had to think about the risk of passing on my condition, and the strain of pregnancy and birth on my heart.

We went through a process called pre-implantation genetic testing, where they fertilise eggs through IVF and then test them for faulty genes. This method didn't work for us: I didn't get pregnant. So, Paul and I decided to try to get pregnant naturally. I was checked every four weeks throughout my pregnancy and that gave us both confidence.

I went into labour at 39 weeks, and needed an emergency caesarean. The moment I looked at Dot's face was incredible. Paul was smitten. When I was being stitched up, he was right by me and helping me to visualise the walks that we had been on together to keep me from panicking. Paul is my rock: he's been by my side throughout my recovery."

What I've learned

I have got friends that have been through some pretty hard times, with health and other challenges, and I have always been astounded by their strength. I've used their example, not to let my diagnosis consume me or take me over. It's made me think, if they can get through their challenges, I can get through mine.

> **"In some ways my diagnosis has been good for us as it's made us more health conscious.**

Paul's story

"When Becky first went into hospital I was fully expecting them to say it was something they would fix, but all of a sudden there were a lot of people in the room and they were trying everything to bring her heart rate down. I was in shock.

I felt whipped along because it was out of my control. I felt emotionally exhausted, hearing lots of new words, having to learn what they meant, and then what that reality meant.

You never think about losing a partner, but I was presented with that situation. When you come out the other side, it makes you very thankful.

When you are the partner you have to tell the families – her family and my family. And so I found myself repeating what we'd been told, as if I knew what I was talking about. It brought up lots of questions about our future together: would Becky ever run again? Could we have a child?

When she got her diagnosis, my overriding concern was how she would take it. I was proud that she seemed to take it positively. She reframed the experience, informing herself, and saying she was going to have this ICD in her chest to keep her safe. Obviously I have concerns about when her defibrillator might go off, but her reaction took a lot off my shoulders.

We're both performers, so that's how we work through things. She started working on a show, with other people who have heart conditions to explore what it's like to get a diagnosis. It helped Becky reclaim it as her experience, and it helped her work out that it wasn't the end of everything.

What I've learned

We've done a lot of walking together and talking as we go. Walking is a great way to give you the time and space to think about your lives, to process any anxieties and unpack how you feel about something.

We're stronger as a pair

We're a team. As well as being partners, we work on shows together, and this was another thing we had to work out together. In the show we are relying on one another. We have worked out how to make ourselves stronger as a pair than we are as single people. And I think that's what fed into our recovery from Becky's diagnosis.

Nonetheless, I had times when I felt a bit lonely, like when Becky had to go in to get the ICD fitted and she was gone for two hours and I was just waiting in the hospital. I don't have Becky's condition, yet I tag along with her on the whole experience.

There are times when I push Becky a little, for example to go on a train journey alone, or on stage for the first time after her diagnosis. It's an attempt to keep horizons broad. You should always start with saying "yes". You can't stop living your life.

The whole experience has made me more thankful. Becky survived, and now we have Dot. We are ridiculously in love with Dot. Becky and I have decided to pause our comedy duo show while Dot is so young. But later we definitely will do some shows where Dot will feature with us on stage." ●

Information and help

If you or your family are affected by an inherited heart or circulatory condition, our Genetic Information Service nurses can help you with your questions or concerns. Call us on 0800 456 8383 (weekdays 9am-5pm), or email hearthelpline@bhf.org.uk.
Read more about inherited heart conditions at bhf.org.uk/inherited and find out more about arrhythmogenic cardiomyopathy at bhf.org.uk/acm.

How to eat well when money is tight

As food costs continue to rise, eating healthily on a budget can be a challenge. Senior Dietitian Victoria Taylor gives some expert tips to help

With food costs higher than ever before, we understand that the size of your supermarket bill might be a bigger concern than whether it's healthy. But it's possible to look after both. By making healthy food choices, you'll be reducing your risk of long-term health issues like a heart attack or stroke.

Your 5-a-day

Any fresh fruit and vegetables can be included in your 5-a-day (apart from potatoes, yams and plantains which are starchy carbohydrates). Ideally, try to have as much variety through the week as you can.

It's worth looking out for special offers on fruit and veg, and buying them in season will be cheaper and tastier than out of season. Frozen fruit and veg also count towards your 5-a-day, and can be cheaper (especially when it comes to things like berries and cherries), as well as helping to avoid waste.

Tinned fruit and veg count towards your 5-a-day if they're tinned in water or juice, without added sugar or salt. Sadly, 'value' ranges of tinned foods sometimes have sugar and salt added. Most of us in the UK eat too much salt, and over time, this contributes to high blood pressure, which can increase your risk of heart attacks and strokes. We're also eating too much sugar, which can lead to putting on weight. So check the label and consider whether the one without sugar and salt is affordable. If not, perhaps you could switch to a different product (like tinned mixed vegetables in water, instead of tinned sweetcorn with sugar and salt).

> **"Most of us in the UK eat too much salt, and over time, this contributes to high blood pressure.**

Protein

Plant proteins – like beans, lentils and tofu – are generally the cheapest way to get protein, and because they're lower in saturated fat than meat, they're a great choice for your heart health too.

If you want to include meat in your diet, extra-lean mince is the healthiest way to buy mince, but it does cost more. The cheapest mince contains around four times as much unhealthy (saturated) fat, compared to extra-lean. If you need to buy the cheapest mince, you can reduce the fat if you cook it the day before, allow it to cool, refrigerate and then remove the fat from the top the next day. Or you might be able to use less meat in dishes like shepherd's pie, Bolognese sauce, stews and curries, by adding beans and vegetables. This will reduce the fat content, and if you don't need to buy as much meat, leaner options might become more affordable.

Skin-on pieces of chicken and pieces with bones are cheaper than skinless, boneless chicken pieces. Just bear in mind that chicken skin contains saturated fat, so remove it before cooking.

Tinned fish is cheaper than fresh, and doesn't even need cooking. Tinned salmon, sardines, mackerel and pilchards are oily fish, which we're recommended to eat once a week for our heart health. Frozen fish can also be cheaper than fresh – frozen fish fillets or pieces without added sauces or coatings are usually healthier than fish fingers or other breaded or battered fish, which contain added fat and salt.

Carbs

Wholegrain versions of bread, pasta, or rice don't necessarily cost more than the white versions. They'll help to keep your digestive system healthy, and can be more filling too.

Porridge oats are a healthy choice, and cheaper than many cereals. If you don't want to make porridge, you could try overnight oats (just soak porridge oats overnight in water, or low-fat milk or plant milk, mix in a pinch of cinnamon and some fruit).

> **"If you have three nutritious, balanced meals each day, you might find that you don't need to snack.**

Snacks

If you have three nutritious, balanced meals each day, you might find that you don't need to snack. But if snacks are part of your diet (or your family's), try to choose fruit, plain low-fat yoghurt and unsalted nuts for a more filling and nutritious choice. Bananas, satsumas and apples make good-value snacks and don't need any preparation, or if you have a little more time, making carrot and celery sticks can be even cheaper per portion, and any leftovers can be used in soups or stews.

Making your own popcorn instead of buying it ready-made, or as an alternative to crisps, can save money and can also be healthier, if you have it plain or flavoured with herbs and spices instead of salt, sugar or butter. Peanuts, sunflower seeds and pumpkin seeds are usually the most affordable nuts and seeds, and have similar health benefits to pricier nuts and seeds. Unfortunately, salted or roasted peanuts are often cheaper than plain unsalted nuts. Bear in mind that the salted ones might tempt you to eat more of them, and that too much salt can contribute to high blood pressure.

Avoiding waste

It's estimated that between a fifth and a quarter of food that we buy is wasted. Planning what you will eat will help ▸

Avoid wasting food – and money – by using leftover veg in soup. Adding beans will make it more filling

you make sure you're eating a healthy, balanced diet, and reduce waste. Writing a meal plan doesn't have to be complicated, and helps you plan for days when you might not have time to cook and so avoid buying food you won't get around to cooking.

Almost any leftover vegetables can be made into soup, perhaps with a tin of cannellini or butter beans to make it more substantial. This can be healthier than buying soup, as you can make it without adding salt, and add herbs or spices instead of salty stock. You can freeze soup in portions for another day. Sliced bread, muffins, crumpets and buns won't go mouldy or stale if you store them in the freezer and just take out what you need. Freezing is also a good way to take advantage of end-of-the-day offers on wholegrain bread.

Cheaper cooking methods

Microwaves and pressure cookers tend to be the most energy-efficient ways of cooking, so can save you money on your energy bills. When it comes to slow cookers, it depends on what temperature setting you're using, but it may work out cheaper than using the oven. If you are thinking of buying one of these appliances, BHF Home stores sell pre-loved models, which have been tested to make sure they work and are safe to use, and are cheaper than buying new.

If you are using the oven, you can reduce the energy cost per dish by batch cooking. If you are baking fish for dinner, for example, serve it with roasted veg that you can cook alongside and homemade potato wedges cooked in the oven. You can cook double portions so that you have leftovers for the next day. You can also try turning the oven off five to ten minutes before the end of the cooking time, as the food should finish cooking in the heat that's still in the oven. This works well for casseroles, vegetables and shepherd's pies, but less well for things where the exact temperature is important, like biscuits and cakes.

If you are cooking on the hob, use the smallest pan you need for the job and put a lid on it to speed up cooking and save on the amount of fuel you use. Try not to boil more water in the kettle than you need, but if you have leftover boiling water, you can put it in a flask to use for hot drinks later.

> **"When it comes to slow cookers, it depends on what temperature setting you're using, but it may work out cheaper than using the oven.**

- Get our guide to a week of eating healthy meals on a budget at bhf.org.uk/budget. ●

Where to get more support

Make sure that you're claiming any benefits you're entitled to. The Turn2us online benefits calculator (turn2us.org.uk) can help you to check. If you're over 50, Age UK offer help with claiming benefits – their Advice Line is 0800 678 1602. You can also contact Citizens Advice (citizensadvice.org.uk) for help.

If you need emergency support, there are food banks around the UK. You may need a referral from a professional such as a social worker, doctor, health visitor, or probation worker or Citizens Advice. Speak to Citizens Advice or Age UK to find out about your local food bank and whether you can get a referral.

Fish pie with carrot and cauliflower topping

Preparation time: 20 mins
Cooking time: 45 mins
Serves: 4
Suitable for home freezing

Each portion contains

Energy	Carbo-hydrate	Fibre	Sugars	Fat	Saturates	Salt
1165kj 277kcal 14%	24.7g	6.8g 23%	15.8g Low 18%	5.5g Low 8%	2.8g Low 14%	0.62g Low 10%

% = of an adult's reference intake (Traffic light colours are based on per 100g)

How we made it healthier
Mashed carrots and cauliflower on top means this pie will contribute to your 5-a-day, as well as to the two portions of fish we're recommended to eat each week. You can use salmon instead of white fish to get the heart-health benefits of oily fish.

For the filling

550ml (1pt) skimmed milk

2 leeks, trimmed and thinly sliced

100g (4oz) button mushrooms, sliced

25g (1oz) cornflour

1tbsp fresh parsley, chopped

75g (3oz) frozen peas

250g (9oz) white fish fillet such as cod or coley (or use salmon fillet instead), skin removed and cut into chunks

150g (5oz) peeled prawns

For the topping

450g (1lb) cauliflower

3 medium sized carrots, peeled and diced

50g (2oz) reduced-fat ('light') soft cheese with garlic and herbs

Method

1 Preheat oven to 180°C/160°C fan/ gas mark 4.

2 Pour 500ml (18fl oz) of the milk into a small saucepan and place on a low to medium heat.

3 Add the sliced leeks and mushrooms to the milk and simmer gently for 3 to 4 minutes to soften. Strain the milk through a sieve or colander into another pan and bring the milk back to a simmer.

4 Mix the remaining 50ml (2fl oz) milk with the cornflour to a smooth paste. Whisk into the pan of hot milk and cook, stirring, until you have a thickened sauce. Add the chopped parsley, cooked leeks and mushrooms along with the peas, fish chunks and prawns, and season with pepper. Spoon into an oven-proof dish.

5 Blitz the cauliflower to fine crumbs in a food processor. (If you don't have a food processor, cut it into florets and cook with the carrots, then mash with the carrots.)

6 Boil the carrots for 10 minutes, until fairly soft. Drain and mash with the blitzed cauliflower and soft cheese.

7 Spoon the carrot and cauliflower mixture on top of the fish pie filling.

8 Bake in the oven for 25-30 minutes until beginning to brown and bubbling at the edges.

Photography by Steven Joyce

Pull out and keep

Low-fat lasagne

Preparation time: 20 mins
Cooking time: 1 hr
Serves: 4
Suitable for home freezing

Each portion contains

Energy	Carbo-hydrate	Fibre	Sugars	Fat	Saturates	Salt
1255kj 298kcal 15%	35.6g	12.2g 21%	14.1g Low 16%	5.4g Low 8%	2.7g Low 14%	0.45g Low 8%

% = of an adult's reference intake (Traffic light colours are based on per 100g)

For the filling

200g (7oz) 5% fat minced beef

1 small onion, peeled and chopped

1 red pepper, deseeded and finely diced

1 green pepper, deseeded and finely diced

100g (4oz) button mushrooms, wiped and quartered

1 medium courgette, trimmed and thinly sliced

2 garlic cloves, peeled and crushed

400g (14oz) can chopped tomatoes

6 fresh basil leaves, torn

4 wholewheat lasagne sheets

15g (½oz) grated parmesan

For the white sauce

2tbsp cornflour

300ml (10fl oz) skimmed milk

100g (4oz) low-fat soft cheese

Method

1 Preheat oven to 180°C/160°C fan/gas mark 4.

2 Add the mince to a non-stick frying pan and cook on a medium heat until completely brown, stirring so the mince doesn't clump together.

3 Add the onion, peppers, mushrooms, courgette and garlic and cook for a further 5 minutes.

4 Add the chopped tomatoes, season with black pepper, stir well, then simmer for 20 minutes with a lid on. Stir in the basil.

5 Meanwhile, make the white sauce. Add the cornflour to a small saucepan and add 3tbsp of the milk to form a paste. Once smooth, gradually add the remaining milk and cook over a medium heat, stirring with a whisk until you have a smooth sauce. Beat in the low-fat soft cheese.

6 To assemble the lasagne, spoon a third of the meat and veg mix to a lasagne dish, top with two sheets of the lasagne then another layer of the mince. Add the remaining two lasagne sheets, the final portion of the mince then pour the white sauce over the top and sprinkle with the parmesan.

7 Bake for 25 minutes until topping is golden and bubbling. Serve hot with a green salad.

How we made it healthier
Using lean mince (5% fat) means this lasagne is lower in saturated fat than a standard lasagne. Lean mince can cost a bit more than the fattier kind, but we've added lots of vegetables, so you don't need as much, and they contribute to your 5-a-day too. We've also cut the fat in the cheese sauce – this one uses cornflour so you don't need butter, plus low-fat soft cheese for creaminess, and parmesan for great flavour without too much cheese.

Pear and raspberry crumble

Preparation time: 10 mins
Cooking time: 30 mins
Serves: 4
Suitable for home freezing

Each portion contains

Energy	Carbo-hydrate	Fibre	Sugars	Fat	Saturates	Salt
1343kj 321kcal 16%	43.1g	5.3g 18%	25.1g Med 28%	13.4g Med 19%	2.5g Low 13%	0.22g Low 4%

% = of an adult's reference intake (Traffic light colours are based on per 100g)

For the filling

3 medium pears, peeled, cored and sliced

1tsp almond extract

100g (4oz) fresh or frozen raspberries or blackberries

For the topping

50g (2oz) plain flour

50g (2oz) porridge oats

55g (2oz) unsaturated fat spread (such as a sunflower, olive or other plant-based spread)

50g (2oz) demerara sugar

10g (¼ oz) flaked almonds

How we made it healthier
This crumble uses unsaturated fat spread instead of butter to reduce the saturated fat content, while an oaty topping adds fibre.

Method

1 Preheat oven to 180°C/160°C fan/gas mark 4.

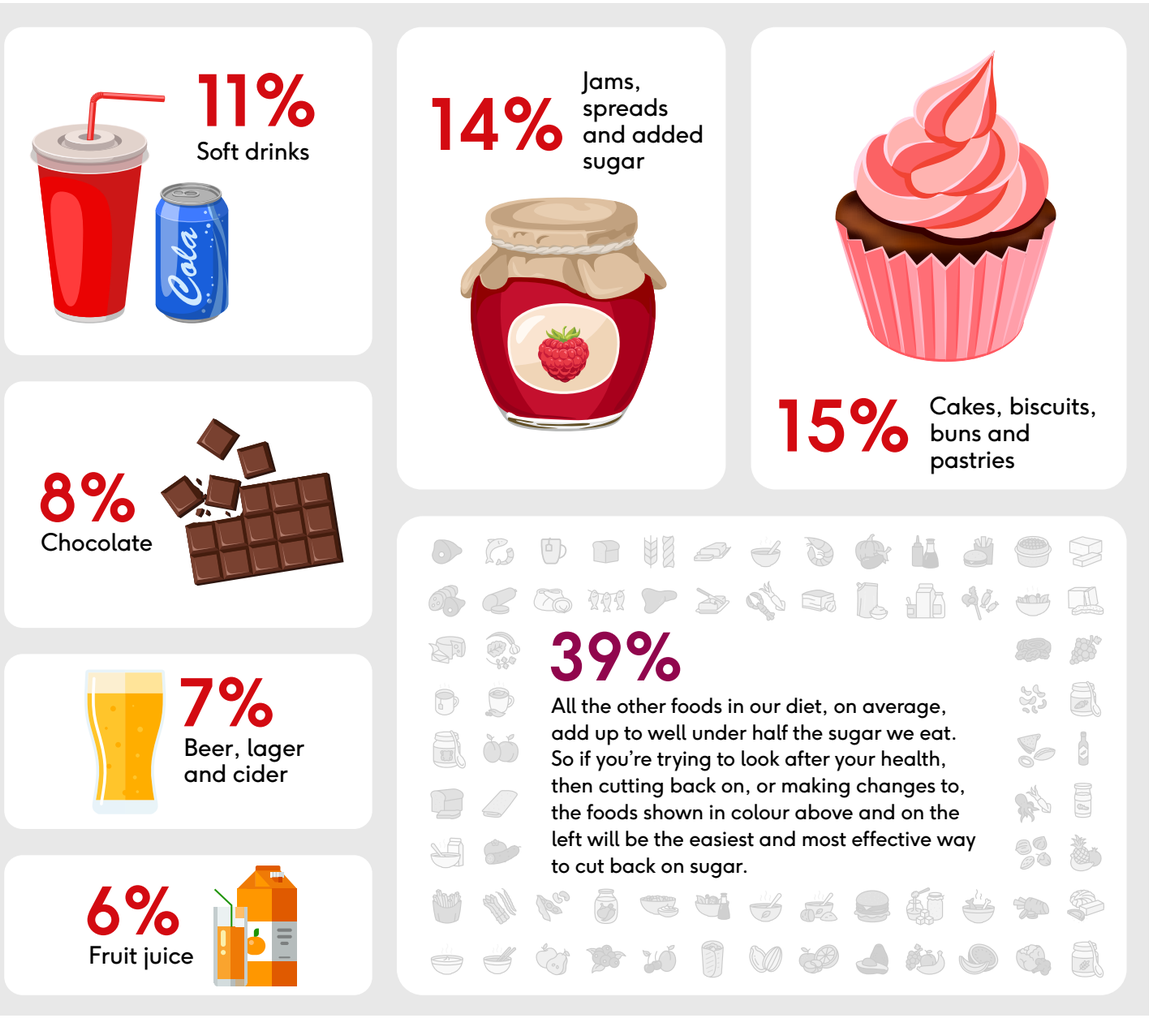
2 Place the pears in a small pan with 100ml (4fl oz) cold water and almond extract. Bring to the boil, cover and simmer for 5 minutes. Remove from the heat and stir in the raspberries.

3 Sift the flour into a mixing bowl and stir in the oats. Rub in the spread with your fingertips so the mixture resembles breadcrumbs, then stir in the sugar.

4 Spoon the pear and raspberry mix into an ovenproof dish and scatter the crumble mix over the top. Sprinkle with the flaked almonds and bake for 25 minutes until golden. Serve as it is, or with low-fat yoghurt or low-fat custard. ●

Which foods add the most sugar to our diets?

Most of us eat too much sugar – but which foods are the culprits? Here's the percentage of sugar in the average UK diet that comes from different foods:



Source: *National Diet and Nutrition Survey (2016-2019). Data from participants aged 19-64

We don't need to remove all sugar from our diets, but almost all of us could do with cutting down on free sugars. These are added to food, or the sugars in juice (they are 'free' because they are no longer inside the cells of the fruit).

Free sugars are often said to provide 'empty calories' because apart from the energy (calories) they give us they have little nutritional benefit. A diet high in free sugars tends to be a high-calorie diet, and this can lead to weight gain, which can increase your risk of high blood pressure, heart and circulatory diseases and some cancers.

The guideline daily maximum is for no more than 30g (7½tsp) of free sugars – but most adults are consuming nearly 50g (12½tsp), and teenagers are having even more.

The government's National Diet and Nutrition Survey tells us which foods contribute the most free sugars to our diets. Apart from yogurt, most of these foods have limited nutritional value, and some of them are major contributors to the unhealthy (saturated) fat in our diet too. So cutting back and swapping for more nutritious foods is a win-win for your health.

Jams, spreads and added sugar - 14%

Most jams, marmalades and chocolate spreads are about half sugar. Together with honey, syrups and sugar we add at the table and to hot drinks, these are the second biggest source of sugar in our diets. Reduced-sugar jams can help cut the amount of sugar you eat – or, for an even bigger difference, try sliced banana, or peanut butter and banana, on your toast instead (this will also help towards your 5-a-day).

Adding just one teaspoon of sugar to two of cups of tea a day adds nearly 3kg (6lbs 6oz) of sugar and 11,680 kcals over a year. To cut out sugar from your tea and coffee, try reducing the amount you add gradually over the course of a week or two, so your taste buds get used to it.

Soft drinks - 11%

Soft drinks like fizzy drinks and squash are a significant source of free sugars in our diets, contributing 11% of our sugar consumption. If you are having soft drinks, choose sugar-free varieties. Even better, try to drink water flavoured with slices of cucumber, lemon, orange or fresh mint.

Cakes, biscuits, buns and pastries - 15%

These sweet foods are the biggest contributors to the unhealthy free sugars in our diet, making up 15% of the sugars consumed by the average person in the UK. They're also one of the biggest sources of unhealthy (saturated) fat, so there's more than one reason to cut down. Generally, buns, tea cakes, and crumpets are lower in sugar and fat than cakes and pastries – as long as you don't add butter or sweet spreads to them. Try to keep biscuits for an occasional treat, and stick to one or two at a time. Plain biscuits like rich tea or ginger nuts tend to be lower in sugar and saturated fat than chocolate-coated biscuits or ones with a jam or cream filling.

Chocolate - 8%

Virtually all chocolate – milk, white or dark – is high in sugar. Even 70% dark chocolate is still high in sugar (although less than milk or white chocolate). Chocolate is also one of the top sources of unhealthy saturated fat in our diet, so there's twice the reason to cut back. It's fine to enjoy a small portion of chocolate occasionally, but keep an eye on portion sizes.

Beer, lager and cider - 7%

You might not think about beer or cider as being sugary, but these drinks are one of the biggest sources of sugar in our diets – much more than wine or other alcoholic drinks. Alternating alcoholic drinks with water, and limiting the number of days when you drink alcohol, can help reduce the sugar in your diet, as well as reducing your risk of the harmful health effects that alcohol is linked to.

Fruit juice - 6%

Once fruit is turned into juice, its sugars become free sugars, and most of the fibre is lost, so it's better to eat the whole fruit. Fruit juice is also a more concentrated source of sugar, because a glass of juice usually contains the juice of more fruits than you'd typically eat in one go. If you drink juice, keep to one small glass. ●

How to spot sugar on food labels

The amount of sugar is listed in a packet's nutrition information, and sometimes on front-of-pack traffic light labels. These figures include all sugars, including those naturally in the food (which are less of a problem) as well as free sugars.

The traffic lights are based on the amounts per 100g. Green is low (5g or less sugar per 100g), amber is medium (5-22.5g sugar per 100g), and red is high (more than 22.5g sugar per 100g, or more than 27g per portion). The percentage on a traffic light label is a percentage of your recommended daily maximum (reference intake) – not how much is in the product.

To spot added sugars, check the ingredients list. Look out for syrups, glucose, fructose, and concentrated fruit juices. The nearer the start of the ingredients list the sugar is, the more there is in the product.

Ask the expert

Send in your nutrition questions

Email: **HMeditor@bhf.org.uk**

Call our Heart Helpline: **0300 330 3311**

Write to: **Heart Matters, British Heart Foundation, 180 Hampstead Road, London NW1 7AW**

Q I hear there's new advice about how to tell if you're overweight – what does this mean for me?

Victoria Taylor is the BHF's Senior Dietitian with 20 years' experience

A The public body that makes health recommendations in England, the National Institute for Health and Care Excellence (NICE), has updated its overweight and obesity guidelines. There's a new way to identify if your weight could affect your health risk: you're encouraged to keep waist size to less than half your height. So, if you are 170cm tall (5ft 7in) then your waist circumference should be less than 85cm (around 33in).

It works as a guide because fat stored around your middle is linked to a greater risk of heart and circulatory diseases compared with fat stored around the hips and thighs.

Other methods like body mass index (BMI) and waist size are still likely to be used by healthcare professionals. But "waist size less than half your height" is easy to work out. It's also easier to remember than the standard waist size guide, where the sizes that put you at increased risk are different for men and women, and for different ethnic backgrounds.

A quick, easy measure like this can help us all to monitor our health at home and be proactive about deciding whether we want to seek further help or support to address our weight.

Q We're constantly being told to eat less salt, but this is difficult when so many of the foods in the shops are high in salt. Is the food industry doing anything to help?

A You're right – as much as 85 per cent of the salt we eat is already in the foods we buy. The food industry has made some progress with reformulation, which means changing food and drink to make it healthier. Since 2000, average salt intakes in the UK have reduced from around 9g to 8.4g per day, mainly due to reformulation. But we still eat too much salt – the recommended maximum is 6g per day.

Progress has been slow, partly because manufacturers prefer to reduce salt in products gradually, so we don't notice the difference. Reformulation efforts have also slowed. Only about half of the voluntary targets set in 2014 have been met.

A report commissioned by the BHF this year highlighted that a reduction in our salt intake to 6g per day by 2024, followed by a further reduction to 5g by 2030, could result in 180,000 fewer cases of coronary heart disease and stroke in the UK by 2035. There is still a real opportunity for manufacturers to commit to further reformulation. We'd like to see bold action from government and industry to build on the progress already made.

- Read our report into how reducing the UK's salt intake could improve our health at bhf.org.uk/saltreport.

How to deal with medication side effects

Illustration by Andrea Ucini

If you're worried about starting a new medication, or you're having issues with side effects, Senior Cardiac Nurse Chloe MacArthur has tips to help

If side effects are bothering you or putting you off taking medicines, you're not alone. But it's worth remembering that your doctor has prescribed them to keep you as well as possible and because in their view, the benefits outweigh the risks for you. So, don't just stop taking them: read on to find out why side effects happen and what to do.

Why do medicines cause side effects?

There are several reasons why medicines can cause side effects. Firstly, the intended effect of the drug might cause issues. For example, blood thinners are designed to reduce your risk of a heart attack or stroke, by making blood less likely to clot. But that can also mean that it takes longer to stop bleeding if you cut yourself, and you may bruise more (see page 34).

Many medicines work by targeting the chemicals your body uses to control its processes. Sometimes, the same chemical controls more than one process, or a medicine may affect more than one chemical. For example, beta blockers block the release of the stress hormones adrenaline and noradrenaline in parts of your body. This slows the heart rate down and can also lower blood pressure. This means they can be a useful medication for high blood pressure, but if you're taking them to control your heart rate or treat angina, and your blood pressure is already normal, the blood pressure-lowering effect may lead to dizziness.

> **"Getting it right can mean a bit of trial and error, but it's worth persisting so you can take your medication and stay as well as possible.**

It may be that a particular ingredient doesn't suit you, or your medication could be interacting with other medication or supplements you take.

There is also lot of research to show that if we expect to get a side effect, we will. This is called the 'nocebo effect'. Several research studies have found that most side effects from statins are caused by the nocebo effect – people get almost the same rates of side effects when they are taking a dummy pill.

I'm worried about side effects: what should I do?

It's normal to be worried about getting a side effect when you're already dealing with a health problem. But try not to think about it too much. The nocebo effect is heavily influenced by your expectations – the more you expect to get a side effect, the more likely it is that you will. It can be useful to remember that most of the main heart medications are taken by millions of people every day, and many of them experience no side effects at all. We're all different, so even if a friend or family member had a side effect from a particular medication, that doesn't mean that you will.

Antania Tang, senior advice and support pharmacist at the National Pharmacy Association, says: "All medicines have possible side effects, but you may not experience any of them. Remember you want to treat the problem that you went to see the GP about. If you don't start your medication, you won't be treating that problem."

What to do if you get side effects

Many people find that side effects only last a few days after starting a new medication. If you continue to have problems, talk to your doctor, pharmacist or specialist. Keeping a diary of any side effects can help them understand how you've been feeling. Some side effects might feel difficult or embarrassing to talk about, but they will have heard similar questions before, and can help you find a solution.

> **"There is also a lot of research to show that if we expect to get a side effect, we will.**

> **"Some side effects might feel difficult or embarrassing to talk about, but your doctor will have heard similar questions before.**

They may be able to suggest changes, such as a lower dose, or splitting the dose across the day. If that doesn't work, you may be able to try an alternative medicine. Or they may be able to give you another medication to help with side effects.

Another possibility is changing the way you take your medication. Ms Tang explains: "Your doctor may suggest that it's best to take your medication with or after food if it's causing stomach irritation. Or if it's a water tablet (diuretic) and you're being disturbed by having to get up a lot at night, they may say take it in the morning, not in the evening."

Getting it right can mean a bit of trial and error, but it's worth persisting so you can take your medication and stay as well as possible.

Tell your GP or pharmacist straight away if your medicines are causing dizziness (which might increase the risk of you having a fall), severe nose bleeds, or other side effects that are worrying you. Don't just stop taking the medication: wait until you have spoken to a health professional, as stopping may cause other problems with your health.

How a pharmacist can help

Pharmacists are experts in medication and can be a good source of information and support. You don't need an appointment. You can visit or call any pharmacist – it doesn't have to be your nearest (handy if you're away from home).

Antania Tang, from the National Pharmacy Association, says: "They can help you explore the problem and determine if you need to speak to your GP. Pharmacies are open longer hours than GP practices and are often open over the weekend.

"If you live in England and you've started a new medication, your pharmacist can provide support and advice over the first few weeks through the New Medicine Service." Ask your pharmacist about it when you take your prescription to the pharmacy.

In Scotland, there is a Medicines, Care and Review Service to help people with long-term conditions: ask your pharmacist for more information. There are slightly different schemes in Wales and Northern Ireland – but if you need help with your medication or side effects, it's always worth asking your local pharmacy.

Soma's story: "I found a way through my side effects"

Soma Biswas, 55, from London, has been on medication for type 2 diabetes, high blood pressure and high cholesterol for 11 years, but five years ago she started experiencing unpleasant side effects.

"I began to have problems with a weak bladder. My doctor suspected it may be the diabetes medication, but I couldn't stop taking it, as it was controlling the diabetes so well. Having a bladder problem was really affecting my life and I began to feel ashamed and depressed.

It did take a while for my doctor to understand what a big issue this was for me. I was given some pelvic floor exercises to do, but they didn't help. Then I got referred to a specialist, although even then I had several appointments that were cancelled. So it took a long time, but I was started on a new medication to help with the problem and it has made a big difference. I can now focus on what's important to me, such as looking after my son and training for a pilgrimage through north and east India.

What I'd say to other people is, don't just stop taking your medication. Ask your doctor for help. Keep asking if you need to – it's important to find a solution to your medications that protects your health and still allows you to live your life." ●

A day in the life: Professor Sanjay Sinha

"I want to be able to offer people with heart problems better treatments in future"

Professor Sanjay Sinha tells us about his team's work to make the Healing Heart Patch a reality, and how he's running the TCS London Marathon to raise vital funds for the BHF to help that happen sooner

06:00 I get up at 6am, and always start my day with Weetabix. I like to top them with almonds, seeds and berries.

Before work, I try to exercise, either on my rowing machine or going for a run. Until recently, I hadn't run regularly for years. But when I heard that the BHF was the charity of the year for the TCS London Marathon, it inspired me to get my running shoes on. My team simply couldn't keep doing all their exciting research without funding from the BHF. And I'm also doing it because I treat people with heart problems, whose courage in the face of their illness really inspires and drives me.

08:00 I'm a cardiologist, and I divide my time between research at the University of Cambridge and working at Addenbrooke's Hospital. I work in the cardiology clinic every two weeks, and every 10 weeks I spend a full week in the hospital – 24 hours a day – supervising the treatment of people with heart problems.

The rest of the time, I'm based at the Cambridge Stem Cell Institute. I'm usually there by 8am and catch up on emails or paperwork.

09:30 My first meeting of the day is with all the members of my research group. Usually one person will present their results for us to discuss.

Half of the team is developing 'heart patches' to repair damage caused by a heart attack. Heart muscle can't regrow, so people who have a heart attack can be left with hearts which aren't able to pump blood properly. This is called heart failure. The only cure is a heart transplant.

So we want to try delivering new heart muscle cells into the heart as a 'patch'. To do this, heart muscle cells are grown in the lab from stem cells and added to a scaffold made from the protein collagen. The scaffold looks like a sponge, and encourages the heart muscle cells to line up and beat effectively. Two weeks later, we'll have a thumbnail-size, beating patch.

The patches are being tested on damaged rat hearts, to see if they help the heart to beat. We've found that they work better if epicardial cells, found on the outside of the heart, are included in the patch. From studying how hearts develop in the womb, we know that heart muscle can't grow properly without epicardial cells, so putting these cells together in the patches is applying what Mother Nature has told us about how to build a heart.

Once we've shown that the patches are safe and effective in rats, we'll start the first tests with people. A thumbnail-sized patch is big enough for a rat heart, but we might need a patch the size of my palm to help repair a human heart. We hope to start the first tests with people within five years.

> **"This heart 'patch' will provide additional muscle to help damaged hearts.**

11:00 I'm the Deputy Director of the Stem Cell Institute, so the rest of my morning will include meetings related to that. The Institute brings together scientists working in stem cell research across a wide range of fields.

13:00 After a working lunch at my desk, I meet individually with members of my team. It's important they feel supported and can ask for advice.

The half of my team that isn't working on the heart patches is using stem cells to mimic diseases 'in a dish'.

We grow cells from skin and blood samples taken from people with genetic conditions. We turn then into stem cells, and then blood vessel cells, for example. As these cells have the same genetic differences as the person who donated their sample, they can help us understand how these differences lead to the symptoms of the genetic condition. We can also use them to test potential treatments.

15:00 I spend the rest of the afternoon writing grant applications or research papers. Applications to funders like the BHF are an essential part of my work. Nine out of the 14 people currently working in my lab are BHF-funded.

18:30 I head home and my wife and I will go for a walk. If I haven't managed to run before work, I might go for a short run to keep on top of my marathon training.

20:00 At home, I sometimes need to fit in extra work, like preparing to give a lecture. After dinner, it's important to have some time to wind down, so I might read or play chess.

23:45 Time for bed. While the days are long, I love the work I do. The research our amazing team does is so exciting, and seeing so many people affected by heart failure and other heart and circulatory diseases in the hospital brings home its wider importance. ●

With your support we can get breakthroughs like the Heart Healing Patch over the line. Sponsor Sanjay at bhf.org.uk/runsanjay. If you're not online, you can still support the BHF and our researchers – details in the editor's letter on page 3.

Transgender people and heart risk

Recent research suggests that being transgender could be linked to heart problems. Lucy Trevallion investigates whether this is true and what can be done to reduce the risk

Up to 500,000 people in the UK identify as transgender (trans), meaning their gender identity is different from the biological sex that's assigned to them at birth.

For Gary Rolfe, 59, who was born female, this is the case. "When I was a young child growing up in Hong Kong, I presumed that I was male, and used the boys' toilets and wore swimming trunks, and was allowed to do that. Then I remember getting older and being told I can't do that anymore."

After a long and difficult journey, Gary transitioned medically at the age of 49. When he got his first testosterone injection, he felt overwhelmed with relief.

Three years after beginning testosterone injections as he transitioned, Gary began feeling pain in his arm when he was walking up a hill near his home in Hastings. He put it down to indigestion, so he didn't worry too much.

Gradually it got worse over two years, and Gary had an angiogram. It showed that the arteries supplying blood to his heart were almost completely blocked.

"I was in my early 50s and really healthy. I did have some family history of heart problems, so that might be a factor. But there didn't seem to be any answers about why it happened to me, or whether testosterone had an impact – although when I asked one doctor about it, he said: 'What do you expect when you take testosterone?'"

Unfortunately, Gary's experience reflects the lack of research and understanding around transitioning and heart health.

Hormone therapy and heart problems

Gender-affirming hormone therapy is used by some trans people so that their body more closely matches their gender identity. It usually involves taking either testosterone or oestrogen, and means that hormone levels will need to be monitored for the rest of their lives.

Gary says: "For a trans person the hormone treatment makes it possible ▸

Photography by Ollie Holder

for you to live, because you can't live otherwise. Nobody would choose to be trans, and it doesn't feel like a choice to take hormones."

There is some concern about a possible link between gender-affirming hormone therapy and the risk of heart and circulatory problems, including some evidence for a link with blood clots and dyslipidaemia (increased levels of fat in the blood). But there's a lack of research in this area, and the research that does exist is often contradictory.

In 2019 Dr Paul Connelly, Clinical Lecturer at the University of Glasgow, led a BHF-funded review of previous research looking at the effects of hormone therapy. The researchers found some evidence for an increased risk of heart attacks and stroke in trans women, but not for trans men - though they did find higher blood pressure and cholesterol levels in trans men. But overall, they found that the quality of previous research was too poor to reach a conclusion. And some other studies have found an increased risk of heart attacks in trans men.

Dr Connelly explains: "We've been using gender-affirming therapy for decades and yet the research in this area is only in its infancy."

Many of the studies that do exist are small, or only had a short follow-up period, and some look only at younger trans people. Usually, the gold standard of testing the effects of a medication is a randomised controlled trial, where people are chosen randomly to either receive the treatment or an inactive placebo: but this isn't possible or ethical when it comes to gender-affirming hormone treatment.

Some studies have suggested that gender-affirming hormone therapy is linked with higher blood pressure, both for trans men and trans women. But recent research papers, including a review of research on this topic published by Dr Connelly, have concluded that there's not enough evidence to be sure.

Not only is the research often contradictory; many questions remain unanswered. Why would hormones have an effect on the cardiovascular system? And why is it that when oestrogen reduces the risk of heart disease in cisgender women, it potentially increases the risk for transgender women?

Dr Connelly says: "We do not know for certain what the hormones do and why they could cause cardiovascular problems, but we know gender-affirming hormone treatment is lifesaving to many people and I wouldn't advise trans people stop this therapy. But we do need to research it better so we can reduce any risks."

The effect of stigma

What we do know is that trans people, whether or not they take hormones, are at higher risk of heart attacks and strokes. For example, a large 2019 study of people in the USA, led by George Washington University, found trans people had a higher reported history of heart attacks compared to cisgender people (people whose gender identity matches the biological sex they were born with), even after adjusting for other risk factors.

Some of this is likely to be due to stigma and social factors. Dr Connelly explains that stigma and stress is common for trans people, and that this can also affect their cardiovascular health.

Gary moved to London in his 20s, living as, he says, "for want of a better term, a butch lesbian", but received a lot of abuse there. "I remember people singing very offensive songs to me on the bus, and I was always being thrown out of the women's toilets. It was traumatic."

> **"Some studies have suggested that gender-affirming hormone therapy is linked with higher blood pressure.**

When Gary learnt about the option of medically transitioning, in his 30s, he thought: "Oh no, please don't let that be possible." He'd seen the abuse trans people received, and he was already estranged from his family. He felt that if he transitioned, he could lose his job as a social worker, partner, friends, and lose his place in the gay community.

Dr Connelly says: "Transgender people can persistently face stigma (both internalised and from others), and experience discrimination and violence, which create psychological distress." When you are consistently facing stress and distress, and experiencing poor mental health, it's very hard to make positive lifestyle changes, and that can increase your risk of developing heart and circulatory diseases.

"Discrimination increases the risk of unhealthy behaviours like smoking," adds Dr Connelly. He says that it's important that health services such as stop smoking services and blood pressure checks are offered to transgender people in an inclusive way.

Bypass and recovery

In 2014 Gary had a triple bypass. When he was home he started having anxiety attacks, always just as he was about to go to sleep, and went to A&E a couple of times. "My GP was amazing. He'd speak to me on the phone and reassure me 'you've had a massive trauma', and he taught me some techniques for anxiety." Gary found it very helpful to write down his worries and his symptoms and to remember that "actually this is probably just anxiety". "It kind of took away the jumbled up, anxious stuff going on in my head. It just ordered it a little bit better."

During his recovery, Gary tried to exercise every day and gradually build up his fitness. "There was the Hastings seafront to walk up, but there was a lot of distance between the benches and I felt vulnerable as there were a lot more people and cyclists. So, I walked in Alexandra Park, walking from one bench to the next, and then getting a coffee at the end. It was so good because it gave me something to focus on, something positive. It started to build up my return to normal life."

Gary now runs support groups for transgender people in his community and is working to help trans people get better healthcare.

Gary says, "Trans people are just people, like everybody else, and have health issues like everybody else, and they deserve to have good health care, like everybody else."

- If you identify as trans or non-binary and have experience of heart or circulatory problems, we'd love to hear from you. If there's more you would like us to cover on this topic, please email HMeditor@bhf.org.uk or write to Sarah Brealey, Heart Matters, British Heart Foundation, Greater London House, London, NW1 7AW ●

How you can manage your risk

If you, or a loved one, are transgender, you may be at higher risk of heart and circulatory problems. Reduce your risk by:

- Making sure your GP is regularly checking your hormone levels.
- Getting a health check, including your blood pressure. You might be recommended to have a health check regularly depending on the results.
- If you have a family history of heart problems, ask at your GP surgery for a cholesterol test. Find out more at bhf.org.uk/cholesterol-test.
- Smoking can clog your arteries and lead to a heart attack or stroke. If you smoke, ask your GP about services near you, or learn small ways to make changes at bhf.org.uk/smoking.
- Take control of your drinking: even cutting down can make a difference. Find out more at bhf.org.uk/alcohol.
- Know your rights as a trans person, or get support with issues like discrimination at stonewall.org.uk or call 0800 050 2020. Mermaids offers support for gender-diverse young people and their families, at mermaidsuk.org.uk or 0808 801 0400.

Ask the expert

Send in your medical questions

Email: **hearthelpline@bhf.org.uk**

Call our Heart Helpline: **0300 330 3311**

Write to: **Heart Matters, British Heart Foundation, 180 Hampstead Road, London NW1 7AW**

Chloe MacArthur
Senior Cardiac Nurse at the British Heart Foundation

My wife recently had a lot of bruising on her leg. Is bruising a side effect of blood thinners? How do you know whether it's something more serious?

A **Chloe MacArthur says:**
Blood thinners (anticoagulants such as warfarin, or antiplatelets such as aspirin or clopidogrel) are taken by many people with heart and circulatory conditions. They interrupt the body's clotting process, to help reduce the risk of clots which could cause a stroke or heart attack. This can mean that you are more likely to get bruising.

For most people taking these medications, this is usually very manageable and isn't something you need to worry about.

Bruises happen when the smallest blood vessels under the skin (capillaries) break and start to leak, causing discolouration. Blood thinners are designed to slow down the blood clotting, so the broken blood vessels take longer to stop leaking, which can lead to a worse bruise or bruising more easily.

If you notice that an increase in bruising comes soon after you start taking a blood thinner, there's a good chance that the two are related. But bruising can have many causes, including some illnesses and some vitamin deficiencies. If you're worried about the bruising, or if you're experiencing other new symptoms (including other signs of bleeding, such as nosebleeds or bleeding gums), speak to your GP or specialist. You may need your blood thinner dose changed, or you may need to try a different medication. And if you are worried that your bruising is caused by something else, they will be able to reassure you or refer you for more tests.

• Turn to page 25 for more on drug side effects.

I've been told my heart condition is idiopathic. What does this mean?

A **Chloe MacArthur says:**
If a heart condition is idiopathic, it means that the cause is unknown. Lots of heart conditions can be idiopathic. A common example is atrial fibrillation (AF). AF can be caused by something specific, such as high blood pressure, but some people never find out what caused their AF.

Even with all the available tests, the cause of some heart conditions remains unknown. Patients often tell me that when an answer can't be found, it can feel disheartening and frustrating, and some people find it makes it harder to come to terms with their diagnosis. Remember that these feelings are normal; it takes time to adjust to any diagnosis.

You might find it helpful to connect with others who have had a similar experience. Our online community (healthunlocked.com/bhf) is a good place to find other people in the same position as you. Or, we have more than 140 Heart Support Groups across the UK – find out more at bhf.org.uk/supportgroups or, if you're not online, find your nearest by calling 0300 330 3300.

It can be helpful to remember that not knowing the cause does not necessarily affect the treatment you get. So even if you don't know why you've developed a heart condition, your medical team will still support you and help you to feel better.

Is there a link between infertility and heart problems? And what can I do about it?

A **Professor Abigail Fraser says:**
There is some evidence of a link between female infertility and heart problems, and weaker evidence of a link between male infertility and heart problems.

Infertility is defined as the inability to get pregnant despite having regular unprotected sex for a year or more.

Female infertility has many causes, including premature ovarian insufficiency (POI), polycystic ovary syndrome (PCOS), endometriosis, fibroids, pelvic inflammatory disease, and differences in the way a womb or other parts of the reproductive system are shaped. Thyroid disorders, certain medicines and cancer treatments can also affect fertility.

Many studies of women with infertility, as well as studies of some causes of infertility including POI, PCOS, and endometriosis, have found they have a greater risk of heart disease later in life. The studies have also found these women are more likely to have risk factors for heart disease such as excess weight or obesity, high blood pressure, high cholesterol levels and diabetes.

There is no evidence that heart disease causes infertility in women. Most women with congenital heart disease can have a successful pregnancy, although some may be advised against becoming pregnant because it puts an extra strain on the heart (see bhf.org.uk/pregnancy).

We also don't know for certain if fertility treatment can cause heart disease in the long term. We do know that women who get pregnant after fertility treatment have a higher risk of problems in pregnancy such as pre-eclampsia (which raises your risk of heart disease in later life). But it is still unclear if this is linked to the fertility treatment or the infertility.

Like female infertility, male infertility has many causes. A sperm count that is low or zero is a common cause of male infertility. Injury to a man's testicles, infection and surgery can also cause infertility, as can carrying excess weight and cancer treatments.

Less is known about infertility and heart disease in men. Multiple studies have found that men (and women) who do not have children are at an increased risk of heart disease in later life. But childlessness is not the same as infertility: not having children can happen for other reasons. Only two studies have looked at whether infertility is linked with heart disease in men. The studies only looked at men who experienced infertility but who went on to have children. Both studies showed no or very weak links.

To sum up, it is likely that some causes of infertility – both in men and in women – are a sign of poorer overall health, including heart health. So, making healthy life choices such as stopping smoking, reducing your alcohol intake, exercising and losing weight can have a positive impact on both your reproductive health and your heart health. ●

Abigail Fraser
Professor of Epidemiology, with a specialism in reproductive health and chronic disease, at the University of Bristol

Which exercise is best for your heart condition?

The three types of exercises you need to get healthier – and how to make it work for you, according to an expert

Whatever your heart or circulatory condition, you'll have something to gain from exercise. Getting active could help ease your symptoms, help you do more in your daily life, and stop your disease from getting worse. Helen Alexander, a physiotherapist who specialises in cardiac rehabilitation at Nuffield Health at St Bartholomew's Hospital, has the lowdown on the best types of exercise – and how you might need to adapt them, depending on your condition:

Aerobic exercise

What is it? Aerobic exercise is where you're moving your body's largest muscles, such as the ones in your arms and legs, in a way that makes you warm and slightly out of breath. Aerobic exercise examples include walking, cycling, and swimming but also everyday activities such as doing housework, gardening, or playing with your children or grandchildren.

What are the benefits? "Aerobic exercise helps your heart and circulatory system to work better, so you are more able to do daily tasks without getting tired or breathless," explains Mrs Alexander. "It can also improve your emotional wellbeing and how well you sleep."

Aerobic exercise also lowers your risk of developing heart and circulatory diseases, and can help stop them getting worse. "Regular aerobic exercise lowers your resting blood pressure and heart rate, it can help improve your cholesterol levels, and helps you keep to a healthy weight, which in turn reduces your risk of developing type 2 diabetes."

> "Aerobic exercise helps your heart work better.

How much? It's recommended you do at least 150 minutes a week of moderate-intensity aerobic exercise. "Moderate intensity means you feel warm and comfortably breathless," says Mrs Alexander. "If you are new to exercise, build up gradually to 150 minutes. Perhaps start by doing five minutes each day. Listen to how your body feels the next day before doing more."

Who's it for? Everyone with a heart or circulatory condition should do aerobic exercise, but you might need to adapt how hard you push yourself, depending on your condition and fitness. So, it's important that you chat about any new exercise with your health professional.

If you've just had **heart surgery**, or an event such as a **heart attack**, it is important to get advice on how to exercise safely. Ask for a referral to your local cardiac rehabilitation team.

If you have **heart failure**, you may need to build up the amount of exercise you do more gradually. Seek advice from your cardiac rehab team or heart failure specialist, and get tips at bhf.org.uk/HFexercise.

Warming up before exercise and cooling down afterwards is important, especially if you have **angina**. "If you get angina symptoms while being active, rest until they're gone. Always carry your GTN spray and use it as you've been advised," says Mrs Alexander. You can also get tips at bhf.org.uk/exerciseangina.

If you have an **implantable cardioverter defibrillator (ICD)**, ask your specialist what heart rate level you should stay below to avoid an inappropriate shock from the device.

For people with **peripheral arterial disease (PAD)**, walking can be particularly helpful: you should see the pain in your legs lessen over time the more often you walk, so keep going despite the discomfort.

If you can't walk or find it difficult to balance, you can still do aerobic exercise by moving your arms and top half of your body. For example, you could try out these seated exercises: bhf.org.uk/chairexercises. There are also specialised bikes: Wheels for All (wheelsforall.org.uk or 01925 575 628) is a charity that offers inclusive cycling at centres across England, or you could speak to your local bike shop or disability organisation. ▸

Strength exercises

What is it? Strength exercises – also known as resistance training – are designed to make your muscles work harder. "These could involve lifting weights or using resistance equipment such as bands or cables. But you can just use your own body weight. Start with moving from sitting to standing out of a chair, then progress to doing squats or press-ups against the wall," explains Mrs Alexander.

Get strength exercises from the NHS (tinyurl.com/NHSstrength) and find out more about strength exercises from the Stronger My Way campaign, from the Chartered Society of Physiotherapy (csp.org.uk/stronger).

> **"The stronger your muscles are, the easier it is to do everyday tasks without getting tired.**

What are the benefits? "Strengthening your muscles means that your arms and legs will work better and that will take the demand off your heart," explains Mrs Alexander. "The stronger your muscles are, the easier you'll find it to do aerobic exercises and everyday tasks without getting so breathless and tired."

How much? Do strength training two or three days a week, ideally spread out across the week, so you have at least a day's recovery time in between. "Start with an exercise you can repeat 10 to 12 times, with the last couple of repetitions starting to feel a bit challenging. If you can, do two to three sets of these 10 to 12 repetitions," says Mrs Alexander.

Mrs Alexander says it's important not to hold your breath during strength training, as this can increase your blood pressure. "If you can't breathe and talk normally while doing strength training, this suggests the load you're lifting is too heavy."

Who's it for? Everyone should do some form of strength training, but if you have certain heart conditions, such as **heart failure**, or have recently had surgery, you'll have to gradually build up your strength – chat with your health specialist before starting.

If you've had **heart surgery**, in the first few weeks following surgery you should keep your elbows by your side when lifting any amount of weight, to reduce the strain on your chest, and don't lift anything heavier than a half-full kettle.

If you've had an **ICD** fitted, for six weeks afterwards avoid lifting your arm above shoulder height on the side it was fitted (which will usually be the left arm).

People who have **PAD** should focus on strengthening the muscles where they experience symptoms – for example, if you get pain in your calf, then calf raising exercises could help.

As we get older, our muscles naturally lose strength, so it's even more important to do resistance training.

Flexibility and balance

What is it? Yoga, pilates and tai chi are all examples of exercises that help improve your flexibility and balance. But you don't need to set aside big blocks of time to work on flexibility and balance. You could include stretches and balance exercises into your other exercise sessions.

Flexibility exercises are best done when your muscles are already warm, so why not add on some stretches after you do aerobic exercise? After walking, for example, you could do a calf stretch (for how to do this, see tinyurl.com/NHSflexibility).

Balance exercises are where we move into a position that is less stable and get our body to hold the position. "It could be something as simple as standing with one foot in front of the other," explains Mrs Alexander. "You could stand on one leg while holding something to support you, like a kitchen worktop, and then gradually try doing that without so much support."

Get more ideas for balance exercises at tinyurl.com/NHSbalance.

What are the benefits? Flexibility exercises make sure muscles don't get too tight. This helps you to move more easily and avoid pain or injury. Balance exercises reduce the risk of you having falls.

How much? Try to do balance and flexibility exercises two or three days a week. Gradually ease into a position where you feel a "comfortable tightness", but it shouldn't feel painful to hold the stretch. Try to hold muscle stretches for at least 30 seconds (the time it takes to count to 30, slowly) – but make sure you're not holding your breath.

> **"Why not add on some stretches after you do aerobic exercise?**

Who's it for? Everyone with a heart or circulatory condition can do balance and flexibility exercises, but if you are on **blood pressure medication** you'll need to take particular care. "If you move quickly from lying down to standing, or sitting to standing, this can cause your blood pressure to drop and can make you feel dizzy or lightheaded," explains Mrs Alexander. "Make sure you move slowly out of different positions."

Free videos to help you get active at home

Exercise videos can be an easy way to get more active – they can be done in your own home, in short chunks if you prefer, and you can pause them to check you're doing it right. Just make sure you chat with your GP or health specialist before taking on any new exercise. Great free video resources include:

- The BHF's cardiac rehab exercise videos, which has six different levels of exercise and lots of tips: bhf.org.uk/cardiacrehabvideos
- Strength exercises from the Charted Society of Physiotherapy: tinyurl.com/CSPstrength
- Videos for people with long-term conditions, created for Sports England with several charities including the BHF: youtube.com/WeAreUndefeatable

Five science-backed ways to break out of bad habits

It can feel challenging, but lifestyle changes can be a huge opportunity to improve your health. A behaviour change expert explains what has been proven to work

Most of us have tried to make a change, like eating more healthily or exercising more, and found it challenging. But change can bring us huge benefits, and can be essential if you have heart problems. Luckily, there are decades of science and theory around behaviour change that we can learn from, to make change easier and more effective.

"When people are looking to change, they can increase their chance of success with the five actions below, which are backed by evidence," explains Dr Paul Chadwick, Honorary Associate Professor at the UCL Centre for Behaviour Change and Clinical Director at Discover Momenta.

1 Be aware of your habits

One thing that a lot of people with health problems find challenging, says Dr Chadwick, is having to keep an eye on themselves every day, for example what they're eating or how much they're exercising, or that they've taken all their medications.

"A good place to start is to monitor your behaviour without trying to change it," he says. This could be recording what you're eating, what exercise you're doing or how much alcohol you're drinking.

Weight management studies show that the more people practise self-monitoring, such as recording what they eat and drink, the better they get at it. "The more accurate they became, the better they became at losing weight," says Dr Chadwick. "It seems obvious but it's powerful."

Why it works

People tend to overestimate how healthy they are. "We aren't all in denial, it's the way humans process information, we have a positive bias about our own behaviour," Dr Chadwick explains. Regularly monitoring and recording your behaviour highlights the difference between what you think you're doing and what you're actually doing.

> **"By monitoring and recording your behaviour it highlights the difference between what we think we're doing and what we're actually doing.**

This is based on the concept of self-monitoring, described by Albert Bandura in 1991. Monitoring means you can also identify patterns. For example, if you notice that your diet is better on weekdays than the weekend, then you can start to think about why this is, and do something about it.

- Try the BHF food diary worksheet at bhf.org.uk/food-diary.

2 Think of what you're gaining

Make a list of what's important to you in your life – such as being able to be independent and not rely on people, or being there for loved ones. Then connect how the change you need to make helps you achieve that.

Dr Chadwick says: "You might be trying to change lots of things and trying to change habits that have been embedded for years. It's important to think about what you can gain by changing your behaviour, not simply limiting yourself to living your old life in a slightly less damaging way."

Why it works

Wanting to do something is more powerful and motivating than having to do something. Often when people are making a change, like a dietary change, they think of what they're ▸

Illustration by Stephan Schmitz

missing out on. If you can shift your mindset to what you're gaining, you're more likely to succeed. Change requires effort, but it needn't always be hard.

3 Label yourself – positively

Dr Chadwick explains that lots of people limit themselves in their change journey by putting unhelpful labels on themselves. "Hardcore smokers say 'I'm a smoker, I love smoking, I'm never going to change'. The reality is, people are always more complicated than the stories they tell themselves about their behaviour." For example, someone might think 'I'm not an exerciser,' but they think nothing of walking around town for 20 minutes carrying heavy bags when shopping – they are exercising but aren't labelling it as that. If you change the bag to handweights and the context to a gym, then this would be labelled exercise. Same behaviour, different labels, and the labels make the difference.

"A really effective strategy is to try new things and learn to pay attention to your experience, looking specifically for positive aspects. For example, if you walk 15 minutes more a day and pay attention to how you feel afterwards, then you are likely to notice that you feel better. Over time this may lead to a shift in how you label yourself – you are a walker!"

Why it works

If we tell ourselves self-limiting stories, like 'I'm not an exerciser', we're less likely to make changes. But you can change self-limiting stories into self-fulfilling stories. By noticing the positives about the change as you start to make it, you're weaving a new story about yourself – one that supports change. "It's important to know that change is possible," Dr Chadwick says, "even in the most challenging circumstances. Believe that change is possible and the mind will be more likely to find a way to make it happen!"

4 Picture the change

You're more likely to be able to make changes if you believe that you can. One step towards this is to use visualisation – painting a picture in your head of you achieving the thing that you want to. Dr Chadwick says: "An example would be picturing yourself as going to an exercise class if you want to get more active, but don't think of yourself as an exerciser, or, if you want to cut back on alcohol, visualise yourself saying no to alcohol when offered at a work event."

Why it works

This is based on research into the concept of self-efficacy by James Maddux. Self-efficacy is the belief that you have about your ability to change your behaviour and control your own life. There is lots of evidence that visualising yourself making a change builds self-efficacy, which in turn makes change more likely to happen.

5 Get support

"When we develop behaviour change programmes, such as cardiovascular disease prevention programmes, we use insights from behavioural science," says Dr Chadwick. Research consistently shows that social support is a key influence on whether people are able to make a change. Social support comes in different forms, for example practical support and emotional support. For example, if you're trying to eat less saturated fat, you might need the people you live with to agree not to bring tempting high-fat foods into the house (practical support). Or you might need someone to simply listen to you and validate how you're feeling (emotional support). "The trick is to figure out what support you need at each point of your behaviour change journey and communicate that to others. Choose the right person for each type of support: for example someone who's very practical might not be the best at giving emotional support."

> "Everybody's made a change in one area of their life, what worked? there for you?

> "Having a connection with a group of people pursuing a similar goal can mean you're more likely to change.

If you feel isolated, or don't have many friends or family who understand what you're going through, you can still find support. Dr Chadwick says: "Many people who give up drinking find amazing friendships in sober communities. These communities can be online or in person, and the support can be life-changing."

- Join our online community at healthunlocked.co.uk/bhf, or we have more than 140 Heart Support Groups across the UK. Find out more at bhf.org.uk/supportgroups or by calling 0300 330 3300.

Why it works

Having a connection with a group of people pursuing a similar goal can mean you're more likely to change your behaviour. Dr Chadwick explains: "Research is starting to show that online communities are not 'second best' or lesser communities. What matters is the opportunity for connection to the group. People on the same journey can offer practical help because they have been there and done that, or emotional support that can validate your experience when things get tough."

The future of Covid vaccines

What will boosters look like in the future? Two experts answer our questions

Covid boosters are designed to top up your level of protection against the illness. They mean you are less likely to catch the virus, and will help protect you from serious illness if you do become infected. Don't assume that Covid is "over" – get a booster when you are offered it.

Autumn boosters

You are eligible for an autumn booster if you're over 50, or have a long-term condition such as a heart or circulatory condition, or you're a carer, or a frontline health or social care worker, or live with someone who has a weakened immune system.

Why are boosters so important?

Danny Altmann, Professor of Immunology at Imperial College London, explains: "The vaccine gives you 'neutralising' antibodies in the blood ready to block the entry of the virus. However, the antibodies don't last very long before they fade. But it also stimulates white blood cells ready for any future encounter."

Professor Saul Faust, who led University Hospital Southampton NHS Foundation Trust's COV-Boost vaccine trial, says: "We looked at COV-Boost data on vaccines last autumn, and found that high antibody levels were reached by day seven, which shows the value of getting the vaccine, and that it acts quickly." He adds: "Boosters are not stopping infection: they are for stopping severe infection and death."

The future of boosters

It's still unclear what the future of boosters will look like. "The first option," says Professor Altmann, "is to refocus immunity onto the variants from the Omicron family that are currently causing problems. The second is to try and broaden immunity in a way that might be more future-proofed against variants that are yet to emerge, by aiming for a 'pan-coronavirus' immune response." The first dual Covid vaccine, a Moderna vaccine, designed to protect against both the original coronavirus and the Omicron variant, is being used this autumn.

> **"The first dual Covid booster, a Moderna vaccine designed to target both Omicron and the original variant, is being used this autumn.**

We still don't know how often we'll need Covid boosters in future. Professor Faust says: "There could be an annual booster, like with flu, or it could be that it's less frequent." Flu jabs are given annually partly because the immunity doesn't last very long, Professor Altmann explains, but also because flu viruses are very good at reassortment (the process whereby viruses swap gene segments) which means they can come back slightly differently. "The annual flu vaccination campaign isn't fundamentally different to Covid boosters," he says. You may be able to get your flu jab at the same time as your Covid booster – don't miss out if you are eligible.

Future boosters might even be given as a nasal spray. This would mean that the virus gets blocked at the site of entry, and avoids the need for needles. Trials on nasal vaccines are under way.

"The future of boosters depends on how ambitious we are in adopting new, 'next-generation' vaccines," says Professor Altmann. "We need to keep up the momentum we had in 2020 to keep trialling, to see which are best."

- Keep up to date with the latest on Covid-19 at bhf.org.uk/coronavirus.