WINTER 2025 | ISSUE 309

# BALANCE

DIABETES UK
KNOW DIABETES. FIGHT DIABETES.

The exclusive magazine for Diabetes UK members

**TECH CHECK**
Make diabetes technology work for you

**COMFORT AND JOY**
Warming one-pot recipes

**NEW HORIZONS**
The latest on faster, smarter insulins

## Aiming for the top

Mica sets her sights on climbing the ladder in science

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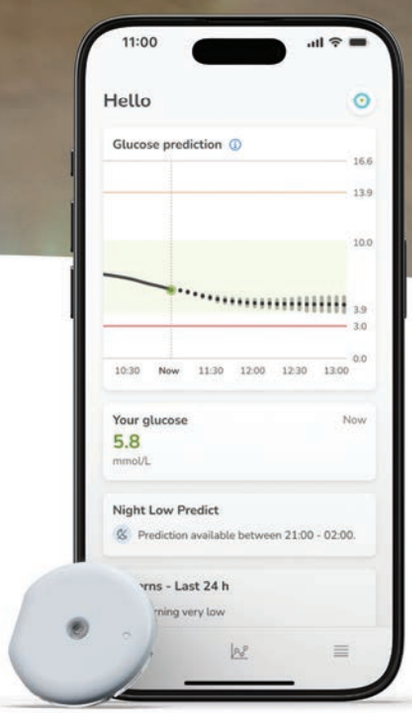
# Simply **prepared**

**Coming soon!** Don't let worries of hypos or hypers slow you down. The **Accu-Chek SmartGuide CGM solution** will let you know about a possible high or low 2 hours in advance*, so you can enjoy life's journey.




**Find out more!**
www.accu-chek.co.uk/balance4

**Please speak to your healthcare team about the most appropriate technologies for you.**

*The Accu-Chek SmartGuide Predict app predicts the general estimated glucose development within the next 2 hours (Glucose Predict), the estimated high risk of low glucose within the next 30 minutes (Low Glucose Predict), and the estimated risk of a night-time hypoglycaemia for the upcoming 7 hours (Night Low Predict, active between 21:00 and 02:00).

The Accu-Chek SmartGuide CGM solution is intended for adults with diabetes aged 18+. The screens you see may differ from the screens in the app. Smartphone required, not included in the solution. The persons shown in these photographs are models for illustrative purposes only and are not real life patients.  Roche Diagnostics Limited, Charles Avenue, Burgess Hill, West Sussex, RH15 9RY. Company Registration Number: 571546 | Date of preparation: September 2025. | Document number: MC-IE-03618 | For use only in the UK and Ireland. | accu-chek.co.uk

# Welcome to your winter issue of Balance

The talent and dedication of our diabetes research community is one to celebrate. In this final issue of the year, we focus on some of the research breakthroughs that promise to change the lives of children and adults living with diabetes in the future.

We have updates on promising research coming out of the Type 1 Diabetes Grand Challenge. Research uncovering the secrets of why type 1 develops could pave the way for new strategies to prevent or delay the condition and, one day, bring us closer to a cure. And early investigations are taking researchers a step closer towards the goal of new types of smarter, safer insulins that prevent hypos.

While today's researchers are making great strides in both type 1 and type 2 discoveries, aspiring scientists of tomorrow are ready and waiting to pick up the baton of cutting-edge diabetes research.

Read more about our cover star, Mica, and the other interns on our Black Leaders in Diabetes Research internship scheme who are doing just that.

With your support, the future of diabetes research is looking brighter than ever – and we can't thank you enough.

**Rachel Hardy**
**Senior Membership and Retention Manager, Diabetes UK**

p22

**Leading role: undergraduate science student Mica McCarthy on her research ambitions**

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**On the horizon: the smarter, faster insulins that could transform life with diabetes**

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**Winter wonders: bursting with flavour, our comfort food won't leave anyone out in the cold**

**Q: How do I amend my direct debit details for my membership?**

A member of our Customer Care team can amend these details for you. Please call us on **0345 123 2399** or email us at: **yourmembership@diabetes.org.uk** with details relating to your direct debit.

**Q: Where is my welcome pack?**

If you have not received your welcome pack within 21 days of signing up, please contact us at: **yourmembership@diabetes.org.uk**

**Q: Do you provide alternative formats of Balance?**

We provide large print, audio and digital formats of Balance. If you would prefer one of these formats, please email us: **yourmembership@diabetes.org.uk**

**Become a member**
**diabetes.org.uk/bal-member**

## FIND SUPPORT

### Call our Helpline

Our confidential helpline is staffed by a team of highly trained advisors with counselling skills who have extensive knowledge of diabetes. Get in touch for answers, support, or just to talk.
Call **0345 123 2399** 9am to 6pm weekdays or email **helpline@diabetes.org.uk**

In Scotland, call **0141 212 8710** or email **helpline.scotland@diabetes.org.uk**

### Talk to people with diabetes

The Diabetes UK Support Forum is our online community where you can share experiences and get information and advice. Go to **forum.diabetes.org.uk**

To meet other people with diabetes in your local community, visit one of our local groups all over the UK.

For more details, go to **diabetes.org.uk/how_we_help**

### Campaign

We campaign hard for people living with diabetes, but we can't do it without your help. Join our campaigning network and help influence care. **diabetes.org.uk/bal-voices**

### Contact the Balance team

**balance@diabetes.org.uk**

### Our Address

**Diabetes UK**
**126 Back Church Lane, London E1 1FH**

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# LEARNING ZONE


Looking for a free, trusted resource you can refer people to?

More than 100,000 people are already using Learning Zone to manage their diabetes with confidence.

Through videos, quizzes and podcasts we offer free, tailored advice from our experts and top tips from others living with diabetes.

Explore for yourself at **diabetes.org.uk/up-zone**

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# THE BULLETIN

The latest diabetes news, research and developments

## Swim22: A splash to remember!

The annual challenge to swim 11, 22 or 44 miles returned in 2025. The results were outstanding! Over three months (from 22 March to 22 June 2025), **5,469 determined swimmers** took the plunge in their local pool and open water, swimming a staggering **125,078 miles**. That's the equivalent of swimming around the Earth's equator five times or making it halfway to the moon! Together, they raised an incredible **£617,627 to support our work**. A huge thank you to everyone who took part in Swim22 or supported this year – it really makes a difference. Every pound raised helps us continue to fund groundbreaking research for new treatments, campaign for better care, and provide vital support to those who need us through our helpline.

Did you know that Swim22 will be back in 2026? **If you'd like to find out more or join in the fun next spring with a friend or family member, simply visit: diabetes.org.uk/bal-swim22**

## Walking to a world where diabetes can do no harm


There are many benefits of being active when you're living with diabetes. It can give you more energy and a better night's sleep, as well as helping insulin work better in your body. Moving more can also have benefits for the mind, releasing endorphins and reducing stress levels.

Our Wellness Walks are the perfect opportunity to meet others living with and affected by diabetes and to raise vital funds for us.

This year, the Wellness Walks, sponsored by FreeStyle Libre, saw over 3,700 people taking on the challenge to raise money for us. Wellness Walks are family-friendly, accessible walking events that take place in city-based locations (this year they were hosted in Glasgow, London and Manchester), with all the donations raised from participants going towards helping us be one step closer to a world where diabetes can do no harm.

Jess, a FreeStyle Libre Ambassador, was just 25 years old when she was diagnosed with type 2 diabetes, and she took on the Wellness Walk London Bridges event this year.

"The motivation for me to do this walk is how inspired I felt last year watching people at the finish line. Seeing everyone come together for the same cause, knowing that those people care enough to raise money and awareness for a condition that I live with is humbling."

**You can register your interest for our 2026 events now by visiting diabetes.org.uk/wellness-walks**

## NEWS IN NUMBERS*

NEARLY

**9 IN 10**

**PEOPLE LIVING WITH TYPE 1 DIABETES** have experienced blame and judgement for their condition, according to a wide-scale survey.

**7 IN 10**

**PEOPLE LIVING WITH TYPE 2 DIABETES** have experienced blame and judgement for their condition, according to the same survey.

**53%**

**OF PEOPLE LIVING WITH TYPE 2** who took the survey agreed that there is negative stigma around their condition being inaccurately labelled as a 'lifestyle disease'.

OVER

**50%**

**OF PEOPLE LIVING WITH DIABETES** said they avoided healthcare appointments due to stigma.

*Diabetes Stigma Assessment Scale, May 2025

# Meet the Communities and Volunteering Team

To celebrate International Volunteer Day on Friday, 5 December, we're shining a spotlight on the incredible work that our volunteers do at Diabetes UK – and sharing an exciting opportunity for you to get involved!

Our Communities and Volunteering team share why volunteers are so important to our work:

**"To achieve our vision of a world where diabetes can do no harm, we rely on a strong and passionate network of volunteers and community partners. The knowledge, skills and lived experiences they bring are vital in helping us reach and support as many people as possible."**

**"Our Communities and Volunteering team work with people across the UK to offer a wide range of flexible volunteer roles that fit around everyday life. Whether it's sharing a social media post, signing a petition, or raising awareness in your local area, every action – big or small – makes a difference."**

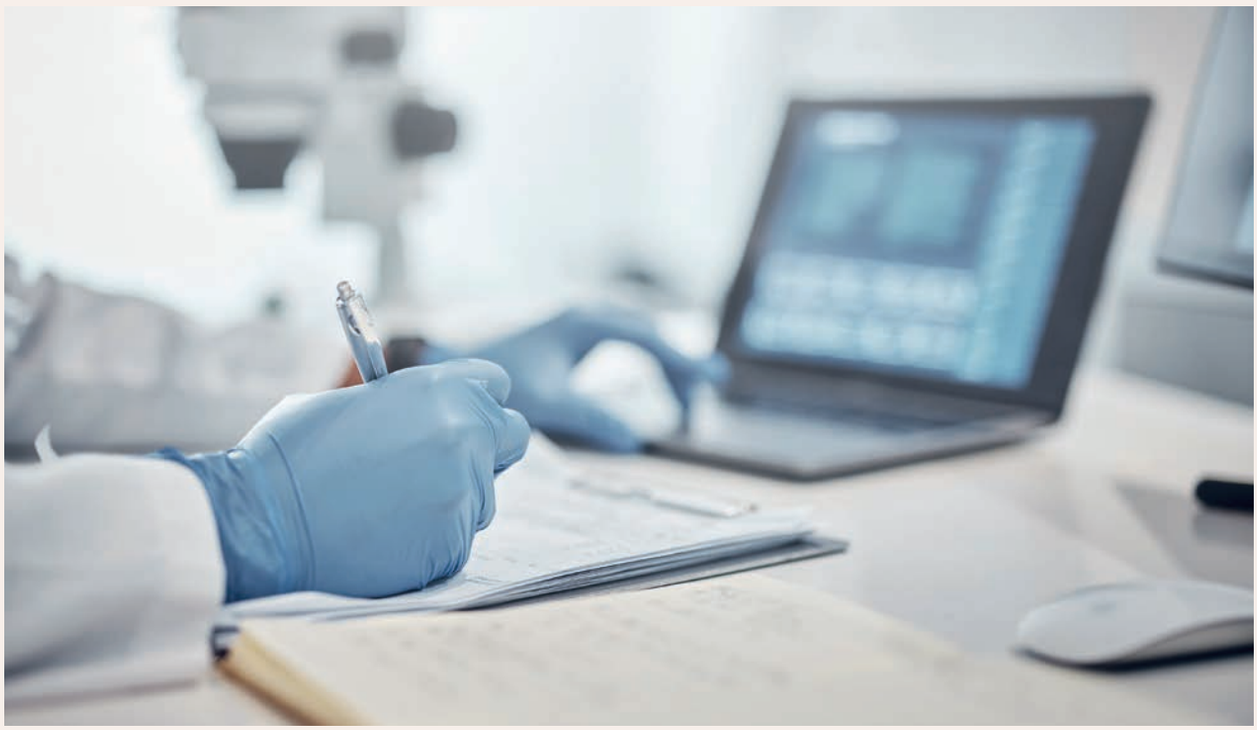
- **Volunteer with us: diabetes.org.uk/impact-volunteering**
- **Contact us: volunteering@diabetes.org.uk**

## All new information about diabetes tech

We've launched new website content about diabetes technology. We understand technology can be a complicated topic within diabetes care, and your access to tech can depend on multiple factors, such as your age, your diabetes type, where you live, and what your current management is. There's a lot to consider and a lot for you to be aware of.

That's why we've put everything you need to know in one place. Find out about all the different types of diabetes tech, eligibility criteria for your part of the UK, and what to be aware of before starting tech, by visiting **diabetes.org.uk/bal-diabetes-tech**

# National registry launched to transform care for people at risk of type 1 diabetes



A first-of-its-kind UK registry for children and adults who are at risk of developing type 1 diabetes has been launched at the University of Oxford, with our funding.

The UK Islet Autoantibody Registry aims to transform how people in the early 'hidden' stages of type 1 diabetes are monitored and supported, and acts as a gateway to groundbreaking clinical trials and treatments.

The registry will track children and adults who have tested positive for type 1 diabetes autoantibodies. These are proteins used by the immune system to target insulin-making beta cells for destruction. Autoantibodies can show up in blood tests months or years before symptoms of type 1 diabetes appear – providing a crucial early warning sign. Once someone has two or more autoantibodies, we say they have early-stage type 1 diabetes. At this point, type 1 diabetes has already begun, but people still have normal blood sugar levels and don't yet have symptoms or need treatment.

Right now, there's little support for this emerging group of people who are on the road towards type 1 diabetes but haven't yet fully developed it. This registry aims to change that by helping healthcare professionals monitor people with autoantibodies and catch the 'full' onset of type 1 diabetes early, to tell people about new immunotherapy treatments, like teplizumab, that could delay their type 1 diabetes diagnosis, and to understand what it's like for people to know they're very likely to develop type 1 and create ways to support them.

**"The UK Islet Autoantibody Registry will be critical in seizing this opportunity, helping thousands of families and individuals to get on the front foot of their type 1 diabetes journey"**

Dr Lucy Chambers, Head of Research Communications and Impact, said: "There's a crucial window – months or even years before type 1 diabetes takes hold – to tackle the immune system dysfunction at the root of the condition. The UK Islet Autoantibody Registry will be critical in seizing this opportunity, helping thousands of families and individuals to get on the front foot of their type 1 diabetes journey.

"It will enable access to the care they need to prepare for a life with the condition, as well as clinical trials of new treatments that can hold off the immune attack and delay the need for insulin."

**Find out more: diabetes.org.uk/bal-type-1-national-registry**

# Fundraising feats

## Fundraising to remember Alexander

**Through walks, raffles, and even shaving her head, Joanne has raised over £4,000 in memory of her son, Alexander, while increasing awareness of diabetes**

Joanne McCall was devastated when her son passed away from type 1 diabetes complications in February last year. Alexander was diagnosed with diabetes before he was two years old and had been in and out of hospital over the last few years. Alexander's father also passed away from complications in July 1991, so Joanne is passionate about raising awareness of the condition and keeping their memories alive.

In October last year, Joanne organised a sponsored 10.5-mile walk to raise money for us and honour Alexander's life. Talking about the day, she said: "We had a great turnout with the oldest person there being 80 and the youngest being six months. We all had a great day, and it wouldn't have been possible without the support of my family."

Joanne organised another fundraiser in April earlier this year, which involved karaoke, raffles and Joanne getting her head shaved, again to raise money to support our cause. Joanne's fundraisers have raised an incredible total of £4,360, and she has plans to do more.

"We have another walk arranged for early next year, and I'll be doing some more raffles until then. I want people to understand the dangers of the condition, but also for them to understand that people can live a normal life with diabetes."

Our community fundraiser for West Scotland, Fiona Stewart, said: "It's a huge privilege to support Joanne with her fundraising, as it was to meet her and her lovely family. Losing both her son and her partner to diabetes-related complications is unimaginable, but in supporting Diabetes UK, she's found a way to honour them. What she's doing isn't just about raising money – it's about keeping their memory alive. We're so grateful for all Joanne has done and continues to do for us."

## A pitch-perfect concert

Tizzy Brown, from Lincolnshire, and her daughter Leona, who lives with type 1 diabetes, have raised an amazing £720 for Diabetes UK at their choir's spring concert. The Beonna Community Choir decided to raise money after Leona picked us as the chosen charity.

Tizzy said: "The director of the choir invited Leona and I to perform a duet, so we picked 'I'd Do Anything' from Oliver! as the lyrics capture the teamwork involved in diabetes management and how our love strengthens us through challenges.

"The learning curve after Leona's diagnosis was steep, but the support from her diabetes team, her school, and our family and friends has been invaluable in helping us adjust. We've purchased Diabetes UK T-shirts and pin badges before, but this is our first time getting involved in fundraising. We'd love to participate in more events in the future."

Charlotte Clarke, our Community Fundraising Manager for the Midlands and East, said: "We are always incredibly grateful for donations such as these as they allow us to continue to support people living with and affected by diabetes across the UK. The Beonna Community Choir's event was a huge success. Helping to not only raise vital funds for Diabetes UK to be able to continue our work but also raising awareness in their local community."

## Brand-new type 1 diabetes school resource

‘My Type 1 Info’ is a brand-new resource available for children and young people with type 1 diabetes to use in school.

Young people can personalise ‘My Type 1 Info’ with information school staff may need to know about their diabetes – the tech being used, hypo treatments and so on. It folds down to the size of a credit card, which is perfect for pupils to carry in their pocket, school bag, pencil case, or diabetes kit bag.

‘My Type 1 Info’ was developed in the Midlands and East region by Lilly, our Together Type 1 Youth Worker, and Amelia, one of our Together Type 1 Young Leaders. Amelia says: “We hope this will help school staff to really understand type 1 diabetes and how their pupils manage their type 1. We also hope it helps to reduce pupils’ anxiety around talking to new teachers about their diabetes. There are also answers to common questions and facts about type 1 that teachers might not know.”


**If you would like the ‘My Type 1 Info’ school resource, email: type1youth@diabetes.org.uk**

## Thank you for funding our life-changing research

As a valued member of Diabetes UK, we appreciate your kind support in improving and changing lives for people with diabetes. Your membership helps fund new research and allows our scientists to relentlessly push for the next treatment breakthroughs and speed up progress towards a cure.

But the cost of funding our research is rising. In 2020, the average cost of a research project grant was £273,429. By 2024, this had risen to £366,722. The average cost of lab supplies needed for a research project in 2020 was £41,061 compared to £44,801 in 2024. We’re entering a golden age of scientific discovery, with breakthroughs that could completely transform lives within reach. It’s crucial we seize upon this momentum and continue investing in the most promising research.

And our research wouldn’t be possible without your support – read about the decades of impact our research has had thanks to you in our Research Impact Report at: **diabetes.org.uk/bal-research-impact-report**

You can also explore the current research projects we’re funding at: **diabetes.org.uk/bal-current-research**

## Star letter

Thank you so much for your article ‘Meet the Veterans’. As someone with type 1 for almost 68 years, it often strikes me that we are the ‘forgotten few’. We have been through the ups and downs of years of diabetes but have survived, brought up families, worked, had children and travelled widely with little recognition.

I hope the stories from the veterans encourage and give hope to those who may be struggling to find their way in life with diabetes.

**Janet Gibson, Oxford**


# "The future no longer scares me"

## Karlie Acaster, 39, from Yorkshire, explains how she changed her life for the better

My family are my world, and as a full-time carer to three of my children who live with additional needs, I pushed worries about my own health to the back of my mind for years.

I was diagnosed with type 1 diabetes when I was nine years old. As I got older, I developed rheumatoid arthritis and other autoimmune conditions, and I've struggled with my weight for most of my life. I knew this was impacting my health.

Because my body mass index (BMI) was too high, I couldn't have a much-needed hip operation. And I'd been shamed about my weight by a customer at a bar I worked in, which knocked my confidence, too.

But losing some weight seemed out of reach, and I just felt I was too busy to think about eating healthily. I would grab food on the go without thinking about what I was eating – breakfast would be peanut butter on toast, I'd have a baguette and crisps for lunch, takeaway for tea, and I'd snack on chocolate throughout the day to keep my energy levels up.

I reached a turning point after seeing photos of me as a bridesmaid at a friend's wedding – I burst into tears, I didn't recognise who I'd become. And, ultimately, I wanted to be there for my children – I wanted to be in the best shape physically and mentally, and knew something had to change.

I was nervous about joining Slimming World and felt embarrassed at the thought of someone else knowing my weight – I worried I'd be judged like I had been in the bar. But I didn't need to be. Kate, who leads the group, and the other members were so warm and kind. My group really is a community, and the support I've had since joining, even on difficult weeks, has been vital.

**After losing 7st in two years, Karlie's health has improved as well as her confidence!**

Slimming World's flexible eating plan works for my dietary needs – as well as type 1, I also have coeliac disease so must avoid gluten. I find the Slimming World app helpful when deciding which recipes to try and I'm now eating much healthier versions of my favourite meals. I'm also cooking more from scratch – I even make my own salad dressings now. My husband and children are also benefiting from our healthier dinners.

I've lost 7st (around 44kg) with Slimming World. Losing weight has changed my life. I'm so proud of how far I've come – I now don't worry about the physical aspects of caring for my children, like carrying my son's wheelchair. I feel better in myself and am so much more confident, too.

When I first saw my healthcare team after some of my weight loss, they'd asked me if I'd had trouble with my blood sugar levels, as they couldn't believe how much weight I was losing. Smiling, I told them to check my records, which showed I'd had no issues, and I shared my Slimming World journey with them!

My insulin requirement has reduced considerably. I wear a patch pump on my arm as part of my treatment plan. Before I lost weight, I would hide it, worried about what people would think – now I don't care who sees. I've also been told I can now have my hip operation. But with the agreement of my GP, I've postponed it indefinitely – the pressure on my joints has eased so dramatically.

Before Slimming World, I was scared for the future and not being there for my children. Thanks to losing weight, it's not just my life that's changed for the better – it's my children's too!"

Katie Bareford, Senior Clinical Advisor at Diabetes UK, says it's important to speak to your healthcare team before you start making changes to your diet to lose weight. This is because there may be changes to your blood sugar levels, medication or both and your healthcare team can give you individualised advice and support.

Slimming World and Diabetes UK have come together in a three-year partnership to support people living with all types of diabetes and those at risk of type 2 to manage their weight in a way that works for them.

To give you a taste of the delicious variety of meals you can enjoy at Slimming World, visit **slimmingworld.co.uk** to find a selection of healthy and flavoursome recipes chosen in partnership with Diabetes UK.

In partnership
DIABETES UK
KNOW DIABETES. FIGHT DIABETES.

Slimming World

Photography: **Slimming World**

# THE INSIDER

**The latest diabetes health news, research and developments**

# Diabetes breakthroughs

**Each year, the European Association for the Study of Diabetes (EASD) brings together thousands of experts worldwide to share what's new and next in diabetes research. This year's meeting in Vienna was no exception, with more than 14,000 scientists and professionals gathering to discuss breakthrough results. From promising type 1 immunotherapies to new GLP-1 drugs for type 2 and weight loss, and fresh guidance on tackling diabetes distress, it was a year packed with progress**


## Slowing type 1 diabetes in people newly diagnosed

New results from three major clinical trials presented at EASD found that existing medicines could help protect surviving insulin-making beta cells in people newly diagnosed with type 1 diabetes.

When people are first diagnosed with type 1 diabetes, they can still have up to 30% of their beta cells. These cells are then gradually killed off by the immune system over the following months or years. Cutting-edge immunotherapies aim to halt or slow this continued destruction, allowing the pancreas to carry on making some insulin.

Preserving even small amounts of natural insulin production matters. It can mean steadier blood sugar levels, fewer hypos, and lower insulin injection or pump doses, and could help reduce the risk of long-term complications.

## MELD-ATG: A breakthrough for children

The MELD-ATG trial tested an immunotherapy drug called anti-thymocyte globulin (ATG). ATG is already used in high doses to alter the immune system's behaviour and prevent organ rejection after transplants. But high doses can cause serious side effects, which makes ATG challenging to use in children.

In the MELD-ATG trial, 117 children and young people aged five to 25 years, who'd been diagnosed with type 1 diabetes within the last nine weeks, received different doses of ATG or a placebo through a one-time intravenous (IV) infusion. Researchers wanted to find the lowest dose that could be effective.

The results showed that even at much lower doses, ATG helped protect beta cells and preserve participants' insulin production, without the serious side effects.

ATG is cheap, widely available, and now shown to hold great potential as a safe and effective treatment in young children and adults with newly diagnosed type 1 diabetes.

## BANDIT: A daily pill that works while being taken

Next up, the BANDIT trial tested baricitinib – an oral immunotherapy drug that's already used to treat autoimmune conditions such as rheumatoid arthritis.

Ninety-one children and young people aged 10 to 30 years, within 100 days of their type 1 diabetes diagnosis, either took a daily baricitinib pill for 48 weeks, or a placebo.

Words: **Faye Riley.** Photography: **EASD**


**The 2025 European Association for the Study of Diabetes (EASD) saw more than 14,000 delegates gather to discuss breakthrough results**

**"Baricitinib remains a very promising option, especially since it's in pill form"**

The latest BANDIT results showed that those taking baricitinib kept producing more of their own insulin and needed less injected insulin than the placebo group.

However, once participants stopped taking it, the benefits faded. Baricitinib works while it's being taken, but the drug hasn't yet shown lasting effects after treatment ends – like ATG or some other immunotherapies have.

Nonetheless, baricitinib remains a very promising option, especially since it's in pill form – making it easy to take – and is already being used for other conditions.

## Ver-A-T1D: A blood pressure pill with promise

Finally, the Ver-A-T1D trial studied verapamil in 136 adults recently diagnosed with type 1 diabetes. Verapamil is a pill that has been used in children and adults for more than five decades to treat blood pressure and heart conditions.

Unlike ATG or baricitinib, verapamil doesn't target the immune system, so it isn't an immunotherapy. Instead, it appears to block proteins that play a role in beta cell death, helping them survive longer.

Participants either took a daily verapamil pill or a placebo for 12 months. Results showed encouraging signs that verapamil could help preserve insulin production.

The study was designed with the expectation that, without any treatment, people would lose their remaining beta cells quite quickly, as seen in earlier research. But in this trial, those in the placebo group lost them more slowly than expected. As a result, the difference between the verapamil and placebo groups was too small to show the benefit of verapamil with certainty – even though the findings look encouraging.

Since verapamil is cheap, widely available worldwide, safe, and easy to take, there's still a lot of potential for its use in type 1 diabetes. Researchers say that with bigger trials, or used in combination with immunotherapies, verapamil could still prove useful.

Combination trials are already underway, including T1D plus, which is currently recruiting in the UK through the Diabetes UK- and Breakthrough T1D-funded UK Type 1 Diabetes Research Consortium.

## What the trials mean for people with type 1 diabetes

Larger clinical trials and regulatory approval are the next steps before these drugs could become real-world treatments for people with type 1 diabetes. But together, the findings bring real hope that treatment options other than insulin may soon be in reach for people newly diagnosed with type 1 diabetes.

We're entering a new era in type 1 treatment: moving beyond simply managing the condition to changing its course. This builds on the momentum of the first immunotherapy – teplizumab – being licensed in the UK.

Teplizumab is used even earlier in the development of type 1 – before too much damage is done to beta cells – to delay the need for insulin treatment in people in the early stages of type 1 diabetes.

In the US, ATG is already being tested in people with early-stage type 1 through the STOP-T1D trial. A trial of baricitinib at this early stage is also set to start in 2026. And there are plans for verapamil to follow.

While for those who've lived with type 1 for longer, immunotherapies may still play a vital role in combination with future treatments aimed at replacing lost beta cells.

Our research, including the Type 1 Diabetes Grand Challenge, is advancing the development of future therapies designed to preserve or restore insulin production.

## GLP-1 pill helps people lose weight

Another major trial at the EASD found that a once-daily oral GLP-1 agonist, called orforglipron, led to substantial weight loss in people living with obesity.

GLP-1 agonists are used to manage blood sugar levels in type 2 diabetes and to manage weight for people living with obesity and overweight. There are many different types of GLP-1s already available for weight loss, but they're all taken as injections.

In their clinical trial, an international research team examined the safety and effectiveness of orforglipron with 3,127 people living with obesity, who did not have type 2 diabetes. Over 72 weeks, participants took one of three daily doses of orforglipron or a placebo, alongside a healthy diet and physical activity.

**"People taking orforglipron also saw improvements in waist size, blood pressure, cholesterol, and other blood fats"**

At 72 weeks, participants in all three orforglipron dose groups had reduced body weights:

- **6mg dose: average weight loss of 7.5%**
- **12mg dose: 8.4%**
- **36mg dose: 11.2%**
- **Placebo: 2.1%**

People taking orforglipron also saw improvements in waist size, blood pressure, cholesterol and other blood fats. Alongside weight loss, these factors can help reduce the risk of type 2.

Because some people find injectable GLP-1s difficult to start or stick with, an oral pill is important as it could make treatment easier for many and support more people to reduce their type 2 risk and help tackle the impact of obesity.

We need further studies to see whether orforglipron could also help manage blood sugar levels in people living with type 2 diabetes.

## Mounjaro improves blood sugar management in children with type 2

GLP-1s continued to dominate the EASD agenda with results from a world-first clinical trial showing tirzepatide (sold under the brand-name Mounjaro) improved blood sugar levels in children and young people living with type 2 diabetes, and helped them lose weight.

The number of children and young people developing type 2 in the UK is rapidly increasing. Type 2 diabetes is more aggressive in younger people, increasing the risk of its serious complications. Yet treatment options for children and young people with type 2 are limited and often less effective.

**"The number of children and young people developing type 2 diabetes in the UK is rapidly increasing"**


Photography: **EASD**

Tirzepatide is a once-weekly GLP-1 agonist, which is already used for treating type 2 diabetes and obesity in adults. Researchers led the SURPASS-PEDS clinical trial to find out if the drug could also help children with type 2. It involved 99 children and young people aged 10 to 17 years living with type 2 diabetes whose medications – metformin, insulin, or both – were not effectively controlling their blood sugar levels.

Over 30 weeks, they either took weekly doses of 5mg tirzepatide, 10mg tirzepatide, or a placebo alongside their existing medications. They were followed up for a year.

The researchers found that tirzepatide improved HbA1c, fasting blood sugar levels, and body weights, with improvements continuing over the year. But in the placebo group, these factors hardly changed.

At 30 weeks, 79% of children and young people taking tirzepatide had HbA1c of less than 6.5%, compared to 29% in the placebo group. Those who took 10mg tirzepatide had an 11.2% reduction in body weight, compared to 7.4% for the 5mg group, and 0.4% in the placebo group.

This promising study highlights tirzepatide as a much-needed potential option that could help improve how we treat and care for young people with type 2 diabetes.

## World's first guideline for diabetes distress

The world's first clinical practice guideline focused on diabetes distress was launched at the EASD, which was underpinned by Diabetes UK-funded research.

Because mental and physical health are closely linked, people with diabetes need support for both. But despite being common, diabetes distress isn't yet routinely addressed in care.

Informed by insights from our landmark D-Stress study and co-developed by researchers, healthcare professionals, and people living with diabetes, the new guideline recommends a standard approach, so health professionals know what to look for and how to support adults with type 1 or type 2 experiencing diabetes distress. This includes asking open-ended questions at every appointment about how people are coping emotionally, not just reviewing treatment or numbers.

The guideline also sums up evidence on the effectiveness of psychological, educational, peer support, and technology-based interventions for reducing diabetes distress.

Its launch marks an important step in recognising and addressing the emotional challenges of living with diabetes.


# Type 1 research at the frontier

**Groundbreaking new discoveries from the Type 1 Diabetes Grand Challenge are uncovering the secrets behind how type 1 develops and paving the way for treatments that could change the future for people living with the condition**

## New clues to why type 1 diabetes is more aggressive in young children

Professor Sarah Richardson and her team have made a major breakthrough in understanding why type 1 diabetes is more aggressive in young children. They've discovered that nearly all their insulin-producing beta cells are destroyed before they can mature. The findings could pave the way for new strategies to prevent or delay type 1 diabetes and, in time, contribute to a cure.

We know that type 1 diabetes is an autoimmune condition, where the immune system attacks and destroys the beta cells in the pancreas. Previous research supported by Diabetes UK at the University of Exeter found that the immune attack can progress differently according to age of diagnosis, and identified two distinct subtypes of type 1.

The first, named T1DE, is typically seen in children diagnosed before the age of seven. It's characterised by a more aggressive immune attack and rapid destruction of beta cells. This can increase the likelihood of diabetic ketoacidosis (DKA) at diagnosis and make the condition particularly difficult to manage. The second, T1DE2, is more common in those diagnosed after the age of 13 and is characterised by a slower loss of beta cells. Children diagnosed between seven and 12 years may fall into either category.

Until now, scientists have had limited tools to study the early development of

**Professor Sarah Richardson**

beta cells, which are found in clusters in the pancreas. In young children, these clusters are small and still forming, and only contain a few beta cells.

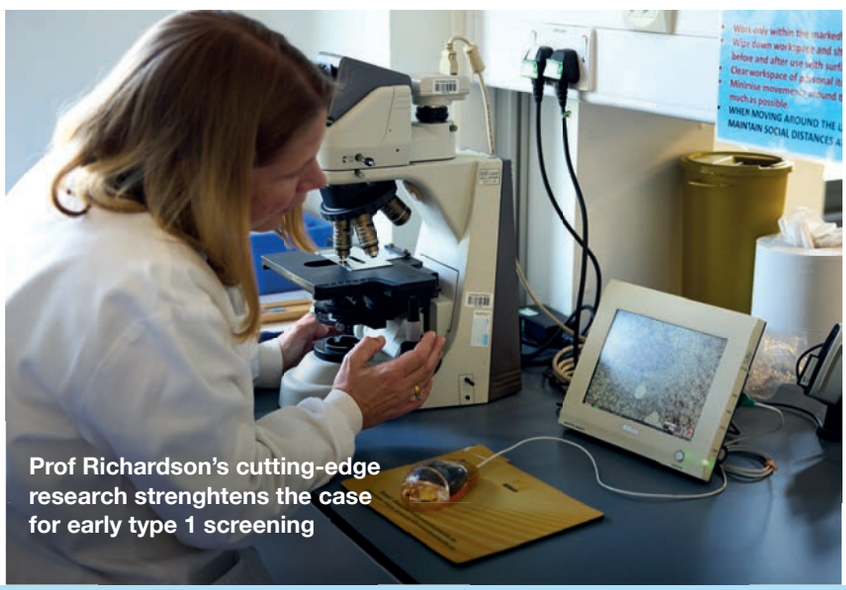
In a new study, Prof Richardson and her team used cutting-edge scientific techniques to study these small clusters in unprecedented detail. They analysed rare pancreas samples from over 250 people of varying ages, both with and without type 1 diabetes. They looked at how these clusters change as we age and how they are affected by the immune system.

The findings confirm that in early childhood, people without type 1 diabetes have many small clusters of beta cells. These usually increase in size and mature with age, with the most rapid development occurring in the first few years of life.

For the first time, our Grand Challenge researchers showed that in people with type 1 diabetes, these small clusters are almost completely absent, having been destroyed by the immune system. While some people with type 1 diabetes retained a few large clusters, allowing them to produce small amounts of their own insulin, this was not the case for those diagnosed at a young age.

Together, the results suggest that the abundant small clusters found in young children are especially vulnerable to the type 1 diabetes immune attack. Their rapid destruction prevents them from maturing, leaving very few beta cells later in life. This explains why children diagnosed with type 1 diabetes at a young age are typically unable to produce any of their own insulin.

Prof Richardson explained: "These tiny insulin-producing beta cell clusters – once overlooked – hold big clues to understanding type 1 diabetes. This new perspective has the potential to reshape how we screen, treat, and even prevent



**Prof Richardson's cutting-edge research strenghtens the case for early type 1 screening**

Words: **Mikayla Hu.** Photography: **Diabetes UK**

type 1 diabetes. Protecting small beta cell clusters early could be key to stopping type 1 diabetes before it starts."

This research underscores the critical role of these small clusters in healthy pancreas development and opens the door for new treatments to protect children's small clusters of beta cells, giving them the chance to mature into large clusters that are less vulnerable to the immune attack. It also strengthens the case for early type 1 diabetes screening, particularly in young children, as essential for identifying those in the early stages of type 1 before these crucial cells are lost.

Dr Elizabeth Robertson, Director of Research and Clinical at Diabetes UK, said: "The Type 1 Diabetes Grand Challenge set out to fund bold, ambitious research with the potential to fundamentally shift progress towards new treatments and, ultimately, a cure for type 1 diabetes. This study delivers on that vision by challenging the foundations of previous understanding about the development of type 1 diabetes in early childhood.

"Uncovering why type 1 diabetes is so aggressive in young children opens the door to developing new immunotherapies aimed at slowing or stopping the immune attack, potentially giving children more precious years without insulin therapy and, one day, preventing the need for it entirely."

Gareth and Joanne Nye's daughter, Gracie, was diagnosed with type 1 diabetes at just 23 months old. They emphasised how tough a type 1 diagnosis and managing it can be at such a young age. "Gracie's diagnosis was traumatic. In less than 48 hours, she went from being a toddler with what we thought was a slight cold to lying unconscious in a hospital bed with diabetic ketoacidosis (DKA), close to death. We lived in constant fear, setting alarms every two hours to finger prick her at night, worrying if she'd still be with us in the morning.

"Research like this, and the possibilities it holds, will be vital in reducing the number of children diagnosed in critical care, like Gracie. It gives us confidence that one day she could be free from her condition – and that fewer parents and children will have to go through this same experience."

## New insulin for smarter, safer type 1 management

Professor Michael Weiss and his team in the US have shown promising progress towards a new type of 'smart' insulin, by engineering a molecule that combines insulin with glucagon.

Professor Michael Weiss

Managing blood sugar levels with current insulin is a constant balancing act for people with type 1 diabetes, and avoiding dangerous blood sugar highs and lows is extremely challenging. The Type 1 Diabetes Grand Challenge is investing in research to reduce this burden.

Glucagon is a hormone that raises blood sugar by signalling to the liver to release stored glucose. The team's new insulin-glucagon molecule is designed to respond to changing blood sugar levels by utilising the body's built-in 'on/off switch' in the liver.

When blood sugar is high, the insulin part of the molecule becomes active, working to lower blood sugar levels like regular insulin. And when blood glucose is low, the glucagon part becomes active, telling the liver to release its stored glucose and bringing levels back up.

The Grand Challenge team tested their insulin-glucagon molecule in rats, with promising results. It behaved as they'd hoped – it lowered blood sugar levels when they were high and raised them when low. It also reduced the need for emergency glucagon injections in the rats when hypo.

Prof Weiss explained: "For the past century, coping with hypoglycaemia has been an ever-present challenge in type 1 diabetes. This has made creating glucose-responsive insulins a major goal.

"Our approach simplifies such design learning from the existing 'smart' switch in the liver – how the body naturally adjusts relative hormonal responses based on whether the blood glucose level is high or low: Too high, insulin wins; too low, glucagon wins!"

This research is in its early stages, with many more steps to happen before it could be made available. But it signals an exciting start towards the goal of smarter, safer insulins that prevent hypos.

Dr Elizabeth Robertson of Diabetes UK, added: "These positive study results are an exciting step toward next-generation insulins that could ease the burden of insulin therapy. We look forward to seeing this promising research advance into human studies and ultimately bring benefits to the type 1 community."

The researchers will continue working on their insulin. Their eventual aim is to create two different types: a longer-lasting version for use once a week, and a short-acting version for use in insulin pumps.

**Find out more about the research funded by the Type 1 Diabetes Grand Challenge at: type1diabetesgrandchallenge.org.uk/funded-projects/**

**"Research like this, and the possibilities it holds, will be vital in reducing the number of children diagnosed in critical care"**

# Closing the diabetes tech gap for children and young people with type 1

**New research funded by Diabetes UK sheds light on barriers that prevent some children and young people with type 1 diabetes from accessing or effectively using diabetes technology – and solutions to help make sure every family gets the support they need**

More and more children and young people with type 1 diabetes in the UK are now using diabetes technology, like continuous glucose monitoring (CGM), insulin pumps and hybrid closed loop (HCL) systems. The tech can make managing blood sugar levels easier and more effective, reducing stress and giving children more freedom to live their lives.

But when new treatments or innovations are first introduced, not everyone gets access straight away. And too often in diabetes care, unfair patterns can emerge – with some groups, such as those from minority ethnic backgrounds or from more deprived communities – missing out or facing barriers to getting the same support.

Thanks to landmark policy changes recommending access to CGM and HCL systems for all children with type 1 diabetes, there's been a big increase in the use of diabetes tech. The NHS and partners like us have worked hard to make sure every child has the same chance to benefit, helping to narrow the gaps in tech access linked to ethnicity and deprivation.

But the latest figures show that progress is still uneven. Children and young people from minority ethnic backgrounds and those living in more disadvantaged communities are still less likely to use diabetes tech, and continue to experience higher average blood sugar levels than their White and more affluent peers.

To better understand why these inequities exist and how to tackle them, we funded the UNBIASED study led by Professor May Ng. The team spoke to children, families and healthcare professionals to explore factors that affect whether children and young people with type 1 from minority ethnic and deprived backgrounds can access, and successfully use, diabetes tech.

## What children and their families said

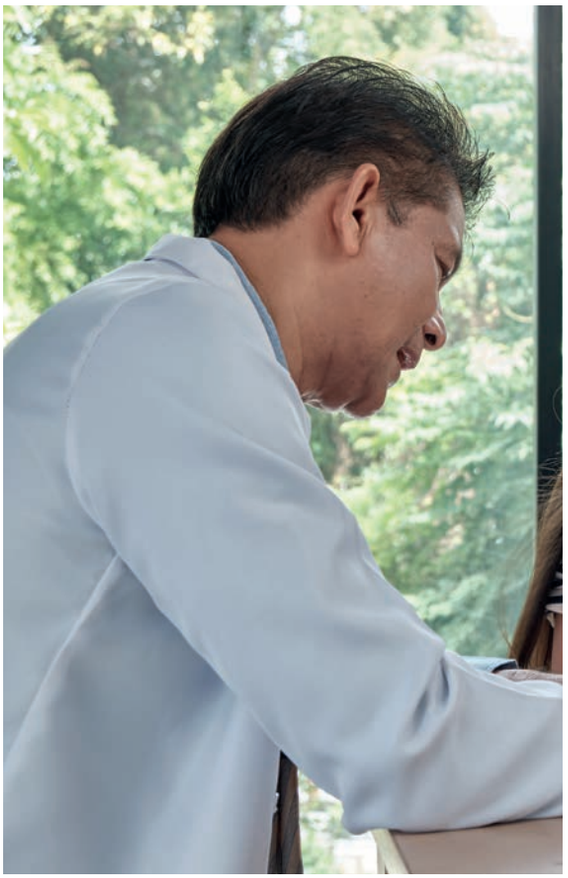
The research team interviewed 32 children, young people, and parents or carers across England to understand their experiences and concerns. They uncovered some key themes.

Some families didn't realise that diabetes tech is available for free on the NHS:

"I thought we had to pay for this. No one corrected me when I said we couldn't afford it."

"I just couldn't afford a smartphone to use them."

> "Some felt misunderstood in terms of language, faith, and food"



Words: **Mikayla Hu.** Photography: **AdobeStock**

Others described how travel costs and safety concerns made attending hospital appointments difficult:

"My mum and I have to take the bus to the hospital. It's not really safe in the area, and the cost is too high."

Communication with healthcare professionals could also be a barrier, especially when they don't share the same cultural background. Young people found it hard to connect and trust them. Some felt misunderstood in terms of language, faith, and food:

"They didn't understand me, my accent, my dialect."

Young people also raised challenges with understanding medical jargon – terms like CGM and HCL – and found

the educational materials they were given too technical.

The study also highlighted the variations in support between diabetes clinics. Some young people received excellent guidance and felt confident using tech, while others struggled to get the help they needed:

"When I moved hospitals, the setup was 10 times better. They actually explained everything."

## What healthcare professionals think

Researchers also spoke with 29 healthcare professionals working in children's diabetes care, who play a vital role in offering and supporting tech use, about their perceptions and understanding of why inequities exist.

Staff described how deprivation, alongside social and cultural factors – including financial pressures, digital poverty, and language barriers – can make it harder for some to benefit from diabetes tech. They also highlighted how stretched services can limit the time they can spend training people to get to grips with new devices, especially for those who may need extra support.

Professionals also pointed to an ongoing 'postcode lottery', where

> "Some said they may hesitate to recommend tech if they worry families might struggle to use it safely"

access can depend on local NHS commissioning decisions. And while many felt unconscious bias plays less of a role than in the past, some said they may hesitate to recommend tech if they worry families might struggle to use it safely, due to health literacy barriers.

## Breaking down barriers

The children, families, and healthcare professionals involved in the study all shared ideas on some possible solutions:

### AWARENESS AND ACCESS

- **Some families don't realise diabetes tech is free on the NHS or what devices are available. Targeted campaigns can help raise awareness, especially among minority ethnic or low-income families, to make sure everyone is armed with the right information.**
- **Providing financial support for practical costs – such as travel, smartphones, or internet access – could also make a big difference in helping families access tech.**

### EDUCATION AND PEER SUPPORT

- **Creating simple, more visual educational materials – and translating materials where needed – could make starting on tech less daunting.**
- **Provide outreach services, where healthcare professionals go out into communities to support children and young people with their questions around technology – creating judgement-free spaces.**
- **Train educators to be culturally sensitive and compassionate, and to openly talk about bias. Families are more likely to engage when they feel understood.**
- **Offer peer support by creating a diabetes network for young people to meet others with diabetes from the same background. Hearing from other families can help overcome obstacles.**

### SUSTAINABLE, EQUITABLE CARE

- **Implement standardised diabetes technology education programmes NHS-wide, to drive equitable access to structured education.**
- **Long-term investment in staff and resources is essential to expand access and ensure every child can be given the right levels of support.**

The UNBIASED team hope these practical recommendations can support the NHS to break down the remaining barriers and ensure that every child and young person with type 1 diabetes can access and effectively use the tech they need to thrive.

Tackling inequity in diabetes care is a pillar of our strategy at Diabetes UK, and ensuring equitable access to life-changing tech forms a key part of this commitment.

The UNBIASED study reinforces the importance of universal access policies, along with the need to tackle wider issues, like poverty, to make sure everyone eligible can benefit. As the rollout of diabetes tech continues across the UK, equality and fairness must stay at the heart of progress.

We'll continue to monitor access and health outcomes closely, staying alert to any new barriers that appear, as others are overcome, to make sure no one is left behind.

# ASK THE EXPERTS

**Our team answers your questions about diet, treatment and life with diabetes**

## EXPERT TEAM

**TASHA MARSLAND**
Senior Clinical Advisor: Tasha has worked as a registered dietitian for 25 years.

**ESTHER WALDEN**
Senior Clinical Advisor: Esther worked as a Diabetes Specialist Nurse for over 18 years.

**DOUGIE TWENEFOUR**
Head of Care: Douglas has over 20 years experience in nutrition and dietetics.

**Q I was recently diagnosed with type 2 diabetes. At a follow-up appointment, I got general advice, including losing some weight. As I've put on weight since menopause, I'd like to do this. The nurse suggested reducing carbs. But my family likes pasta, rice and potatoes, so my GP says to reduce calories instead. I'm confused.**
**Sarah, Kenley**

**Tasha says:** Weight is a sensitive issue for many people, and, if you're living with overweight or obesity, it's great that you would like to lose some. If you're living with overweight, losing around 5% of your body weight can have real benefits for your health, including improving your blood pressure, cholesterol levels and blood sugar levels. And it will mean you'll reduce your risk of serious diabetes complications like heart disease and stroke.

When you're first diagnosed, it can be a big shock, and it can be difficult to take in all the information you're given. This will often include advice, such as diet and weight loss, which can have implications for both you and your family.

For some people with type 2, following a low- or lower-carb diet can help with short-term weight loss and may lead to lower long-term blood sugar levels (HbA1c), cholesterol and blood pressure. But this sort of diet isn't appropriate for everyone, and the evidence shows it can affect growth in children. So, if you are preparing meals for the whole family, this is something you need to consider.

Calories are the units used to measure the amount of energy in food and drink. All foods and most drinks contain calories. Consistently eating more calories than your body requires can lead to weight gain over time. There are lots of factors that influence our body weight – such as age, gender and activity levels.

There are many ways to lose weight, and there's no one-size-fits-all approach. Part of losing weight is finding a way to eat fewer calories than you need. Evidence shows us that certain dietary approaches can help with weight loss, such as following a vegetarian or Mediterranean diet. Other methods include reducing portion sizes or reducing carbohydrate intake.

Whatever approach you decide on, it's worth remembering that not all carbohydrate foods are the same. Focus first on the quality of the carbs you eat, rather than the total amount. That means choosing healthy carbs (see 'Carbohydrates: How low should you go?, page 58), and cutting back on less healthy carb options, like white bread, fries and sugary drinks. Exchange snacks like crisps, biscuits and sweets for unsalted nuts, seeds and unsweetened plain yoghurt. Once you're making healthier swaps, you can then think about the quantity of carbs and the overall balance of your diet.

The best approach to weight loss is one that you enjoy and you're able to stick to. It's important that it involves reducing your calorie intake and fits in with the rest of your life and that of your family. If you need some ideas and help getting started, our website offers meal plans for different approaches to healthy eating and weight loss and features a variety of both low-carb and low-calorie options.

Finally, when you're diagnosed with type 2 diabetes, if it's appropriate, you should be offered a discussion about weight management or weight loss. If you don't feel this was done appropriately or you've been given confusing information, ask for an appointment with a

Photography: **Adobestock**
**PLEASE NOTE: The experts can't take phone calls**

diabetes dietitian or diabetes specialist nurse (DSN) to help with this.

Also, if you're taking medication for diabetes, talk with your healthcare professional about any adjustments to these when trying to lose weight. This is especially important if you're taking medications that increase the risk of hypos (low blood sugar levels).

■ **For more on meal plans, visit: diabetes.org.uk/bal-meal-plan**

**Q Our son has type 1 diabetes and recently started secondary school. He has an Individual Healthcare Plan (IHP), and we had a meeting before he started. But he's struggling to settle and was told off for checking his sugar levels on his phone. He was late to a lesson after treating a hypo and was warned with detention next time it happened. A few kids commented about catching diabetes from him, so we reported it to the school. They dealt with it, but we are finding the difference to primary school challenging.**
**Terry, Bourne End**

**Esther says**: The move to secondary school is a huge change for any child.

Most find it exciting, but a bit scary. Many children experience some difficulty settling into new surroundings and are expected to take more responsibility for themselves. Doing this with a health condition can add to the challenges.

It's really good that your son has an IHP in place and that you had an initial meeting with school staff. But it sounds like it would be useful to have another meeting now that your son has been at the school for a few months, and you know what isn't working for him. The issues you might want to raise include ensuring all the staff have some understanding of type 1 and that those teaching him understand how it might impact him during the day. You could ask your son's diabetes team to attend a meeting with you for support.

At primary school, children usually have regular contact with a relatively small number of staff. In secondary school, your son might be taught by six to seven different teachers each day. These teachers might be interacting with over 100 pupils every day. So, it's important that the school ensures your son's teachers and support staff understand his needs. This includes making sure he's not disciplined for managing his diabetes, such as checking his sugar levels on his phone or treating low or high blood sugars.

It's also important that they understand that blood sugar levels may impact his behaviour. So, if he doesn't seem to be paying attention or appears irritable or uncooperative, that may be due to low or high blood sugars. Some pupils find it useful to have a card with key information that they can hand to staff to avoid having to repeatedly explain why they may need to look at their phone, eat or step out during class.

It would be helpful if your son could find a practical way to let staff know if he is going to be late for lessons due to checking blood sugars or treating a hypo or hyper. If he has a friend in class he's happy to talk to about his diabetes, it might be sufficient for them to pass a note to the teacher.

The comments made by other children are upsetting, but – sadly – not an uncommon experience. In working with children and young people, we often hear stories like this, such as other pupils unwilling to go near them in case they 'catch' diabetes, and misconceptions and misunderstandings about the causes of diabetes and how the condition is managed. It's good that the school took the incident seriously and dealt with it.

What you do next depends partly on whether it happens again and how your son feels. If your son is happy for people to know about his diabetes, then the school could organise some awareness sessions for his classmates or year group. But some children find the attention this brings unhelpful. If the comments keep happening or take a form that your son finds particularly upsetting, you should report this to the school immediately. All schools in England are required by law to have an anti-bullying policy, so you may want to look at this to understand how and who to report concerns to and what action to expect from the school. If you think that your son is being bullied, talk to him about bullying, what it is, how it makes people feel and what he can do if he's being bullied.

■ **The charity Family Lives has helpful information on its website, including 'How to talk to your child about bullying'. Find out more at: familylives.org.uk/advice/bullying**

**WRITE TO**
'Ask the experts,' Balance, Diabetes UK, 126 Back Church Lane, London E1 1FH, or email: balance@diabetes.org.uk

**HELPLINE**
To speak with a trained advisor, call: 0345 123 2399 Mon to Fri, 9am to 6pm, or email: helpline@diabetes.org.uk

**SUPPORT FORUM**
For information and support, chat to members of our forum at: diabetes.org.uk/bal-forum

# LEADING FROM THE FRONT

**This summer, four undergraduate science students got the chance to experience what it's like to be part of top diabetes research teams, thanks to our Black Leaders in Diabetes Research internship scheme. Here, Mica McCarthy, one of the programme's interns, tells us how this opportunity has fuelled her ambition to become one of tomorrow's leading Black researchers**

Our Black Leaders in Diabetes Research internship, in partnership with the Windsor Fellowship, aims to offer research opportunities to students of Black backgrounds, who are currently underrepresented in the UK diabetes research community. The programme also gives established diabetes scientists the opportunity to nurture the next generation of Black research leaders. Over six weeks, the students learned new skills, contributed to real projects, and began to see themselves as part of the future of diabetes research. Mica, one of the interns, shares her story.

## Future researchers – Mica

From an early age, Mica McCarthy, now 21, remembers being fascinated by how the human body works. Now in her final year of her Biomedical Sciences degree at the University of York, Mica has her sights firmly set on a future in immunology research – specifically immunotherapies, treatments that focus on the underlying cause of autoimmune conditions like type 1.

Although training to be a doctor seemed the natural route for her to take, Mica wasn't so sure it would be the right way to go. "I always knew biology was going to be on the cards when I went to university, I just wasn't sure what area of it. I didn't feel I had the people skills to be a doctor, but loved the thinking and concepts of science and trying to figure things out," says Mica. "That's what made Biomedical Sciences really appealing to me. It was focusing on the whys of science: Why does this happen? And how can we go about finding specific treatments or cures?"

At York, Mica's growing curiosity around the immune system, including its role in conditions like type 1, offered clues to where her academic strengths and interests might take her after graduation. So, she was thrilled to be selected for the Black Leaders in Diabetes Research internship scheme, which has helped cement her ambitions to pursue a career in immunology research.

"Looking at type 1 diabetes more closely, when the body attacks its own insulin-producing beta cells, the thinking behind that autoimmune attack and figuring out why that happens is something that I find interesting," says Mica. "When I came across Diabetes UK's internship, I felt it would be an amazing opportunity to experience first-hand all the work that is going on in the diabetes research field."

### INCREASING DIVERSITY

For the third year of her degree, Mica got to experience American college life at Towson University, not far from Washington DC. Here she spent some invaluable time in a lab alongside PhD researchers. It was during her year abroad that Mica applied for the internship scheme and found out that she'd been successful. Never expecting to get short-listed, Mica couldn't contain her excitement at securing a place.

"When I read the email offering me the internship, I was literally screaming – it was so amazing. In my head when I applied, one of the things that Diabetes UK said was that the panel would give feedback on the interview. So, I thought that worst case scenario, if I just get to the interview stage and no further, at least, I'd get feedback on how to do better in future."

Mica's family were proud of her, too: "I'm first generation African. Both of my parents were born in Sierra Leone in West Africa. I know how much they sacrificed and worked for me and my sister to be able to have opportunities and do whatever we want to do – to the best of our abilities.

"So, I think being aware of my heritage has really made my educational achievements something I should feel proud of. I don't see enough Black people or people of colour in general when it comes to science research, and that's on both sides in terms of researchers and then participants," Mica observes.

"If you increase the diversity of researchers, in turn you will increase the diversity of participants. When people from Black backgrounds see researchers from their own community, they're more likely to take part in research studies, so they are then represented more, too. This goes hand in hand. With schemes like this, the title of the project speaks for itself – Black Leaders in Diabetes Research."

### CLOSE TO HOME

Growing up in south London, Mica's first memory of type 1 diabetes and how it can impact people's lives was at primary school. Mica remembers her school friend's type 1 diagnosis clearly and appreciates the daily responsibility of managing the condition. This, along with Mica's own grandmother's type 2 diagnosis, has given her a deeper understanding of diabetes.

"When I saw the advertisement for Diabetes UK's internship scheme, I immediately thought about type 1. It reminded me of my primary school friend and her diagnosis at 10 years old. She went into hospital and then her life changed forever – having to inject herself at such a young age must have been so hard," says Mica.

Mica can remember her friend coming to her house after school one evening,

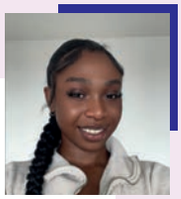
Mica with her mum and sister in 2022, visiting family in Sierra Leone

Words: **Sabeha Syed**. Photography: **Nick Dawe**

## FUTURE RESEARCHERS – IRENE, MAISA AND PRECIOUS

The scheme has left a lasting mark on the students, giving them the confidence to imagine their place in diabetes research. This is what they, and their mentors, had to say about their experiences:

### IRENE YEBOAH



Irene Yeboah joined Dr Stephanie Hanna at Cardiff University, where the focus is on the type 1 immune attack. For her, the experience was transformative:

"One thing I didn't expect was how collaborative everything would be – everyone, from the technicians to the clinical researchers, was approachable and supportive, and they all worked together seamlessly to drive progress in research for the benefit of people living with diabetes. And listening to patients and families share their experiences made the research feel even more meaningful and human.

"This internship really expanded my understanding of research, especially how lab work connects to real-world impact for patients. From the internship, I've come away with fresh and interesting insights, more confidence in the lab, and a better idea of how research fits into my long-term career goals."

### MAISA HASSAN

For Maisa Hassan, her placement – exploring why beta cells go wrong in type 2 diabetes – at Oxford University with Dr Daniela Nasteska, was equally eye-opening:

"My internship has expanded my scientific knowledge. But more than that, it's given me a deeper understanding of medical research. Working alongside leading researchers has shown me the power of collaboration, critical thinking and problem-solving."

### PRECIOUS OLUBORI

Dr Giulia De Rossi mentored Precious Olubori at University College London, where she's researching a new retinopathy treatment designed to prevent serious eye damage and sight loss. Dr De Rossi, who mentored Precious, said:

"Mentoring through this internship reminded me how powerful hands-on experience can be. Precious brought enthusiasm, curiosity, and a fresh perspective that enriched the lab. It's incredibly motivating to watch someone discover their potential in real time."

**You can find out more about our support for diabetes researchers from Black backgrounds in the UK at: diabetes.org.uk/bal-black-leaders-research**

and her mum making dinner for them: "We had to calculate her carbs for that meal. We sat working out how much insulin she needed and she also brought a sugary drink with her in case she had a hypo. Looking back, we were just 10, and my friend had to learn how to do all of this – not only insulin injections, but finger-prick blood checks, too.

Reflecting on her 82-year-old grandmother's type 2 diagnosis around eight years ago, and her African heritage, has made Mica acutely aware of the fact that Black people are more likely to experience health inequalities when it comes to diabetes care and access to treatment.

"I was a teenager when my grandmother was diagnosed with type 2. She lives in Sierra Leone and is one of the lucky ones who has access to healthcare – my mum makes sure she gets the treatment and care she needs to manage her condition," says Mica. "But there are lots of people who don't have that kind of access to healthcare or support that they need for their diabetes. And when you look at some of the statistics about certain communities, and that they're more at risk of developing diabetes complications, I find it unbelievable."

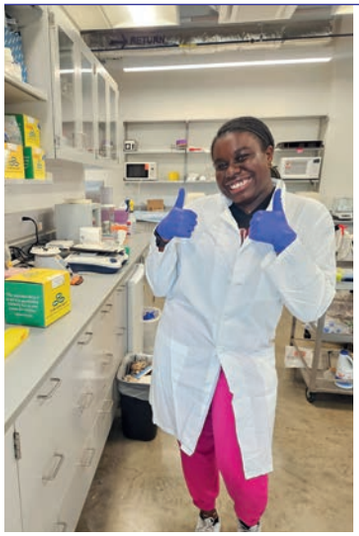
**"I find it unbelievable that certain communities are more at risk of developing diabetes complications and don't get the healthcare they need"**

### SEEING SCIENCE FROM DIFFERENT ANGLES

Mica's internship was split across three different Diabetes UK-funded projects, where she spent two weeks at each university: "I didn't just get involved in one research project. I was moving between three universities, so it was more like experiencing science from different angles," says Mica of her time spent with each of the researchers. "I got to meet patients and their families, sit in clinics, and see how research directly impacts people's lives. And there were a lot of light bulb moments that presented options and choices to me that I didn't really know were there.

"For the first two weeks of my internship, I was at the **University of Oxford** with Dr Rachel Besser, who is a consultant paediatric endocrinologist at the John Radcliffe Hospital. Dr Besser is involved in translational research, where her work directly impacts patients. I got to meet some of the patients and their families – and sit in her paediatric clinics."

The experience of meeting children living with diabetes, along with their families, has stayed with Mica. "Being in the clinic with Dr Besser is always something that I'm going to remember. And if I do get the chance to do a PhD, each test tube will represent, for me, a person and their family. All this



**Left: Mica stepped into a lab for the very first time during her third year at Towson University near Washington DC; and celebrating her 21st birthday with her dad while in the United States**

research isn't just here in the lab but represents somebody somewhere with a mum, a dad and a sister or brother, say. And, you know, this is the real impact of science on people's lives, so I'm always going to take that with me in the future."

Mica then went to the **University of Exeter** for two weeks, where she had some invaluable time in the lab. "I was with Professor Sarah Richardson in Exeter, where there is one of the biggest resources of pancreas samples from people with type 1 diabetes. I had the chance to learn from researchers how to study hormones such as glucagon and insulin in beta cells. Watching these hormones being revealed under the microscope was an invaluable experience."

The final part of Mica's internship was based at the **University of Bristol** with Professor Kathleen Gillespie where she continued getting hands-on research experience in the lab. "In Bristol, I got to help them with a research study looking at the genetic risk scores for diabetes in the general population. So, they have samples coming in – blood and urine. I helped process those samples, which helped me to practice my pipetting skills and accuracy. I also helped to do some general PCR (polymerase chain reaction) testing, which the researchers were using to look for genetic material in a sample."

### RESEARCH AMBITIONS

Reflecting on her time immersed in cutting-edge diabetes research, Mica says: "I really experienced what lab research entails, and its direct impact on people living with diabetes. It's really rewarding to see how much science is moving forward – even if we don't have all the answers yet."

And as for the future, Mica is now very clear about where she sees her place in research: "In 10 years, I'd love to have done my PhD. I definitely want to be respected for whatever I have done or completed by that time. I want to be proud of the person I am, not just the achievements and accolades, but in character, too. I'd also love to be someone who can help support other people like me and use my own success in the field to give advice on how to climb the ladder in science, so that others can realise their dreams – just as I want to do."

## TACKLING INEQUITY IN DIABETES RESEARCH

The Black Leaders in Diabetes Research scheme follows the work of our Diabetes Research Steering Groups (DRSGs). Last year, they brought together researchers, healthcare professionals and people living with diabetes to identify ways to address health inequalities in diabetes through research.

People of Black ethnicity are at higher risk of type 2 diabetes and tend to develop it at a younger age. Under 40, they're three times more likely to have type 2 diabetes than White people. And those living with all types of diabetes can experience unfair differences in care and treatment, affecting their diabetes management and the risk of complications.

We're funding research to better understand and address the multiple causes of these inequalities. But we also recognise that research itself can reinforce health disparities, in part because Black people have been underrepresented in research for many years. That's why, through our DRSGs and schemes like Black Leaders in Diabetes Research, we want to make sure that the research community reflects the diversity of those living with diabetes.

**For more on what we are doing to tackle inequity, visit: diabetes.org.uk/bal-tackling-inequity-report**

## OPENING DOORS FOR WOMEN AND GIRLS IN SCIENCE

Celebrated every year on 11 February, International Day of Women and Girls in Science was established in 2015 by the United Nations to promote full and equal access to, and participation in, science for girls and women.

Beating stereotypes and ending prejudice against women and girls in science – from all backgrounds – means recognising and championing the amazing females who are continuing to break new ground in research and innovation. Our interns got to spend time with just some of the inspiring female scientists in diabetes research.

**Read about some of the female scientists we're funding, at: diabetes.org.uk/bal-female-scientists**

# SHINING ON THE STAGE OF LIFE

**Diabetes can affect all ages and, depending on when you're diagnosed with diabetes, you'll need to navigate the condition alongside key moments that come with the stages of life.**

## Childhood

Around 38,000 people under the age of 19 in the UK are living with diabetes. Of those, 90% have type 1 and are mostly diagnosed between the ages of 10 and 14. The number of children with type 2 diabetes is increasing and it's normally diagnosed after the age of 10. For babies and very young children, parents and carers will learn how to manage their diabetes, give them insulin, monitor blood sugar levels, and carbohydrate count. Managing diabetes in this age group can be difficult as babies and toddlers might not be able to tell a parent or carer if they're experiencing low blood sugar (hypo) or high blood sugar (hyper). Fussy eating and short bursts of activity can also make managing blood sugar levels difficult.

Type 2 diabetes in childhood can be more aggressive than type 2 in adults and can lead to complications at an earlier age. But with the right support it can be managed, and the risk of long-term complications can be reduced.

If you're a parent or carer of a young child with diabetes, we've got lots of information and advice on our website at **diabetes.org.uk/bal-children**. We also have parent and family support groups so you can meet and share experiences with others. Find your local group at **diabetes.org.uk/bal-local-groups**

## Teen years and adolescence

Adolescence usually means the ages between 10 and 19 and is a period of change where young people often learn to manage their diabetes themselves, with care and support. This age range can be an exciting time as young people will forge new relationships and start to gain their independence.

This time can also have its challenges as young people experience rapid physical and hormonal changes. Managing diabetes on top of all these changes could make things tough. It's important that teenagers with diabetes are offered psychological support as part of their routine care to reduce distress and improve wellbeing. If you're a parent or carer of an adolescent with diabetes,

ask their healthcare team what psychological support is available.

During puberty, our bodies grow and develop quickly, and various hormones are released which can have an impact on diabetes. Some of these hormones can prevent the insulin in our bodies from working properly so blood sugar levels may be higher than usual. During adolescence, a person is growing rapidly, and more energy is needed so appetites and food intake increase to meet this requirement. A young person's healthcare team may need to support them in adjusting their insulin requirements due to their changing body size and increased food intake. Girls generally start their periods around this age which can have an impact on diabetes management. Read our article about periods and diabetes in the Summer 2025 issue for more information.

## Early adulthood

The ages of 18–24 are often when our strength and stamina increase, and we're generally in good physical health. By the age of 18, most young people will have transitioned from paediatric to adult services. If this doesn't go smoothly, there's a risk of young people becoming lost in the system and not having the healthcare appointments they need. If you're a parent or guardian of someone transitioning into adult care or has recently transitioned, it's important that they're still on the hospital's system. If you have any concerns or think they're missing from the system after transition, get in touch with the diabetes outpatient clinic at the hospital. They should be able to check they have their details, arrange an appointment, and answer any questions.

It can be more difficult for young people with type 2 diabetes to get the care they need at this age because services are more set up for young people with type 1. If you're a young person living with type 2, or know someone that does, visit our website to read more about the care you should be receiving and what to do if you aren't getting it: **diabetes.org.uk/bal-health-checks**

## Adulthood (25-40 years)

As we head into adulthood, we might experience big life moments such as starting our careers or becoming a parent.

If you have diabetes and live in England, Scotland or Wales, you have employment rights which are set out in the Equality Act 2010. If you live in Northern Ireland, your employment rights are set out by the Disability Discrimination Act 1995. These acts lay out the steps employers must follow in their treatment of employees and job seekers who have a disability. You may not think of your diabetes as a disability, but you should be protected at work by these laws.

Employers may need to make 'reasonable adjustments' to make sure everyone can do their job safely and healthily. For example, if you live with diabetes you might need to eat at set times each day to stay on top of your blood sugar levels and having your lunch break swapped around if you're on a rota could make this difficult. A reasonable adjustment could be for your employer to let you have your lunch break at the same time every day.

Managing your diabetes at work might feel more difficult for lots of reasons such as increased stress levels, not finding the time to eat, or experiencing more hypos if you're on your feet all day. The better your colleagues understand diabetes, the easier it will be for them to support you. Encourage them to ask questions and give them the information they need to help. It's also a good idea to tell your line manager about your diabetes so they can give you the best support you need. Find out more about your rights at work and managing diabetes at work on our website at **diabetes.org.uk/bal-work**

Some people in this age group might start thinking about having a baby. Most women with diabetes have a healthy baby. But having diabetes means you have to do more planning and have more support from your healthcare team before, during, and after your pregnancy to reduce the risks to mother and baby. If you live with diabetes and you're planning on becoming pregnant, it's very important that you get support and advice from your healthcare team about the important steps you need to take before you get pregnant. If you think you're already pregnant, book an appointment as soon as possible. Find out more about pregnancy and diabetes at **diabetes.org.uk/bal-pregnancy**

## Later adulthood (40-65)

If you've lived with diabetes for a while, as you enter your later adult years you are probably more aware of the possible long-term complications. Prolonged high blood sugar levels could increase the risk of heart attacks, strokes, kidney failure, and eye and nerve damage. But there are steps you can take to reduce your risk of complications, no matter how long you've lived with diabetes. And healthy habits that you develop during this time can significantly benefit your health as you approach later life and help you enjoy these life stages to the full.

Looking after your blood sugar levels and keeping them in your target range reduces your risk of long-term complications of diabetes. Eating a healthy, balanced diet can help you manage blood sugar levels, and blood pressure and cholesterol levels, too. Being physically active also helps you manage your blood sugar levels.

Middle age is often a stressful time if juggling work with caring responsibilities, and exercise can help improve your wellbeing and sleep quality. Regular physical activity, including resistance exercises, is crucial for reducing the risk of falls and improving balance. Carrying shopping bags, heavy gardening and lifting and carrying grandchildren all count as resistance training.

We know type 2 and types of cancer have some similar risk factors, such as living with obesity and overweight. People with type 1 also have an increased risk of some cancers. It's essential that everyone with diabetes gets regular health checks so any health concerns or complications can be caught and treated early. Early treatment can prevent or lower your risk of developing serious health problems. Read more about

Words: **Lucy Evans.** Photography: **Adobestock, iStock**

## SARAH'S STORY

**Sarah was diagnosed with type 1 diabetes in 1973 and has navigated diabetes through various stages of life. Sarah's story includes mention of disordered eating which some readers may find distressing. She says:**

I was nearly 10 years old when I was diagnosed and was clueless about diabetes. My first hypo happened at school. My mum had just dropped me off and I felt myself starting to panic. She saw me and realised what was going on so gave me some of the sugar lumps I was carrying, but I remember feeling very scared. During my teen years, I was very conscious of my weight and started to control how much I was eating and reduced my insulin. I developed an eating disorder and, even though I told my mum about it, I felt unable to discuss it with my diabetes consultant. My control was appalling during these years.

When I entered the working world during my early 20s, I finally got some help and gradually my control improved. Nowadays, my diabetes remains challenging. I'm now over 60 and still experiencing menopausal symptoms, even though people generally tend to think these only happen between the ages of 40 to 59. The menopause has led to distressing unpredictable extremes of insulin sensitivity and has made it very difficult to manage my blood sugar levels.

I'm on a waiting list for an insulin pump and I hope this will help my overall control. I've had some challenging times with my diabetes, but I keep doing my best every day. Diabetes has given me an appreciation of many things and a deeper understanding of life's struggles and triumphs.

diabetes and cancer at **diabetes.org.uk/bal-cancer**

Menopause is usually reached when a woman has stopped having any periods for 12 months and typically occurs between the ages of 45 and 55. However, some women experience menopausal symptoms after the age of 60. Levels of female hormones change during the menopause, and this can have an impact on blood sugar levels and make managing diabetes more difficult.

These hormonal changes can lead to women's bodies becoming less responsive to insulin. Some women experience rapid changes from high to low blood sugar levels for no apparent reason. Menopause can lead to higher blood pressure, higher cholesterol, and weight changes, such as carrying more weight around the middle.

Healthy eating, keeping active and looking after mental wellbeing can help with symptoms during perimenopause and menopause. Speak to your healthcare team about possible treatment options for any perimenopausal or menopausal symptoms you might be experiencing.

Discuss your diabetes treatment with your healthcare team too. If you take insulin, they can consider adjusting treatment to help with insulin resistance. If you take metformin, this can be an effective treatment for menopausal women as it helps manage insulin resistance. It's also important to check your blood sugar levels more often as some perimenopausal or menopausal symptoms may be similar to symptoms of diabetes complications or high or low blood sugar levels. Using a continuous glucose monitor (CGM) means it's easier for people with diabetes to check their blood sugar levels. Talk to your healthcare team to see if you're eligible for a CGM if you don't already have one. Find out more about menopause and diabetes at **diabetes.org.uk/bal-menopause**

> "A third of people living with diabetes in the UK are over the age of 65"

## Older people (65+)

Due to improved healthcare, more of us are living longer and healthier lives. A third of people living with diabetes in the UK are over the age of 65, and there are some things to consider as you get older and live with diabetes. We biologically age at different rates, and ageing well, taking certain measures, such as keeping active, can help with this. Receiving personalised support from your healthcare team is also key.

You might be at increased risk of hypos because as we age, our bodies become more sensitive to medications, and your body can have trouble getting rid of them meaning they stay in your body for longer. You might also find your hypo warning symptoms become less obvious or you don't have any symptoms at all. It's important you check your blood sugar levels regularly, or have someone check them for you, and make sure you treat any hypos immediately. To prevent hypos, try to have regular mealtimes and snacks containing carbohydrates and keep your hypo kit nearby, so you have any hypo treatments to hand if you need them.

Getting older and living with diabetes makes it even more important to focus on your health and getting the care and support you need to do this. This will keep you as active and independent as possible. This includes making sure you get the free vaccinations you're entitled to, your eyes screened, and seeing your dentist regularly. You should receive a free medical review by a doctor, pharmacist, or nurse to ensure your medications are still right for you.

Keeping active in later life can help strengthen muscles, maintain mobility and balance, and improve insulin sensitivity. It can also help improve mental wellbeing and help prevent falls. Older people with frailty have been shown to benefit from light resistance and balance training. We have free resources on our website to help with keeping active at home including while sitting down **diabetes.org.uk/bal-exercise-resources**. Speak to your GP before starting any new exercise.

If you'd like more advice and support on the issues we've raised, talk to your healthcare team or call our Helpline on **0345 123 2399** or email them at **helpline@diabetes.org.uk**

# MANAGING YOUR DIABETES IN HOSPITAL

**When you're living with diabetes, it helps to be prepared for any hospital stay. We talk to Esther Walden, our Senior Clinical Advisor, about what you need to know to help manage your diabetes on the ward**

Words: **Gabriella Taylor.** Photography: **Diabetes UK**

Going into hospital can feel daunting – when it's planned or when it's not. And if you're living with diabetes, navigating day-to-day life on the ward alongside your condition can be even more challenging. Whether you've been admitted because of your diabetes or for another reason, make sure you get support with your diabetes if you need it when you're having hospital treatment.

"It's really important you let any ward or hospital staff know that you have diabetes, don't assume they will know," says Esther Walden, our Senior Clinical Advisor. "They have access to your hospital records but for peace of mind, it's a good idea to raise this with them."

If you're very unwell and unable to look after yourself, hospital staff will manage your diabetes for you, along with any other conditions you may have. The more information they have, the easier it will be for everyone involved in your care. So, making sure your family or friends can advocate for you – if they need to – is important. It may be worth writing something down for them or you can print our 'Hospital patients with diabetes sheet', which is available for free on our website at: **diabetes.org.uk/bal-hospital**

The majority of people with diabetes who use insulin will understand how to manage their condition better than anyone else – and it's no different when you're in hospital receiving care. "Ask if there's a self-management policy, as timing of medication can be a problem in hospital as there are usually set drug rounds on wards," says Esther. "So, it's better if you can take over. You might be assessed, and asked to sign a consent form so staff can agree that you can continue to self-manage your diabetes medications. Ask if there's a diabetes specialist you can speak to if you're having any issues – although not all hospitals have them."

## Diabetes medication and tech

You should take your usual medication and anything else you need, such as hearing aids (if you use them) and spare batteries for them. Bring at least a week's

supply of your usual medication in its original packaging. Show the nurse or doctor when you arrive, so they can make note of them and ensure they are securely stored while you're on the ward.

Most hospitals can't supply sensors for your continuous glucose monitor (CGM) or any other supplies for your diabetes tech, and there could be a delay in getting the right insulin or medication to the ward. So, it's important you have some with you. Esther says: "I wouldn't recommend taking in lots of spare equipment, but you should take some. Take in your own insulin and tablets. And if your visit to hospital is pre-planned, put any supplies in a box and label it with your name to avoid them going missing. If you have an insulin pump and have been told you can't continue to use it in hospital, send it home with your family or friends and ask them to bring it back when you're discharged."

If you have got diabetes tech, there may be certain areas in hospital where you can't wear them. Esther says: "These are places like intensive care, if you're going in for an MRI (also known as Magnetic Resonance Imaging) or PET (also known as Positron Emission Tomography) scan, or during some operations. If you use a hybrid closed loop system and you're allowed to continue using your pump, you may be asked to come out of hybrid closed loop and go into manual mode. And the hospital staff may want to do some blood glucose readings even if you use sensors. You can have a conversation with them about how often is necessary."

You can find out more about what happens if you're using an insulin pump in hospital on our website. Visit: **diabetes.org.uk/bal-hospital-insulin-pumps**

## Insulin safety

If you normally use an insulin pen, you may be asked to use safety needles while in hospital. "Staff may ask you to use their safety needles as a safety precaution. If you're unsure about how to use them, ask staff to show you," explains Esther.

"If you're put on intravenous insulin while you're in hospital and you normally take long-acting insulin, then you should continue taking it. If you aren't being given long-acting insulin, ask the hospital ward staff the reason why and if you should be."

If you run out of your usual insulin, don't worry. "There's always an out-of-hours pharmacist on duty and there are lists in hospitals of which wards have certain insulins or medications," says Esther. "If staff say they don't have it, explain that you need to take your insulin and on time, and it's really important they check supplies with other wards."

## Hospital food

"Hospitals usually have a weekly set menu and some will have worked with the dietitians to provide carbohydrate information for people, but there's no guarantee, so ask if this is available for you," suggests Esther. "But one thing to keep in mind is that portion sizes aren't always consistent. So, if you use an app or book like Carbs and Cals, then it might be worth taking it in with you."

If you get served something you don't like or have special dietary requirements, speak to the ward catering staff or ask to see a dietitian to see what alternatives they can offer you. Esther says: "As long as you check first, your friends and family should be able to bring in food from home. Also, if you haven't eaten or your hospital food hasn't arrived, make sure you tell the ward staff to avoid hypos."

**"If you haven't eaten or your food hasn't arrived, make sure you let the ward staff know so you can avoid hypos"**

When it comes to hypo treatments, Esther recommends bringing some in with you: "Take in your own hypo treatments, as wards will have things like glucose gel and orange juice, but you may not have immediate access to a nurse to get them for you. Having your own treatments is a safety net. Explain to staff what they're for and let them know when you've taken any hypo treatments."

## Health checks

You should have certain checks while you're in hospital. Your feet should be assessed routinely on admission, says Esther: "Staff will look at your feet and check for sensitivity. It's so important to look after your feet. Heal protectors can be worn when lying in bed. Bring well fitted shoes or slippers so you never walk around the ward in bare feet. If you notice redness or pain, let the ward staff know as soon as you can."

While you're in hospital, you will also have regular blood pressure checks, and your blood sugar levels should be tested regularly, too. If you're concerned about anything, you should ask if there's a diabetes specialist available to talk through any worries or to do some further checks.

## Changes to routine

When you're in hospital, your routine will be different because of sleep disturbance and changes to your normal insulin administration, for example. Esther says: "Expect things to be out of pattern. When you have diabetes, any illness, trauma, infection or surgery can increase your blood sugars as you need extra energy to fight infections. Food may come at different times and there may be things you don't like, so it's important to keep talking to the ward staff and flag any concerns."

You may find when you're in hospital that your physical activity will be different too – either you'll be doing more or less than you're used to. Esther says: "Most people might be lying in bed and unable to move around much, while others may have increased their movement because of physiotherapy, for example. If you have to lie in one position for long periods, there are special air mattresses to prevent pressure sores, so speak to staff to see if that's available to you."

The dosage of your diabetes medications may change, so check with ward staff if you aren't sure and again on

## RORY'S STORY

**Rory, 32, from Bedfordshire, has been living with type 1 since he was six years old. Here he shares his positive experience of being in hospital for about six days following a colitis flare-up. He says:**

I was diagnosed with colitis in 2019 after really struggling with symptoms. Last year, I had a flare-up and ended up in hospital for about six days while they tried to get it under control.

In hospital, I always told staff about my diabetes – in case they hadn't seen my notes. I was able to continue using my own insulin and inject myself without any dosage changes. They made sure to check my feet and asked if I wanted to talk to a diabetes specialist. I took in my own hypo treatments, things like sweet drinks and biscuits, and packed books to keep me occupied.

I don't eat meat as it makes my colitis worse, but they gave it to me a couple of times. So, it's important you flag if you're served food you can't eat. The staff made sure I had three meals a day. Although I didn't have the carbohydrate information on the menu, I worked it out myself.

The staff wanted to do blood sugar tests quite often. They would wake me up every few hours to do a test. Even if it was at 2am, they would test and ask me to do an insulin injection, which I wouldn't do at home.

On the whole, the staff were great, and I had fantastic care.

**"Sleep disturbance in hospital can be a problem. If you're being woken up at night for blood sugar tests you wouldn't do at home, ask if it's necessary"**

discharge. If you're living with type 2 diabetes and you're on SGLT2 inhibitors (tablets that end in 'gliflozin'), you may have your medication stopped while you're in hospital. But this and alternative diabetes treatments should be discussed with you.

Sleep disturbance in hospital can be a big problem, so bringing an eye mask and ear plugs with you may help you get as much rest as you can. If staff are waking you up during the night to do a blood sugar test and you wouldn't do that at home, ask them if it's necessary.

### Emergency admittance

If you've been admitted as an emergency, either with diabetic ketoacidosis (DKA), something related to diabetes complications or a hypo, your diabetes management will mostly be taken over by hospital staff until you can manage it yourself. You will likely be assessed to see when or if you can take it over.

Communication between wards and the healthcare teams outside the hospital can be difficult – especially if you're in hospital out of your area. "When you leave hospital, ask for a copy of your discharge letter and take it to your GP or diabetes team at your next appointment to make them aware. The hope is that you would be referred for a follow-up, but this may not happen," says Esther.

### Winter and diabetes

Cold weather increases risk of falls and injuries in icy conditions. It can also reduce the effectiveness of the immune system and worsen underlying health issues, like heart and respiratory conditions. "During the winter months, your chances of getting other illnesses increases. Changes in the temperature means you're more susceptible to flu and other illnesses," says Esther. "So, it's really important to keep yourself wrapped up, your home warm and take up the flu jab."

If you're living with diabetes complications, like heart disease or neuropathy, the cold weather can make this worse for some people. It can raise blood pressure, putting extra strain on the body and affect circulation in your hands and feet, making neuropathy more painful in those areas.

Make sure your home is heated to at least 18°C in the spaces you normally spend time in and keep bedroom windows closed at night. The NHS has guidance on staying well during the winter: **www.nhs.uk/live-well/seasonal-health**

### Packing for hospital

- Pack comfortable clothing, slippers, toiletry essentials and wet wipes in case showering isn't possible. You can take in razors but the hospital may not permit an electric one on the ward.
- Things to keep your mind busy, like magazines or puzzle books.
- Don't bring in large amounts of cash or any other valuables. Avoid bringing original documents, instead bring copies if you need to.
- You may want to mark or label some of your belongings for peace of mind. Hospitals aren't responsible for your personal belongings.

### Sick day rules

- Keep taking diabetes medications even if you don't feel like eating.
- Your insulin may need to be increased or decreased when you're unwell.
- Check your sugar levels more and be aware of the signs of a hyper and hypo.
- Stay hydrated with unsweetened drinks – drink little and often.
- If you have been shown how to, check ketone levels if your blood sugar levels are above target range.
- If you're struggling to eat meals, try to eat snacks with carbohydrates for energy.
- For more on sick day rules, go to: **diabetes.org.uk/bal-care-to-expect**

# TEAMWORK

**When you're living with diabetes, you'll have appointments with a range of healthcare professionals to help you manage your condition. Here, some of the healthcare professionals who support people with their diabetes take us behind the scenes of their day-to-day work**

# "We're here to listen and help problem solve"

**Ravinder Dosanjh is a Diabetes Specialist Nurse Manager working for Hwyel Dda University Health Board in Wales. She says:**

My interest in diabetes started from watching my grandmother do her daily insulin injections and carry around sweets to treat hypos. So I knew a bit about the condition, before working in diabetes care, from family experience.

I started my professional journey in diabetes after qualifying as a nurse in 1991. I worked in medical wards until I trained to be a health visitor and then returned to nursing as a blood transfusion practitioner.

In 2015, I joined the diabetes nurse teams and became project nurse lead on a national initiative called Think Glucose to improve inpatient diabetes care. As part of the project, I was involved in planning an education programme to improve staff knowledge of diabetes, reduce medication errors and hypos, and reduce how long people need to stay in hospital. Working with the diabetes teams, we successfully improved patient's experience while staying in hospital. Although employed as a project nurse in diabetes, I wanted to update my nursing skills and studied an MSc module in diabetes and then later pursued a full Practice Based Diabetes MSc at Swansea University.

Every day looks different in my role. Some days, I'm adding data to reports and answering emails about staff education, other days I'm delivering self-management education courses, such as DAFNE or Xpert, to people living with diabetes. I also support the diabetes clinics and review patient's medication changes and introduce them to technology like continuous glucose monitors (CGMs) and smart insulin pens. I enjoy delivering the education courses because I think it's essential that all people with diabetes are given the knowledge and skills to best manage their diabetes.

DAFNE is a course for people living with type 1 to give them the skills to adjust insulin for any food choices and teach strategies for managing blood sugar levels when doing activity and exercise, going on holiday, eating out, and more.

Xpert is a course for people living with prediabetes or type 2 and teaches them about how different factors can impact blood sugar levels. Diabetes is complex to manage, and people need continuous support and education to look after their health and wellbeing.

A personal highlight in my role was when I was awarded Diabetes Nurse of the Year 2025 at the British Journal of Nursing awards. I was really proud of that. I was also proud to be involved in Diabetes UK's ChangeLab, a space for people living with diabetes and healthcare professionals to discuss how to improve inpatient diabetes care. We talked about including carbohydrate content of meals on hospital menus, how to best support people to self-manage their insulin doses while staying in hospital, and improving information resources and communication with them during their stay.

My role comes with its challenges. We are reviewing our services across the health board to meet demand with the capacity we currently have and provide seamless care for people with diabetes.

Our team have lots of work coming up that I'm excited about. We've had funding for a new insulin pump service to implement and increase a specific model of a hybrid closed loop system. I'm excited to see this service being rolled out as it means more people living with type 1 in our area can use hybrid closed loop technology, improve their diabetes management and reduce their risk of future complications.

Living with diabetes can be overwhelming and I always encourage people to take every opportunity to attend clinic appointments and structured education courses.

> "I always encourage people to attend their clinic appointments and structured education courses"

To get the most out of an appointment with a diabetes specialist nurse, come prepared with logs of your blood sugar levels, a list of questions and your medication so we can review and support any issues. It's important to be honest and tell the nurse how you feel and talk about your concerns.

We're here to listen and can help you to problem solve. We can also support if you're feeling stressed, anxious, or burnt out – it's not all about blood sugar levels! We want to support you as best as we can.

Words: **Lucy Evans**. Photography: **Gemma Griffiths**

# "Appointments should be a collaboration"

**Jennifer Madden is a Consultant Podiatrist in Diabetes working in the Belfast Health & Social Care Trust. She says:**

I started out like most podiatrists (foot specialists) in a community clinic, but in 2004 I moved to one of the largest hospitals in Belfast. I wasn't working within diabetes care at that time and worked more on the elderly care wards, but I always had an interest in high-risk foot and wound care. I've now been working in hospitals for the past 15 years.

I work within the multidisciplinary diabetes foot team in Belfast. We also work with other teams around the region, so we have a very collaborative approach to diabetes footcare. I really enjoy the variety of people I get to learn from in my line of work. No profession is an island, and I'm always learning from the range of people around me, including podiatrists, endocrinologists (diabetes specialists) and vascular surgeons (blood vessel specialists). We also link in with other hospitals and foot protection teams and meet each other regularly. Collaboration is so important because it means we can refer people to the right places in our podiatry services to get the treatment and care they need.

We have an emergency clinic that runs every morning, so the team sees to emergencies every day from across the region. We also have dedicated regional beds for people experiencing diabetes foot complications. The team see people with all types of diabetes, but we're starting to see more people with type 2 at younger ages. The most common thing that we see people for is infection in their foot that, if not treated quickly, can be very damaging.

I've been lucky to have been a member of Diabetes UK's Clinical Champions programme twice – first in 2017 to 2018 and then again in 2022 to 2023. The Clinical Champions programme gave me a free opportunity to develop my leadership skills and build a UK-wide support network and local partnerships. For me, it was a space to talk to other healthcare professionals about challenges that come with developing a service for people with diabetes. I also wanted to develop the skills I needed to support the staff I work with. Being accepted onto the programme is one of my proudest moments.

My team and I are always thinking about how we can improve diabetes footcare, what the difficulties are, and how we can make differences. We're currently using the ACTNOW cards, a checklist created by Insights for Diabetes Excellence, Access and Learning (iDEAL) to help people with diabetes recognise the warning signs of foot complications. We're using these to develop our own regional cards and posters with clear pictures showing the signs to look out for in case of an emergency with the feet. We're putting the posters up in supermarkets and pharmacies, and hope to get these out across Belfast. People living with diabetes get a lot of information and have many things to think about, so sometimes having something as simple as a few pictures can be easier to digest.

I view my job as a podiatrist as giving people with diabetes the skills to understand what the risks of foot complications are and what their own foot health looks like. Appointments should be a collaboration and it's important we listen to people with diabetes so we can give them the right information and advice. A lot of the people we see are in their 40s or 50s and have lots of other things going on, like jobs, children and mortgages so they might not have the mental space to think about their feet. But if people feel listened to and their concerns are heard, we can give them the appropriate advice to suit them.

It's very important for people living with diabetes to check their feet and know the signs and symptoms of infection or neuropathy. Some people can self-refer to a podiatrist if you think you need to get something checked which a lot of people aren't aware of. This can vary by area, so it's best to check your local trust's podiatry service's website or contact them directly. If you think there's an issue with your feet, get treated as soon as possible.

Words: **Lucy Evans**. Photography: **Charles McQuillan**

# "I want everyone who comes to clinic to feel welcome"

**Ellouise Simpson is an advanced specialist diabetes dietitian working across Yorkshire. She says:**

I qualified as a dietitian in 2017, and I've been working in the NHS ever since. I lead the diabetes dietitian team at the hospital, where we support people living with all types of diabetes – type 1, type 2, gestational diabetes and others rarer types. Our care extends across the community and within the hospital, providing tailored support to those who need it most. Even when I was studying for my degree, I knew that diabetes was the area I wanted to focus on.

I grew up in Birmingham in the Black Caribbean community. Although my family wasn't directly affected by diabetes, I knew so many people in our community who had been affected by the condition – and type 2 diabetes specifically. I used to hear people in my community speak about diabetes as if it was just part of life and was inevitable. This got me interested in why they might feel this way and plays a big part now in how I approach my role as a specialist diabetes dietitian.

When I'm in clinic, I support people with diabetes to live well and understand who they are and their relationship with food. I want to make sure the people I see have an understanding of how the foods they eat impact their blood sugar levels. I can then give them the tools to help them manage their diabetes in relation to their diet. When they attend clinic, it's as if they come in to see me with an empty toolbox. My aim is to help them to start filling it with the information they'll need to equip them on their journey managing their diabetes. They'll have that toolbox for the rest of their lives. So, if later a person feels that things aren't going well, they can dip back into their toolbox of knowledge to revisit the information I give them.

> "My aim is to give people the tools to help them manage their diabetes in relation to their diet"

I want to make sure that everyone who comes to clinic feels welcome. Sometimes, talking about diet and diabetes makes up a small part of their appointment. I find that taking time to talk about life in general helps people to open up and helps me to understand what's happening in their lives. Then I can offer advice that's right for them and manageable, too.

A typical day in my role can begin with a telephone clinic, supporting patients who need timely diabetes advice and guidance. I also deliver one-day structured education programmes for people living with type 2 diabetes, helping them understand their condition and feel more confident managing it. I also run carb-counting and insulin skills courses for those with type 1, empowering them to make informed food choices and optimise their insulin use. No two days are the same – and that's what makes the work I do so rewarding.

My job has taught me it's important to see a person's culture, listen to their experiences and understand where they are in life. I believe that dietary support and health advice should be tailored to the person as one size can't fit all. Food is often at the heart of communities. It plays a big part in who we are and our culture.

Some people might be disappointed when they talk to their healthcare team about their cultural foods because of a lack of understanding and the fact it might be considered unhealthy. But that's not the case and as we continue to raise awareness of the diverse communities we serve, the goal is for the healthcare landscape to become more inclusive, which will then begin to reflect the communities we care for.

I am proud to be a Black woman in my field and believe that diversity matters. I've found that who I am often helps to bring down barriers. It helps people with diabetes from diverse backgrounds to talk freely to me about their health and lifestyle as they feel I'll understand.

Words: **Sabeha Syed**. Photography: **Nick Dawe**

# “I’m there to offer a safe space”

**Luke Purdy is a Youth Worker working in the Dudley Group NHS Foundation Trust. He says:**

As a Youth Worker, my role is entirely led by young people. I support a range a range of people aged 13–25 living with long-term health conditions but mainly those with diabetes. There will be doctors and nurses to look after their clinical needs, and I’m there to support with anything outside of that. I see young people in schools, colleges, at home, in coffee shops, wherever they want to meet up, roughly every three weeks. I describe my work as holistic support. A lot of the time it’s about offering emotional support around anxiety or any stresses they’re experiencing. I can also be support with accepting a new diagnosis.

Sometimes I attend their diabetes clinic appointments with them to act as their advocate and offer support when they transition from paediatric to adult services. For some young people, attending appointments and speaking to healthcare professionals can seem daunting so a friendly face can help them feel more comfortable.

Every now and then I take them out in a group to do something fun. Earlier this year, I took 28 of them go-karting so they could meet and connect with other young people with diabetes. None of them knew each other beforehand and some of the girls started to form a group to get to know each other. They ended up exchanging numbers and now all keep in touch through a group chat. It’s amazing to see them connect with each other and form important friendships.

Sometimes I’ll go into a young person’s school and have a session with them there. Some young people stop attending school if they’re experiencing mental health struggles, so I try to support getting them back in. We don’t always chat about diabetes, and I can also offer support for personal issues they’re having. Their mental health can impact their physical health and if we can support them emotionally and give them the tools to look after themselves and their diabetes, this will reduce their risk of diabetes complications. We also want to encourage young people to make healthy decisions that they can then take into adulthood.

I can’t offer the same support as a mental health professional, but I can offer them the opportunity to have someone to talk with. For some of the young people I work with, my sessions might be the first confidential space they’ve had to be completely honest about their feelings towards living with diabetes. Some of them struggle with it and say they resent the condition. I’m there to

**“My advice for a young person with diabetes who might be struggling is to look out for peer-to-peer support and make connections”**

Words: **Lucy Evans**. Photography: **Ben Pollard**

"Our youth work service was set up two years ago and the data shows it's been working"

offer that safe space for them to be open with their feelings and listen to what they need to say.

Our youth work service was set up two years ago and the data shows it's been working. The attendance rate of young people with diabetes coming to their clinic appointment six months before seeing me was 50%. The attendance rate six months after I've started working with them has shot up to 75%. That's been amazing to see. I rarely talk about appointment attendance with them. But the statistics shows that if young people feel more heard, seen and supported, they're more likely to attend appointments as a byproduct of feeling more connected with their hospital.

My advice for a young person with diabetes who might be struggling is to look out for peer-to-peer support and make connections. Look into Diabetes UK's Together Type 1 youth programme to meet other young people with diabetes. I've referred some of the young people I work with to become Young Leaders in the programme. I often think young people who have struggled with their diabetes make good leaders and are able to support others because they've been through it themselves. They also always want to help other young people with diabetes.

Youth work looks different in different hospital trusts across the country, so ask your hospital if they run a youth service and, if they do, if you can be referred. Making the first step is daunting but accessing the support that's available to you can have so many benefits.

# Your diabetes healthcare team

When you're diagnosed with diabetes, you'll see a range of healthcare professionals who make up your diabetes team. How diabetes care is managed where you live can vary from one GP surgery to another and it's not the same in all parts of the country.

You may have appointments with different healthcare professionals from your GP surgery, such as a practice nurse, as well as a GP. You may go to a diabetes clinic as well or instead.

The healthcare professionals who make up your team will vary depending on your diabetes – type 1, type 2, gestational diabetes or other types. Who you see may change over time because your diabetes may affect different parts of your body.

## Healthcare professionals you may see

### ■ YOUR GP

The diabetes care you get from your GP may vary. That said, your GP will usually be your first point of contact for any health concerns you may have. Generally, it's your GP who coordinates your care and can refer you to specialists. If your GP is an expert in diabetes, you might see them a lot at the surgery. But you may attend a diabetes clinic instead, where you will meet lots of different healthcare professionals.

### ■ DIABETES SPECIALIST (A DIABETOLOGIST OR ENDOCRINOLOGIST)

A doctor who is a diabetes specialist and usually based at a hospital or clinic, although some areas have community diabetologists based at a GP surgery.

### ■ DIABETES SPECIALIST NURSE (DSN)

This is a nurse with specialist knowledge of diabetes. DSNs can support and give you advice between appointments with blood sugar checks and adjusting your medication, for example. Whether or not you see a DSN, will depend on your treatment and specific personal situation.

### ■ REGISTERED DIETITIAN

An expert in food and nutrition who can support you with your diet and managing your diabetes.

### ■ REGISTERED PODIATRIST (FOOT SPECIALIST)

This is an expert in feet and legs. You'll probably have your yearly foot check at your GP surgery or diabetes clinic, with a nurse. But if there's something that needs extra care, you may be referred to a podiatrist for this.

### ■ EYE DOCTOR (OPHTHALMOLOGIST)

A doctor who's an expert in eyes, they'll oversee treatments and diagnose eye problems in people who have diabetes (diabetic retinopathy). You may never meet the ophthalmologist, but they look at photos of your eyes after you go for your yearly eye screening. This may be every other year if your previous checks were fine.

### ■ PSYCHOLOGIST

Living with diabetes can be difficult. If you're struggling with the emotional effects of diabetes, your doctor can refer you to a psychologist to talk it through. You're entitled to this kind of support.

## Out-of-hours or emergency support

Most GP surgeries and diabetes clinics will have an out-of-hours service. Make sure you know what the numbers are so you can call if you need to.

If there isn't an out-of-hours service and you live in England, Scotland or Wales, call 111. It's a free NHS helpline for urgent medical help. If you're very ill, go to a hospital Accident and Emergency department immediately. Or call 999 for an ambulance.

■ **For more on the care to expect when you have diabetes, visit: diabetes.org.uk/bal-care-to-expect**

# INSULIN – LOOKING TO THE FUTURE

**Insulin — a lifeline for millions of people with diabetes — has come a long way over the last century. Today's synthetic versions are produced in the billions of units by cutting-edge labs around the world. But progress hasn't stopped there, and faster, smarter insulins that could fundamentally change life with diabetes are on the horizon**

Scientists had been intrigued by insulin for years before Canadian researchers Frederick Banting and Charles Best, and Scottish scientist John Macleod, managed to extract it for the first time from the pancreas of a dog in 1921. But even then, it wasn't safe for use in humans. Chemist JB Collip was brought on board to 'clean' the substance.

With his help, the team were able to successfully isolate animal insulin (this time from a cow) well enough that it could be used safely in humans. In 1922, 14-year-old Leonard Thompson became the first person to be treated with insulin. Before the injection, he was severely unwell and facing death. But within a day of the injection, his blood sugars had fallen to a normal level. His life had been saved, and the impact of a type 1 diabetes diagnosis had changed forever.

Banting and Macleod received the Nobel Prize in 1923 for their work – an award they shared with Collip and Best.

## Improving insulin

Animal insulin derived from cows and pigs remained standard treatment for type 1 and some people with type 2 for decades. But these insulins could cause allergic reactions. They also weren't always of a consistent quality, and they were relatively expensive to produce.

In 1978, scientists created the very first 'human' insulin from E. coli bacteria, and the first commercial version was released a few years later in 1982. This 'synthetic' insulin could be produced more reliably at scale, and it didn't cause the same allergic reactions. It could also be tailored more readily by scientists, who began to develop the long- and rapid-acting insulins many people with diabetes use today.

Access to insulins that work at different speeds is crucial for managing diabetes flexibly. People with insulin pumps require rapid-acting insulin, while those on multiple daily injections will need doses of both long- and fast-acting insulins. Some people use 'mixed' insulins, which combine insulins that work at different speeds.

Words: **Katherine Hignett**. Photography: **Adobestock**

## Next generation insulins

Although plenty of progress has been made since 1921, synthetic insulin still isn't as effective as insulin produced in the pancreas. It doesn't work as quickly, and it's not responsive to blood sugar levels, leaving people with diabetes to work out complicated doses. Given just how many factors can influence blood sugars – food, exercise, hormones, sleep and even the weather – current insulins often fail to balance them out. High and low blood sugars are part and parcel of having diabetes today.

Lots of researchers are working hard to make life easier for people with diabetes and reduce some of the mental burden of having the condition. Improved insulins could mean fewer injections, more stable blood sugar levels and less time spent calculating doses.

## Very long-acting insulin

Most people who take long-acting insulin have to inject it at least once a day. This is

## Modernising insulin delivery

As insulin has evolved, so has its delivery. For decades, people with diabetes who needed insulin therapy carried glass vials and syringes that had to be sterilised at home and the needles sent off for sharpening. But in the late 1970s, a Scottish doctor decided something needed to change. Frustrated by the 'medieval' equipment used to treat her young daughter's diabetes, Dr Sheila Reith had an idea to modernise insulin delivery. Dr John Ireland and Dr John Patton, at Southern General Hospital in Glasgow, worked with Sheila to bring the idea to life. By 1981, they had developed a new injection device in the shape of a pen. With the help of Diabetes UK, which funded 100 prototype pens and 5,000 cartridges to fill them, the team was able to trial their device. Two years later, the world's first insulin pen was released to the market.

Insulin pens have been a mainstay of diabetes treatment ever since. Even people on insulin pumps or hybrid closed loop systems keep spare pens around in case their technology fails. They don't look much different to four decades ago, but in the last few years, pens have become much smarter.

Most people who take insulin regularly will know the stress of trying to remember whether they had insulin with their last meal or took their last basal dose. Accidentally doubling up can be dangerous, leading to hours of watching sugar levels like a hawk.

'Smart' insulin pens can prevent this stress. They display the last dose delivered and the time passed since it was taken. Some 'smart' pens can also share information about hundreds of previous doses via a smartphone, reducing the need for paper logbooks. This data can be combined with information from continuous glucose monitor (CGM) apps to help people with diabetes see all their sugar levels and insulin dosing data side by side. If you use Novo Nordisk Penfill insulin cartridges, you may be able to get smart pens on the NHS. Speak to your diabetes team if you'd like to try them.

We also funded the first insulin pump, and our research has helped develop hybrid closed loop systems. Our campaigning has meant many people with type 1 now have access. Visit: **diabetes.org.uk/bal-closed-loop-research**

known as background or basal insulin. But some newer long-acting insulins are designed to work at a much slower pace, releasing insulin gradually over a week. It's hoped this will simplify diabetes management – reducing the number of injections needed and the chance of missing doses. Some of these insulins may even reduce the overall amount of background insulin people need to take.

Novo Nordisk has developed an insulin called icodec that only needs to be taken once every seven days. It's not yet available in the UK, but it's been approved by regulators in the EU and Canada, where it is already in use for the treatment of both type 1 and type 2.

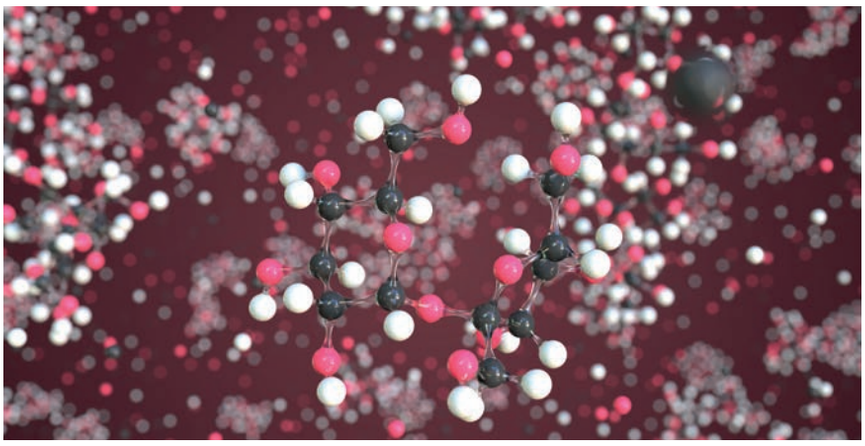
People with type 2 may soon benefit from another once-weekly basal insulin called efsitora. US scientists have shown that this new Eli Lilly insulin is as effective as a standard daily basal insulin injection. Researchers plan to submit their findings to medical regulators in the hope of getting approval for the insulin.

Once licensed in the UK, icodec and efsitora will also need a recommendation from the cost-effectiveness agency, the National Institute for Health and Care Excellence (NICE), to be made widely available on the NHS.

## Novel insulins

Diabetes UK – alongside partners Breakthrough T1D and the Steve Morgan Foundation – is investing £2.7m in innovative insulin projects as part of the Type 1 Diabetes Grand Challenge (see page 16). They're all at an early stage and won't be tested in humans for some time, so it's too soon to put a timeframe on their potential availability. But if and when any of them make it to market, they could offer truly groundbreaking treatment that fundamentally changes the way the condition is managed.

Right now, there's no way of stopping insulin that's already been injected into the body from working. But 'smart' novel insulins are designed to automatically switch 'on' and 'off' when blood sugar levels rise and fall, preventing highs and lows and reducing much of the mental burden of living with diabetes.



**How a sugar molecule looks under the microscope**

## A mix of glucagon and insulin

Glucagon is a hormone that makes the liver release extra glucose, raising blood sugar levels. People with diabetes may have come across it before, as it's used as a treatment for severe hypos. Scientists think they can harness this sugar-raising effect to prevent hypos in everyday life – the most common side effect of insulin treatment. Researchers have developed a novel protein molecule that contains both insulin and glucagon. (You can learn more about their latest findings on page 17.)

Other Grand Challenge researchers are investigating how 'nanotechnology' can make insulin smarter. 'Nano' means something that is very, very small. One nanometre, for example, is about 10,000th of the width of a single human hair. One Grand Challenge team is working on tiny particles – nano sugars – that carry both insulin and a glucose-sensing molecule. These particles react to very small changes in blood glucose and release insulin only when blood glucose levels are outside a target range, without any input from the user.

**"Researchers are working on nano sugars – tiny particles that release insulin when needed without any user input"**

## Tiny insulin delivery systems

Another project is investigating a smart insulin delivery system which uses tiny particles called nanocomplexes that can be injected under the skin to create a reservoir of insulin. If glucose levels in the blood rise, insulin is automatically released from the stored particles into the bloodstream. This allows glucose levels to be managed in real time, as less insulin is released when they are low.

Excitingly, the research team has shown in pigs with type 1 diabetes that a single injection of the insulin nanocomplexes is enough to keep glucose levels stable for a whole week. Further tests will investigate how well the system works in scenarios like exercise and hypos in animals, as well as explore ways to improve manufacturing.

Another team will work to create a 'smart' insulin that uses a type of molecule called a 'polymer' to create a stable reservoir that sits under the skin. Once injected, insulin is released in response to high blood sugar levels. Still in the early stages of development, the team is tweaking their recipe and testing how well the insulin can manage blood sugars in animals.

## 'Smart' insulin pills

Outside the Grand Challenge community, scientists in Australia are developing a smart insulin in a pill form.

Photography: **Adobestock**

## Finding the right insulin for you

Everyone's experience with diabetes is different – and so are their insulin needs. Many people will change insulin regimens and delivery methods over time for various reasons. If you take insulin, it's a good idea to think about whether you're on the best insulin for you. Speak to your healthcare team if you think the type of insulin you're taking is not working well to keep your blood sugar levels stable or if you'd like to know more about the different types of insulin that are available. You can talk to them about the different options available and agree what's best for you.

Closely monitoring your blood sugar levels can help you to spot patterns which might be linked to your insulin. Using a continuous glucose monitor (CGM) can be very useful as they can give you a fuller picture of your sugar levels and smart insulin pens can also be useful when used with CGM as you can view both sugar levels and insulin data together. To find out more about diabetes technology and to check if you're eligible, see Diabetes UK's tech pages for more information at **diabetes.org.uk/bal-technology**

Many factors can influence blood sugar levels, so it's important to get advice from your diabetes team if you have any concerns about your blood sugars. You can also ask them to explain the differences between the different insulins, as well as information on the following:

- **How often you need to inject insulin.**
- **The best times for you to inject insulin.**
- **Where you should inject.**
- **The different types of insulin devices and needles that are available for you.**
- **When you're ill, why you might need to change your insulin dose.**

Source: NICE guidance

Traditional liquid insulin can't be given by mouth, as very little of it survives the harsh stomach environment. The smart pills, however, protect insulin molecules by wrapping them in very thin 'nano' material that only certain liver enzymes can break down. These enzymes are only produced when blood sugar levels rise, meaning the smart pills should only release insulin when it's needed.
A study published last year shows the pills seem to work in animals, and the research team hope to test them in humans next.

## Ultrafast insulin

Not all novel insulins are 'smart'. Some are designed to work in tandem with innovations in technology. One Grand Challenge research team is working on an 'ultra-rapid' insulin that could help closed loop systems better mimic the behaviour of the pancreas.

Right now, people using these systems, made up of a continuous glucose monitor (CGM), an insulin pump and an algorithm that responds to changing sugar levels – still have to input information about exercise and meals. An insulin that works very quickly could help these systems work fast enough to respond automatically to food and exercise.

> "One Grand Challenge research team is working on an 'ultra rapid' insulin that could better mimic how the pancreas works"

Ultra-rapid insulin could also have benefits for people who aren't using pumps. Its fast response could reduce mealtime blood sugar peaks, while its short duration could help reduce post-meal blood sugar lows.

**For information on innovative novel insulins, visit the Type 1 Diabetes Grand Challenge website at: type1diabetesgrandchallenge.org.uk/the-challenges/novel-insulins**

**Australian scientists are developing a smart insulin in pill form**

# YOUR FEELINGS ABOUT TECHNOLOGY

**There have been lots of exciting developments in diabetes technology over the years. And while tech can vastly improve your diabetes management, it's important to be aware of some of the challenges that some people can experience with it. There are some things you might need to consider to help you feel emotionally ready to use diabetes tech**

For some people with diabetes, technology can be a really important part of their diabetes management. Diabetes tech is any device that helps give you insulin or check your blood sugar levels, such as smart insulin pens, blood glucose monitors, continuous glucose monitors (CGMs), insulin pumps, and hybrid closed loop systems. While tech can ease some of the daily burden of managing diabetes, there can be some things that are important to think about.

## Technology burnout

Some people can feel overwhelmed and frustrated at the relentlessness of managing their diabetes. This can lead to them stepping back from looking after themselves and their diabetes. This is known as diabetes burnout. Sometimes, you might feel these emotions towards your diabetes technology. This is called technology burnout.

Diabetes tech can hold a lot of data, such as your blood sugar level readings and insulin doses, and this information is always available to you. Devices like CGMs are constantly recording your sugar levels, and while this can be helpful for knowing how your day-to-day life affects your levels, there are times when people may find this amount of information overwhelming. And it can feel disheartening if your sugar levels aren't trending the way you want or expect them to. You'll also need to take the time to understand this data, identify patterns and adjust medication doses. Your healthcare team will offer support and advice on this, but some people might find understanding all the data challenging.

These feelings are understandable, and they can make it feel harder to take care of yourself and your diabetes, so it's important that you get support. Speak to your healthcare team if you're experiencing technology burnout and they will be able to offer advice on how to cope.

## Alarm fatigue

Some devices, such as CGMs and insulin pumps, sound alarms if your sugar levels are too high or too low, if you need to change your device, or if there's an issue with it. These alarms can be helpful for reducing the amount of time your levels are out of range and making sure you see to any issues immediately. But if you receive a lot of alarms in a short amount of time, this can feel frustrating. This is known as alarm fatigue. Some people might feel embarrassed if these alarms go off in certain situations, like in a work meeting or a lesson at school. It may also feel frustrating if your alarms are going off during the night and interrupting your sleep.

If you're experiencing alarm fatigue, talk to your healthcare team about how the alarms are affecting you and for advice on what to change the alarms to. There may also be settings you can use, like 'vibrate only', but it's important to talk to your healthcare team to get individualised advice on what alarm settings are safe for you.

If your alarms are sounding a lot because of high or low blood sugar levels, your healthcare team will also be able to review your CGM data and advise on what changes you might need to make to increase your time in range, which

Words: **Lucy Evans**. Photography: **iStock**

should also help with how often the alarms are going off.

If you feel worried about your CGM or insulin pump alarms going off in public, it can be helpful to remind yourself that CGMs and insulin pumps are designed to keep you safe and improve your diabetes management. Seeing it as a proactive step in managing your health and looking after yourself may help you feel more empowered about wearing and interacting with your diabetes tech in public.

## Visibility of tech

Tech like CGMs and insulin pumps are attached to you at all times, and some people can find this uncomfortable. You might see this as a physical reminder of your diabetes and, if the tech is visible to other people, can lead to questions being asked about it. Although these questions are probably well-meaning, you might not want to answer them all the time, and sometimes you just might not want to talk about diabetes at all. Some people might also be worried about being viewed as different or receiving judgement for their condition. It's OK to have these concerns, and you aren't alone in your feelings.

**"It can be helpful to remind yourself that CGMs and insulin pumps are designed to keep you safe and improve your diabetes management"**

Speak to your healthcare team if your diabetes tech is having a negative impact on your body image. They'll be able to chat this through with you and maybe refer you to psychological support if they, and you, think that will help. If you're worried about how your body image will be affected by tech, talk to your healthcare team about choosing more discreet options. Some devices are small and can be worn underneath clothing. Some can also be controlled using an app on a smartphone, which can be more discreet than using a separate, unfamiliar device.

## Managing expectations

Before starting on diabetes tech, you might have some expectations about how it will affect your diabetes management, such as seeing a sudden, significant improvement in your blood sugar levels. But it's unlikely that this will happen straight away.

Your routine is likely going to change, as you might be managing your diabetes differently than before. This might feel challenging, and it will take time to adjust to using your diabetes tech. If you use a hybrid closed loop system, the system will also need to adjust to you. That's because it needs to take some time to fine-tune to an individual person's needs, so it's unlikely you'll see a change in your sugar levels straight away.

Some people may also expect that using diabetes tech means they won't have to manage their diabetes as much. While tech can ease some of the daily burden, you'll still have to interact with it to manage your diabetes. For example, if you use an insulin pump or hybrid closed loop system, you'll still need to count your carbs and input this information into the pump. Or if you use CGM and your symptoms don't match your reading you'll need to do a finger-prick check.

It's important to remember that technology is only a tool to help you manage your diabetes. On its own, it won't help increase the amount of time your blood sugar levels are in range. But you can work with your healthcare team to help you use tech to reach your blood sugar level target range. Keeping this in mind can help prevent disappointment if diabetes technology doesn't meet your expectations.

## Getting support

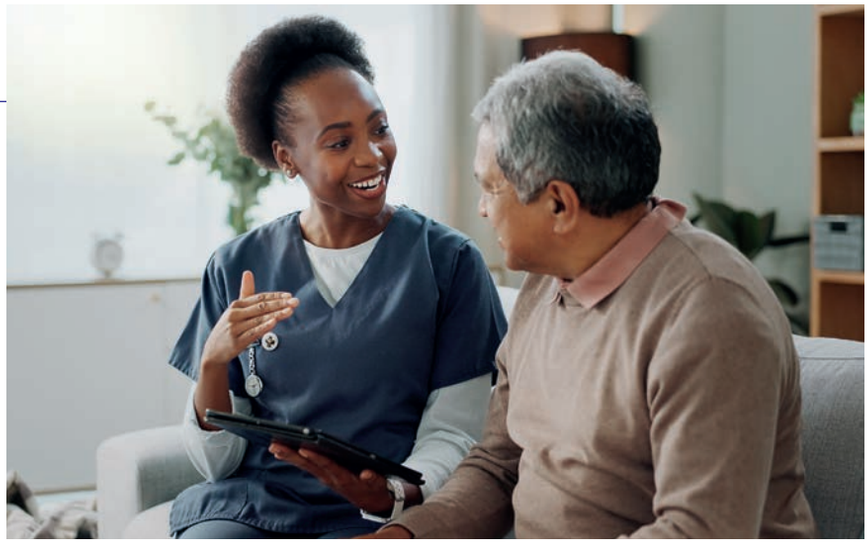
If you're thinking about using diabetes tech, here are some things to consider to help you feel prepared:

- **How you're going to manage the data – think about how you can make sure it's useful but not overwhelming. Speak with**

## MARTIN'S STORY

**Martin Tetlaw lives with type 3c diabetes and uses a hybrid closed loop system to manage his condition. He says:**

Diabetes technology has been vital for my blood sugar management. Having initially struggled with long-acting insulin, I received a pump and then a continuous glucose monitor (CGM), which integrated with the pump. In the early days of my diabetes, I would have been blissfully unaware of what my blood sugar levels were doing until there was a reason to check. Now I can track what they're doing in real time. I sometimes worry more about why they're trending a certain way, if my corrective bolus has worked, if I picked a bad infusion site, etc. Some days intervention is minimal, other days it feels like micromanagement. Seeing and understanding my blood sugar levels in real time helps me manage my diabetes much better. The pump and CGM integrate with my smartphone, providing me with alarms when my blood sugar levels are out of range and I can send the CGM data to my diabetes team. Overall, my CGM has been life-changing and has made managing my diabetes much easier.



**"If managing diabetes is affecting your wellbeing, be kind to yourself and seek support"**

**your healthcare team for guidance on how often to check the data and try to keep to that plan.**

- **Your expectations of using technology – it's good to have all the facts and be realistic about what it can do by working with your healthcare team to set realistic goals.**
- **How you might feel about having technology attached to you all the time – think about whether it might cause issues with exercise or change how you feel about your body.**

Talk these things through with your healthcare team. And remember, if managing diabetes is affecting your wellbeing, be kind to yourself and seek support. Your healthcare team is there to support you, so talk to them if you're feeling distressed or burnt out.
It might also help to talk to a trusted family member or friend about how you're feeling.

If you're already using diabetes technology and you're feeling burnt out, taking a break can help. Although you can't completely ignore your diabetes, taking a break means you can spend a little less energy on it. This could mean relaxing your blood sugar targets a bit or reducing the number of times you check your blood sugar levels each day. It's important that you talk to your healthcare team before making these changes so that they can support you to make some small changes to your routine safely. And your healthcare team can help you with how to cope when your routine goes back to normal.

It's also important to set realistic goals for what you want from your diabetes tech. Although you might not see a vast improvement straight away, setting small, achievable goals could help you to gain a sense of accomplishment.

If you're struggling with your feelings about diabetes technology, it might help to talk with others with lived experience. Join thousands sharing their experiences with technology on our forum at: **diabetes.org.uk/bal-forum**

You can also join a local support group where you might find others who feel the same way. Find a group near you at **diabetes.org.uk/bal-local-groups**

### Explore your options

Feeling emotionally ready for technology is just as important as learning how to use it. But don't worry if you don't feel ready. There are steps you can take to learn more about diabetes tech to help you feel more prepared. Ask your healthcare team for support and talk openly about the different types of technology available and how you feel about them. You can also ask them about accessing psychological support to talk through your feelings, if you think it's needed.

It's important to remember that although there may be some things to think about before using any type of diabetes tech, there are many advantages, and it can significantly improve your diabetes management. Tech can help ease some of the day-to-day stresses of managing diabetes and, by giving you more information about your diabetes, can help you spot patterns and adjust your management. This can help keep your blood sugar levels to target range, reducing the risk of diabetes complications.

Even though there may be things to consider, technology has vastly improved the quality of life for people living with diabetes.

- **If you're worried about using diabetes technology or have any questions, contact our Helpline on 0345 123 2399 or helpline@diabetes.org.uk. You can also find out more at diabetes.org.uk/bal-technology**

Photography: **Adobestock**

# LET'S TALK ABOUT... GETTING A SECOND OPINION

**Katrina Jones lives with type 2 diabetes and when she started experiencing foot complications, she had to fight to be seen by a specialist service**

Being diagnosed with type 2 diabetes wasn't a shock diagnosis, but it was an unwelcome one. My dad's side of the family have a strong history of diabetes, so my diagnosis felt inevitable. I was 38 and the early days were a bit of a jolt as I had to transition to a new way of life.

I wasn't well supported in the beginning and did a lot of my own research. My dad was given lots of information by his GP, but I was just told to "go on the Internet". It wasn't until I pressed the GP surgery that they gave me more information. Everything felt under control for a while until five years ago when I had a fall.

I was out shopping one day and tripped over an uneven floor. I hurt my wrist and foot but didn't know how serious the foot injury was. I'd broken my left foot, but I couldn't feel it properly because I had neuropathy, which I also wasn't aware I had. I got an appointment with the local diabetic foot clinic for a check-up and was told I had an ulcer on my broken foot, but it was treatable. But, because of the position my injured foot was in, it meant I couldn't keep the weight off the ulcer. Overtime, it grew and became more painful and prone to infection. I was told by a podiatrist at the clinic that I'd need to see someone at the hospital to get my foot repositioned to help with treating the ulcer.

There were no diabetic foot specialists at the hospital, so they weren't sure what to do. They said my only option was to amputate due to the infected ulcer. I said no. My dad had his foot amputated because of an infected ulcer but I refused to go down that route unless it was absolutely necessary. They said it was my only option but, after I refused again, they sent me to another hospital for a second opinion.

The next hospital was 25 miles away but did have a foot and ankle specialist team. I was told again that my only option was to amputate, and I said no again. I was going to fight this. There was more back and forth with the hospital until I next saw my local podiatrist and she recommended going to King's College Hospital in London. They have a well-established footcare unit and, if they also said to amputate, then I'd have to accept it. At this point, it had been almost a year since the ulcer developed.

At King's, they took the bandages off my foot and were shocked at the condition it was in. It had got very bad. But they said they could treat it. It was going to hurt, but it was doable. They diagnosed me with Charcot foot with complicating infection, gave me antibiotics for the infection and then operated on the foot. It took a year to be able to walk on the foot properly again but I'm so glad I fought to have my voice heard and get other healthcare professional's opinions.

It's so important for anyone with concerns about their feet to get them checked. After my experience, I strongly believe patients with diabetes should know they have the option to hear second opinions if they aren't sure of what they're being offered. I'd always encourage people to fight for their rights. If I hadn't, I would now be living with an amputation.

- **To find out more about Charcot foot, visit diabetes.org.uk/bal-charcot-foot**
- **To find out more about getting a second opinion on the treatment you're getting, visit diabetes.org.uk/bal-second-opinion**

# KEEPING FIT AT HOME

**Increasing or simply maintaining your physical activity levels to help you manage your diabetes can feel even more challenging during the cold winter months. These tips can help you to get or stay active – from the comfort of your home**

However mobile you are and regardless of your past experiences of physical activity, regularly taking time to move more at home can benefit both your physical and mental health. And being physically active when you have diabetes is good for you – whatever type you have. It's also good to keep physically active if you're at risk of developing type 2 diabetes.

This is because keeping physically active helps insulin work better in your body – whether it's the insulin you take or the insulin your body makes. This helps keep your blood sugar levels within target and helps prevent other health problems linked to diabetes, known as complications.

Even better at this time of the year – you can reap these rewards without having to brave the weather.

"We know that home can be a great place for people to start moving more, without the need for expensive gym

## GETTING STARTED

### START SMALL

Commit to achievable targets, rather than something unrealistic, to avoid the risk of injury or losing motivation. Remember also that feeling your fitness building is a great motivator for keeping going.

### HELP YOUR FUTURE SELF

Pre-empt those times we all have when motivation is low by finding ways to encourage yourself to keep going. Putting your goals and routine on pieces of paper or sticky notes on your walls, signing up for live online activities, or preparing by putting on your workout clothes in the morning can all help keep the flame alive.

### KEEP A RECORD

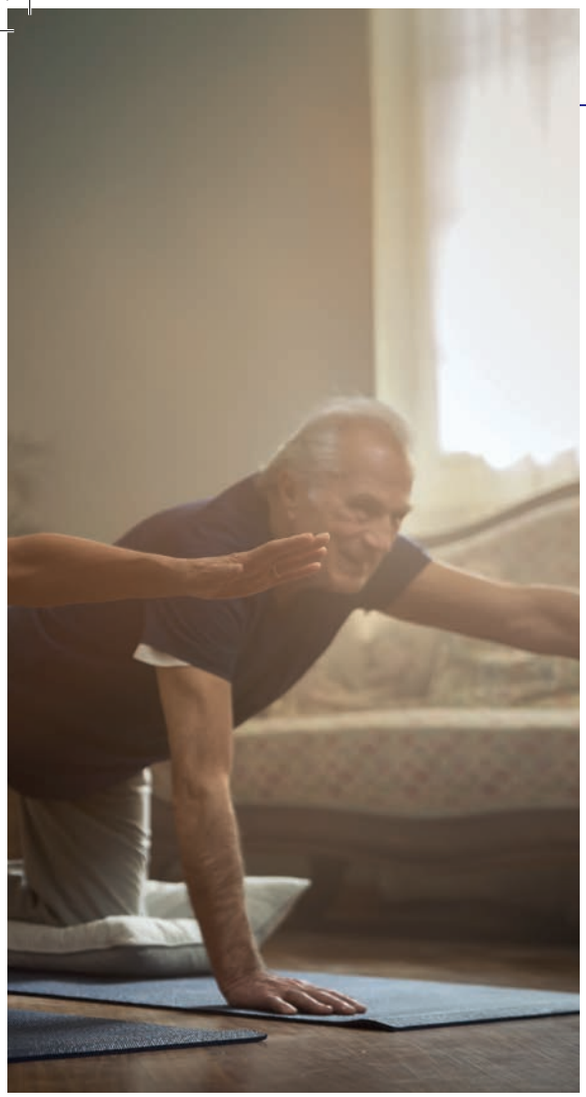
Tracking your progress is an effective way to spur you on and identify realistic goals. If you can manage five minutes of jogging on the spot on day one, log where you're at by day 30 and so on. You may end up surprising yourself at how much you've progressed.

### PREPARE PROPERLY

Ensure you have everything you need, such as a blood glucose monitor, hypo treatment and suitable clothing, to hand when it's time to move. Make sure that there's nothing in your way – no trip hazards to prevent you doing it safely.

### REWARD YOURSELF!

Celebrate the targets you hit with small treats that mean something to you – this could be a day out somewhere with family or friends.



memberships or sports equipment," says Diabetes UK's Senior Physical Activity Advisor Neil Gibson. "So set yourself an achievable routine: Start small and stay consistent, and you will soon be on your way to achieving at least 150 minutes of moderate exercise that the NHS advises we should all do as a minimum every week."

## Little and often

If that sounds a bit daunting, try not to be put off. By committing to move a little more, more often, at home, those minutes can soon rack up – helping you feel fitter, healthier and happier in no time. "The beauty of this is that it's so much easier to build moving more into your daily routine when you're doing it in the comfort of your own home," explains Neil.

"So, if you work from home, you could set yourself a target of jogging on the spot for a few minutes after each

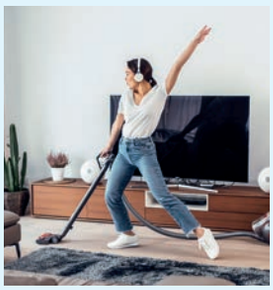
Words: **Robert Brown.** Photography: **Adobestock**

## FIVE INDOOR WORKOUT TIPS

Pumping iron at the gym or running laps of the park aren't the only ways to move more. These five indoor workout activities can help you improve your fitness in no time…

**1** **MUSIC WHILE YOU WORK**

Housework needn't be a chore. Cleaning up can be a great way to let off steam, raise the pulse and work a range of muscle groups – all while listening to your favourite tunes. So, dust off those cleaning gloves, fire up the vacuum cleaner and crank up the music!

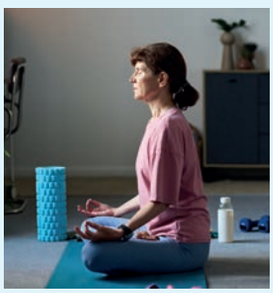


**2** **STRENGTH WITHOUT GYM MACHINES**

Strength training can be done while standing, sitting or lying down. Try doing movements like a bicep curl or lifting your arms above your head, while holding objects that differ in heaviness. Or have a go at exercises that use your bodyweight, such as a plank or press-up. Easier versions of these can be done by having your knees on the ground.

**3** **FIND YOUR INNER YOGI**

Yoga has been practised for millennia (aficionados are known as yogis). Sessions can last for a few minutes to more than an hour and involve stretching and static strength (or isometric) exercises. Yoga builds strength, flexibility, balance and coordination, and can help ease pain and anxiety, as well as improve posture.



**4** **TAKE THE STAIRS**

It's easy to overlook the stairs in this era of get-fit-quick fads, but simply taking the stairs more often is a great way to help you improve your physical health. To build strength and stamina, set a target – say, one ascent and descent, leading with your right foot and then with your left, and build from there.

**5** **DO A PLANK**

Planks improve core strength, stability and posture while working the muscles in your legs, thighs, abdomen and shoulders. Lie on your stomach and position your elbows under your shoulders with your forearms and palms flat on the floor. Lift your body with legs and back straight, engage the core, and hold for a set time. You can try it from a kneeling position to make it easier.

## MOVE MORE WITH DIGITAL HELP

■ **DIABETES UK EXERCISE VIDEOS** are a library of free videos to help put you through your paces with a range of accessible online workouts. **Visit: diabetes.org.uk/bal-exercise-videos for the link to our free video workouts**

■ **COUCH TO 5K** is a free running programme if you're looking for something that takes you outside. It has inspired millions to put their running shoes on and start running. The free NHS app sets a plan and features a trainer to help keep you motivated. Compatible with music players, it gives access to the Couch to 5K online community, too. **Get the app from the NHS website, at: www.nhs.uk/better-health/get-active**

■ **THE ACTIVE 10 APP** can help you track your activity. This NHS app anonymously records every minute of physical activity you carry out while your phone (Android or Apple) is in your pocket. It tracks your steps, allows you to set goals, shows your achievements and shares tips on boosting your activity. Download the app and get cracking – you'll be hitting that target of 150 minutes of exercise a week in no time! **To find out more and get the app, visit: www.nhs.uk/better-health/get-active**

■ **WE ARE UNDEFEATABLE** is an initiative supported by 15 health charities – including Diabetes UK – to inspire people with multiple health conditions to move more. It's packed with exercise tips tailored for people with different conditions. There's an app, as well as exercise videos featuring celebrities including comedian (and former Strictly Come Dancing winner) Bill Bailey. **Visit: weareundefeatable.co.uk**

online meeting, for example. Or try to get moving every time you're waiting for the kettle to boil. It's all about establishing a routine that helps you reduce the time you spend sitting down and increasing how much you're moving every day."

The benefits of becoming more active for people living with diabetes are undisputed. Physical activity can help lower blood sugar levels, increase insulin sensitivity, build muscle, increase flexibility and aid weight loss – for people with type 2 diabetes who are in remission it can help people maintain their weight loss, which is important for staying in remission. What's more, most activities can be tailored for people who have mobility problems or multiple health conditions.

"Just get creative," says Neil. "You don't need expensive dumbbells if you want to do bicep curls or weighted squats – try using bottles of water or tins of beans. As you feel yourself getting stronger, you can gradually build up to heavier items over time if you wish. The more you do it, the more you'll want to do it as you feel yourself getting fitter. Before you know it, you'll be surprising yourself with how much you can lift!"

**"Start small, stay consistent, and feel fitter, healthier, and happier from the comfort of your own home"**

### Getting active and diabetes

Still, there are some precautions you should take. If you live with any complications arising from diabetes, such as problems with your eyes or feet, it may be worth considering chair-based exercises. These can include regularly lifting your legs or weighty items to get those muscles moving (see box, 'Five indoor workout tips', page 47). It's important to clear space before starting a workout and ensure you're wearing suitable footwear and clothing. If you have diabetes complications, speak to your healthcare team before you start (see box, below).

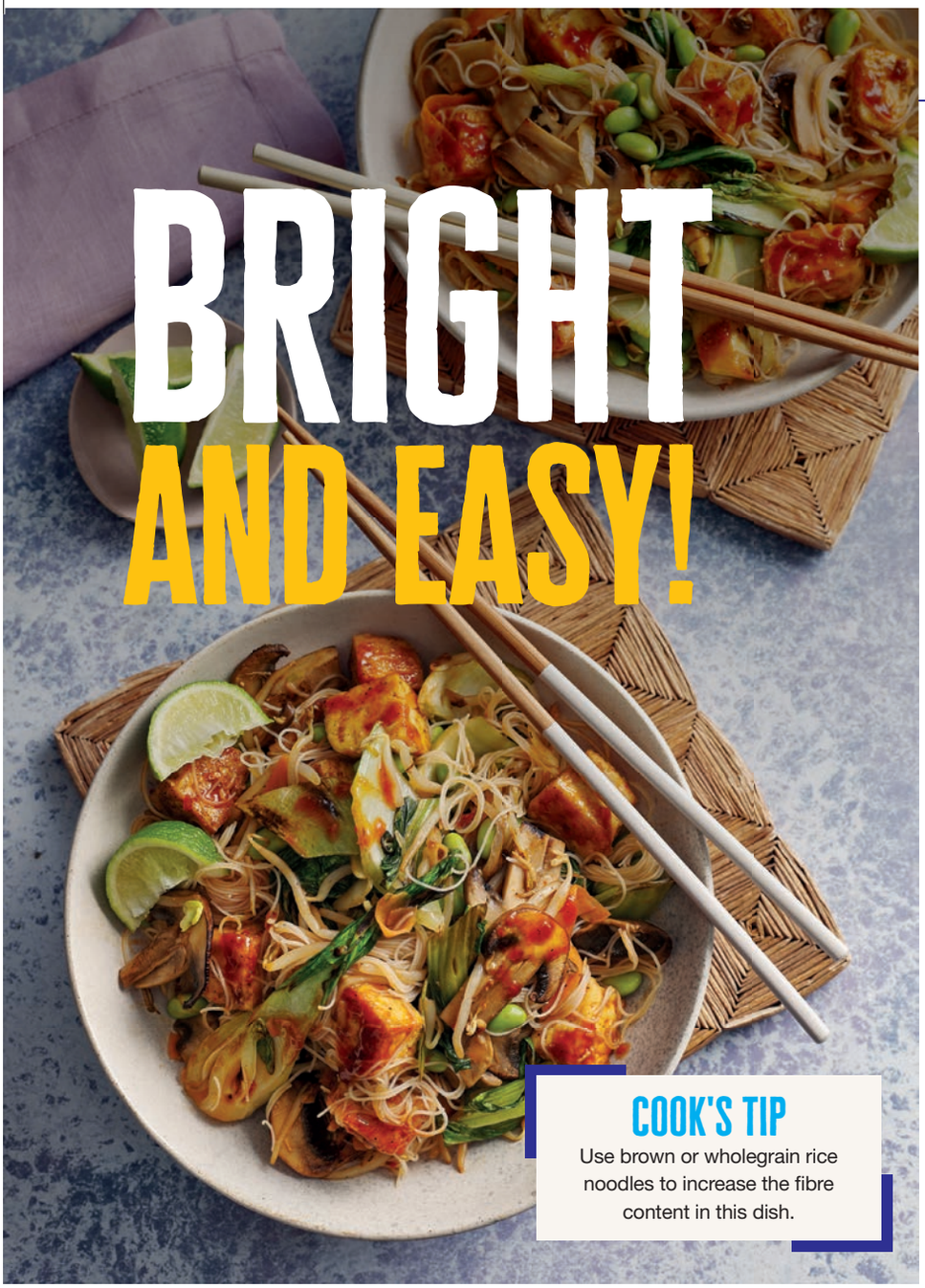
People who take diabetes medications that can lower blood sugar levels (such as insulin), should regularly monitor their blood sugar levels and ensure they have treatments for low blood sugars (hypos) to hand in case needed. Check your blood sugar levels before, during and after exercise. You may need to continue checking them more regularly for 24 hours after exercise. It's important to speak to your healthcare team for an individual plan on how to manage blood sugar levels during exercise and how to adjust medication.

"Remember that physical activity can also cause blood glucose levels to rise depending on intensity and what exercises you're doing," says Neil. "It's also worth considering how you can vary your activities so that you're getting the most out of it. Not every session needs to be super-intense – mixing in things like stretching, yoga, or just simple wrist and ankle rotations can be beneficial. It all counts."

■ **For more on physical activity and exercise, visit: diabetes.org.uk/bal-fitness**

## SPEAK WITH YOUR HEALTHCARE TEAM

**It's good to be active, but it also needs to be done safely. Before trying any new physical activity or exercise, including those you do at home, it's important to check with your healthcare team first. They can help you decide what's safe and consider any complications you have.**



# BRIGHT AND EASY!

**COOK'S TIP**

Use brown or wholegrain rice noodles to increase the fibre content in this dish.

This delicious stir-fry will bring spice to your winter menu – and a dash of vibrant colour to your dinner table!

We hope you enjoy it. Don't forget that you can find more recipes we've co-created on both our Recipe Finder and the Slimming World website.

PER SERVING **520g**

| CARBS | CALS |
|---|---|
| 34g | 311 |

| Sugars | Fat | Sat Fat | Salt | Protein | Fibre |
|---|---|---|---|---|---|
| 14g | 10g | 1g | 1.3g | 17g | 7.9g |

3 portions of fruit and veg

In partnership DIABETES UK KNOW DIABETES. FIGHT DIABETES. | Slimming World

Photography: **Slimming World**



## Sticky tofu noodles

Serves 4 | Prep: 5 mins | Cook: 30 mins

VEGETARIAN | DAIRY FREE

- 2 tsp Chinese five spice powder
- 1 level tbsp cornflour
- 600g plain, firm tofu, drained and cut into bite-sized cubes
- Low-calorie cooking spray
- 4 nests of dried rice noodles (about 200g)
- 400g mixed stir-fry vegetables with mushrooms
- 200g frozen soya beans (edamame)
- 4 baby pak choi, cut into quarters (or 1 large pak choi, roughly chopped)
- 1 level tsp sesame oil
- 2 level tbsp sriracha (or hot chilli sauce)
- 2 level tbsp reduced-sugar sweet chilli sauce
- 3 tbsp reduced-salt light soy sauce
- Lime wedges, to serve

**1** Preheat the oven to 220°C/200°C fan/gas 7. Mix together the Chinese five spice powder and cornflour in a bowl. Pat the tofu dry with kitchen paper. Add to the bowl and toss to coat. Line a baking tray with baking paper and spread the tofu out on it. Spritz with a couple of pumps of cooking spray and bake for 15 mins, or until the tofu is lightly golden and crisp.
**2** When the tofu has been in the oven for 10 mins, prepare the noodles following the pack instructions. At the same time, spray a non-stick wok or frying pan with a couple of pumps of cooking spray and put over a medium-high heat. Throw in the stir-fry vegetables, soya beans and pak choi, and sizzle for 4–6 mins, or until the vegetables are just tender. Add the sesame oil, then drain the noodles and add those, too. Tip everything into a bowl and cover with foil to keep warm.
**3** Mix together the sriracha, sweet chilli sauce, soy sauce and 100ml water, and add to the pan. Once hot, drop in the tofu and sizzle it, stirring, until well coated in the sauce and deliciously sticky. Return the noodles and vegetables to the pan and gently toss it together for a minute or so. Divide between four bowls and serve with the lime wedges.

Nordic fabric gonk decoration, £10.99


Arthouse Unlimited A5 hardback journal, £14.99

Rainforest 1,000-piece jigsaw, £14.95

Glossy ceramic tealight holder, £4.95

Red toadstool night light, £4.95

# FAMILY FAVOURITES

With the festive season just around the corner, you'll find something for all the family in our pick-and-mix gift guide! **Visit: diabetes.org.uk/bal-shop**

**ITEMS ARE SELLING FAST – DON'T MISS OUT!**


Pass the parcel sprout, £6.99


Alpine candle (mixed spice), £12.99

William Morris set of four coasters
£19.99

Resin Rococo flying dove decoration,
£7.99

Metal star LED light – 30cm,
£14.95

Asteraceae herb pots,
£14.99

Vintage Rose eco gift set,
£19.50



TfL vintage poster The Ashes mug,
£6.95

Safari animal finger puppets (set of 5),
£9.95


Looking Dapper Christmas cards (10), £4.99


Holly and Ivy Christmas cards (10), £4.99


Pop-out penguin Christmas card, £3.95

Alpine Santa wood decoration, £3.99

# One-pot wonders

As the winter nights draw in, cosy up with these healthy and comforting dishes that will warm you to the core!

## Lentil Bolognese

**Serves 8 | Prep: 10 mins | Cook: 1hr–1hr 5 mins**

VEGAN | GLUTEN FREE

- 2 tbsp sunflower oil
- 2 large onions, finely chopped
- 3 sticks celery (about 180g), finely chopped
- 3 medium carrots, peeled and finely chopped
- 3 large garlic cloves, peeled and crushed
- 250g baby button chestnut mushrooms, sliced
- 400g dried red split lentils
- 2 x 400g tins chopped tomatoes
- 2 tbsp tomato purée
- 2 tsp dried oregano
- 2 tsp dried thyme
- 1 litre low-salt, gluten-free vegetable stock
- 1 x 400g (265g drained weight) tin green lentils, rinsed and drained
- 2 large courgettes (about 180g), trimmed and finely diced
- Large handful fresh, chopped flat-leaf parsley
- Freshly ground black pepper


**1** Heat the oil in a large deep saucepan and fry the onion, celery and carrots for 10–12 mins, stirring occasionally. Stir in the garlic and mushrooms.
**2** Cover and cook for 6–8 mins, stirring occasionally until softened. Stir in the red lentils, tomatoes, tomato purée, oregano, thyme and stock. Bring to the boil, cover and simmer over the lowest heat possible for 30 mins, stirring occasionally to prevent it from sticking on the bottom.
**3** Stir in the green lentils and courgettes. Simmer for a further 10–15 mins until the sauce is thickened and courgettes tender.
**4** Stir in the parsley and season to taste with freshly ground black pepper.

# Fish and quinoa tagine

Serves 2 | Prep: 20 mins | Cook: 25 mins

DAIRY FREE | GLUTEN FREE

- 75g dried white, black and red quinoa
- 2½ tbsp cumin seeds
- 2 tbsp coriander seeds
- 2 tsp black peppercorns
- 10 cardamom pods, lightly crushed
- 1 tsp ground cinnamon
- 2 tsp ground ginger
- 1 tsp ground turmeric
- Pinch of saffron threads
- 2 lemons
- 2 sea bass fillets, scaled (about 125g each – see cook's tip, below)
- Freshly ground black pepper
- 2 large garlic cloves, crushed
- 1 small red pepper, cored, deseeded and cut into thick strips
- 2 tsp olive oil
- 2 tbsp finely chopped coriander, plus extra to serve
- 1 small fennel bulb, cut into 8 wedges (about 175g)
- 1 medium carrot, peeled and thickly sliced on the diagonal
- 1 small red onion, peeled and cut into thin wedges
- 1 small baking potato, peeled and thickly sliced (about 175g)
- 250ml low-salt, gluten-free chicken stock

**1** Cook the quinoa according to the pack instructions. Remove from the heat and leave to sit until the tagine is ready. This will give the quinoa time to absorb all the liquid and become fluffy.
**2** Meanwhile, dry fry the cumin and coriander seeds, and peppercorns and cardamom pods in a frying pan for 1 min until toasted and fragrant. Add the cinnamon, ginger, turmeric and saffron, and tip into a spice grinder or food processor and blitz to a powder. Sieve and place into a screw topped jar.
**3** Cut four slices from one lemon and set aside. Place the fish fillets on a plate. Squeeze the juice from the remainder of the lemon over the fish and season with freshly ground black pepper. Arrange the lemon slices over each fillet. Put to one side.
**4** Meanwhile, in a shallow lidded casserole dish or a tagine base, mix together 1 tbsp of the homemade spice, plus the garlic, red pepper, finely grated rind and juice from the second lemon, olive oil and coriander. Add all the remaining vegetables and the potato, and toss well to coat.
**5** Pour over the stock. Arrange the fish with the lemon slices over the top. Bring to a gentle simmer, cover with a lid and continue to simmer over the lowest possible heat for 15 mins until the vegetables are tender and the fish is opaque and cooked through.
**6** Remove fish to a plate and cover with foil to keep warm. Remove the vegetables using a slotted spoon and place in a bowl and cover with a plate to also keep warm.
**7** Boil the pan juices rapidly for 2–3 mins until reduced and thickened. Add the vegetables and cooked quinoa to the pan juices and serve piled into individual shallow serving bowls. Arrange the fish over the top. Scatter with coriander and serve with lemon wedges.

PER SERVING 783g

| CARBS | CALS |
|---|---|
| 53.2g | 584 |

| Sugars | Fat | Sat Fat | Salt | Protein | Fibre |
|---|---|---|---|---|---|
| 12.7g | 21.3g | 3.9g | 1.28g | 37.1g | 15.5g |

2 portions of fruit and veg

## COOK'S TIP

Ring the changes and use your favourite fish – salmon, haddock, cod and hake all work well with this dish. For thicker fillets, cook for an extra 5 mins or until cooked through. Look out for frozen fish. Defrost before using and pat dry with kitchen paper before cooking.

# Frying pan apple crumble

Serves 4 | Prep: 15 mins | Cook: 15–20 mins

VEGETARIAN

- 2 tbsp vegan butter
- 75g no added sugar muesli
- 25g pecan nuts, roughly chopped
- 2 tbsp desiccated coconut
- 1 tsp ground cinnamon
- 1 tbsp olive oil
- 2 Bramley apples, peeled, cored and cut into wedges
- 2 Pink Lady apples, cored and cut into wedges
- 225g raspberries
- 200ml unsweetened apple juice
- 1–2 tbsp granulated sweetener, optional (see cook's tip, right)

**1** Melt the vegan butter in a frying pan and add the muesli, pecan nuts, desiccated coconut and ground cinnamon. Stir while cooking over a low heat for 3–4 mins until crisp and toasted. Tip into a bowl and cover with a plate to keep warm.
**2** Wipe out the frying pan with a clean cloth. Heat the olive oil in the frying pan and add the apples and cook over a low heat for 5–6 mins turning until lightly golden. Sprinkle over the raspberries and pour over the apple juice. Cook over a low heat for a further 5 mins. Add granulated sweetener, if using.
**3** Spoon the topping over the apples and serve.

PER SERVING 244g

| CARBS | CALS |
|---|---|
| 29.7g | 272 |

| Sugars | Fat | Sat Fat | Salt | Protein | Fibre |
|---|---|---|---|---|---|
| 21.7g | 13.7g | 3.6g | 0.19g | 4.1g | 6.9g |

2 portions of fruit and veg

## COOK'S TIP

Some apples are naturally sweeter than others – taste the apple mixture once cooked, and add the granulated sweetener only if necessary.

# Greek baked beans

Serves 4 | Prep: 15 mins | Cook: 50 mins

VEGETARIAN | GLUTEN FREE

PER SERVING 583g

| CARBS | CALS |
|---|---|
| 32.2g | 249 |

| Sugars | Fat | Sat Fat | Salt | Protein | Fibre |
|---|---|---|---|---|---|
| 18.1g | 4.9g | 1.1g | 1.41g | 12.2g | 13.7g |

5 portions of fruit and veg

- 1 small red onion, thinly sliced
- 150ml white wine vinegar
- 1 tbsp olive oil
- 1 large white onion, peeled and finely chopped
- 1 small fennel bulb, trimmed and finely chopped
- 3 garlic cloves, crushed
- 1 tbsp tomato purée
- 2 x 400g tins chopped tomatoes
- ½ tsp ground cinnamon
- 1 tsp dried oregano
- Finely grated rind and juice of 1 lemon
- 2 x 400g cans butter beans, rinsed and drained
- 100ml boiling water
- Freshly ground black pepper
- 225g mixed cherry tomatoes, halved
- 15g feta cheese, finely crumbled
- Small handful fresh torn flat-leaf parsley

**1** Preheat oven to 180°C/160°C fan/gas 4. For the pickled red onion, place the red onion and white wine vinegar in a small saucepan and bring to the boil. Remove from the heat, cover and set aside to cool completely.

**2** Heat the oil in a large shallow ovenproof casserole dish. Add the white onion and fennel, cover with a lid and fry for 8–10 mins, stirring frequently until golden and softened. Stir in the garlic and tomato purée, then cook for 2 mins. Stir in the tinned chopped tomatoes, cinnamon, dried oregano, lemon rind and juice, butter beans, 100ml boiling water and freshly ground black pepper. Bring to the boil, cover with a lid, transfer to the oven and bake for 25 mins.

**3** Mix together the cherry tomatoes, feta cheese and parsley, and scatter over the top of the beans and bake for a further 5 mins.

**4** Drain the red onions, discarding the vinegar. Scatter over the baked beans and serve.

## COOK'S TIP

Check hot sauce food label and ingredient list for added sugar and salt. Look out for a pure chilli hot sauce, naturally low in sugar and salt. Use a certified gluten-free sauce if following a gluten-free diet.

PER SERVING 434g

| CARBS | CALS |
|---|---|
| 46.7g | 455 |

| Sugars | Fat | Sat Fat | Salt | Protein | Fibre |
|---|---|---|---|---|---|
| 12.3g | 13.2g | 3.5g | 0.86g | 34.2g | 6.5g |

2 portions of fruit and veg

# Chicken and vegetable traybake

**Serves 4 | Prep: 10–15 mins | Cook: 30 mins**

GLUTEN FREE

- 4 garlic cloves, crushed
- 2 tbsp vegetable oil
- ½ tsp dried mixed herbs
- 1 tbsp Chinese five spice
- 4 small chicken breasts, about 100g each
- 2 large, sweet potatoes (about 475g), leave skin on and cut into wedges
- 1 large red onion, peeled and cut into wedges
- 100g shredded kale
- 400g tin chickpeas, rinsed and drained
- 150g unsweetened Greek-style yoghurt
- 1 tbsp gluten-free hot sauce (see Cook's tip, above)
- 2 spring onions, trimmed and finely chopped
- 2 tbsp finely chopped coriander, plus extra to serve
- Freshly ground black pepper

**1** Preheat the oven to 200°C/180°C fan/gas 6. In a shallow dish, mix together the garlic, half the oil, mixed herbs and Chinese five spice. Keep some aside for the chickpeas. Make a few slits in the chicken breasts with a sharp knife. Coat the chicken in the spice mixture, massaging well into the slits. Lift the chicken out and set aside.

**2** Toss the sweet potatoes and red onions in the remaining oil and spread onto a large roasting tin. Roast for 10 mins.

**3** Push the vegetables to one side of the tray. Make a foil tray large enough to fit into the other side of the tray. Add the chicken to the foil tray and bake for 10 mins.

**4** Place the kale into a colander and rinse under cold running water. Shake to remove excess water and arrange over the top of the sweet potatoes and onions only (not the chicken). Toss the chickpeas with the remaining spice mix and add to the vegetables. Return to the oven for 10 mins until the chicken is cooked through and no pink flesh is visible, and the vegetables are tender.

**5** Meanwhile, mix together the yoghurt, hot sauce, spring onions and coriander. Season to taste with freshly ground black pepper. Serve with the traybake.

# Smoky mushroom chipotle eggs

Serves 2 | Prep: 10 mins | Cook: 35 mins

VEGETARIAN

- 1 tbsp olive oil
- 1 small red onion, peeled and thinly sliced
- 250g chestnut mushrooms, sliced
- 1 large garlic clove, crushed
- 1 red chilli, deseeded and thinly sliced
- 2 tsp chipotle paste
- 400g tin chopped tomatoes
- 200g baked beans, reduced salt and sugar
- 100g baby spinach leaves
- 2 large eggs (see Cook's tip)
- Freshly ground black pepper
- Fresh torn coriander to serve

**1** Heat the oil in a shallow lidded casserole dish. Add the onion and cook for 6–7 mins until softened and beginning to brown and caramelise.

**2** Add the mushrooms and cook for a further 6–8 mins, stirring frequently. Add the garlic and chilli and cook for 1–2 mins until fragrant. Stir in the chipotle paste, tomatoes and baked beans. Stir well, and bring to the boil, cover and simmer over the lowest heat possible for 10 mins.

**3** Stir in the baby spinach and cook until just wilted. Make two wells or dips in the sauce. Break an egg into each well and sprinkle over a little freshly ground black pepper. Cover with the lid and cook gently for 3–4 mins until the egg whites are set and the yolks are just set but still a little runny. Scatter over the coriander and serve immediately.

PER SERVING 602g

| CARBS | CALS |
|---|---|
| 24.9g | 309 |

| Sugars | Fat | Sat Fat | Salt | Protein | Fibre |
|---|---|---|---|---|---|
| 14g | 12.3g | 2.5g | 0.98g | 20.1g | 9.1g |

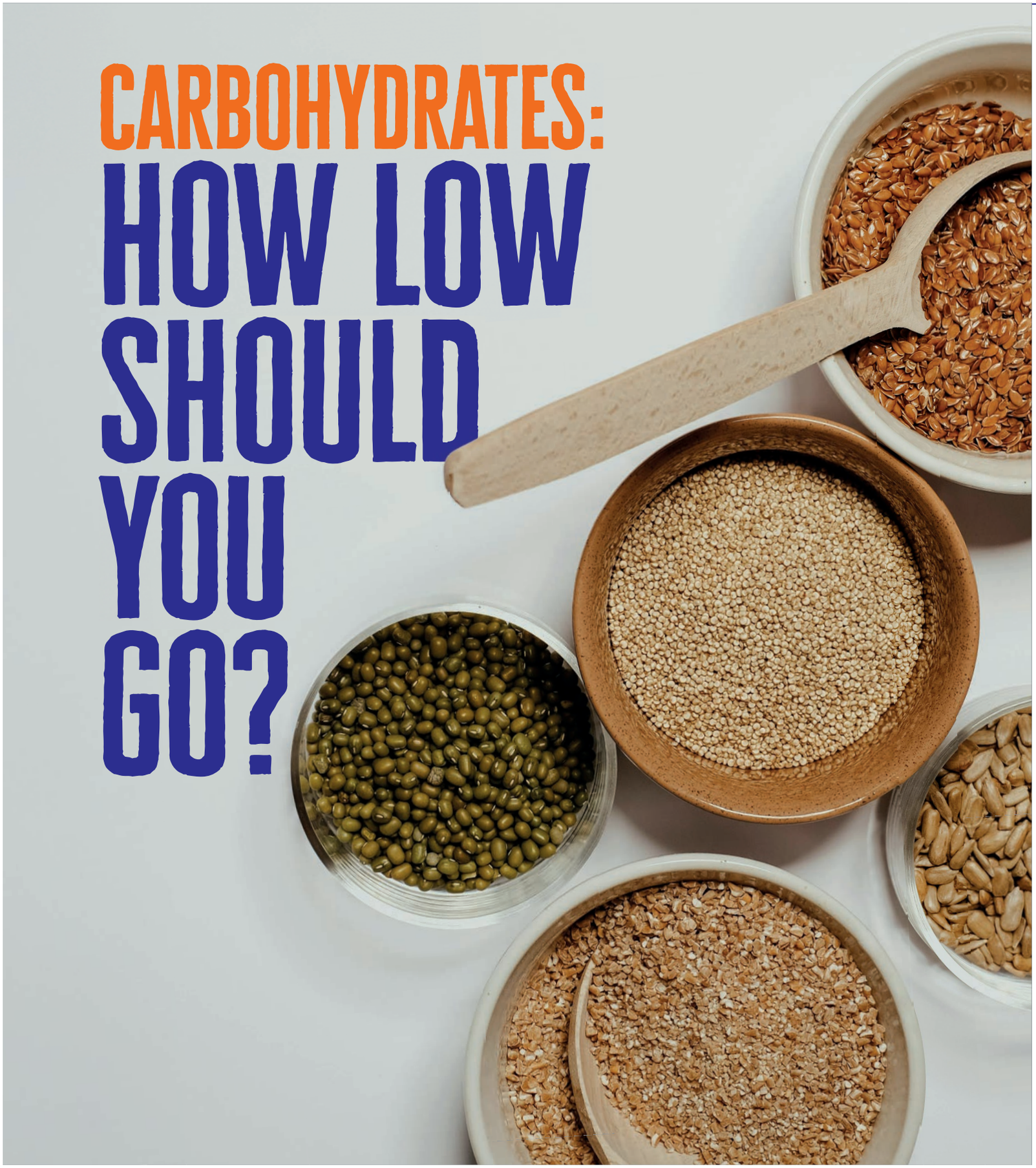
4.5 portions of fruit and veg

## COOK'S TIP

At-risk groups, such as infants, children, pregnant women, the elderly and those who are unwell, should avoid soft/lightly cooked and raw eggs, unless they can guarantee that they are produced under the Lion code quality assurance scheme.

Photography: **Vinny Whiteman.** Recipes and food styling: **Lorna Brash.** Props: **Morag Farquhar**

# CARBOHYDRATES: HOW LOW SHOULD YOU GO?



**You could be forgiven for thinking that you need to limit carbs when it comes to managing diabetes. But what's the truth about the amount and type of carbs you should be eating? Let's look at the sorts of carbs to put on your plate**

The type and amount of carbohydrates (carbs) you should be eating if you're living with diabetes can feel confusing, especially given the rise in popularity of low-carb diets in recent years. But carb-containing foods not only give us energy, they're also an important source of vitamins, minerals and fibre. And while there are UK recommendations that 50% of total dietary energy should come from carbohydrates for the general population, it's less clear if you live with diabetes. There's currently no evidence to support an ideal amount of carbs for people with diabetes. Recommendations should therefore be based on personal preference, individual glycaemic response and other health targets, ideally with the support of a registered dietitian specialising in diabetes.

When we think about carbs, starchy carbs like bread, pasta, potatoes, yams and rice spring to mind. But carbs are in a wide range of the foods we eat, such as **fructose** in fruit, **fibre** – another type of carbohydrate found in vegetables, pulses and wholegrains, nuts and seeds – and **lactose** that's in some dairy foods. And these are the types of food that are essential to ensure you're having a healthy, balanced diet. So, it's important to look at the type and quality of the carbs you're eating, as well as the amount.

We all need some carb-containing foods in our diets. But how much you need will depend on your age, activity levels and any health goals you're aiming for, such as managing your weight or supporting endurance sports like long-distance running. The amount of carbs you eat will have the biggest effect on your blood sugar levels after you've eaten, so thinking about the quantity of carbs you're having at mealtimes is helpful. But not everyone with diabetes needs to restrict their carb intake. Instead, it's about finding the right balance for you – choosing higher fibre carbs and watching carbohydrate portion sizes can help keep your blood sugar levels steady.

"It's important to look at the type and quality of the carbs you're eating, as well as the amount"

"Carbs are our body's main source of glucose – and the preferred nutrient for our brains"

## What's good about carbs?

Carbs are our body's main source of glucose – and the preferred nutrient for our brains. Along with giving us energy, they're also important for our overall health, providing us with essential fibre in our diets, which has many benefits. Fibre-rich foods, such as beans, pulses, fruits and vegetables, wholegrain cereals and wholemeal bread, help keep our guts healthy and bowels regular. They can also reduce blood cholesterol levels, which lowers the risk of cardiovascular disease. Having diabetes can increase your risk of cardiovascular disease.

Oats, barley and rye are rich in a type of soluble fibre called beta-glucan and can help lower cholesterol levels and may also support healthy blood pressure. And, if you're trying to maintain a healthy weight, including fibre in your diet can be beneficial. This is because foods higher in dietary fibre are more filling and mostly have a lower glycaemic index (GI), which can help manage your appetite. Foods with a lower GI also have less of an effect on your blood sugar levels. So make sure you're eating foods containing fibre each day. Adults should be aiming for 30g of fibre a day. Most of us don't consume this amount.

It's about finding the right balance for you – choosing higher fibre carbs and watching carbohydrate portion sizes can help keep your blood sugar levels steady.

For more on fibre and diabetes, visit: **diabetes.org.uk/bal-fibre**

## How carbs affect diabetes

Different carbs are digested and absorbed by your body at different rates. The glycaemic index (GI) ranks from 0 to 100 and tells us how quickly each carb-based food and drink raises blood sugar levels after consumption.

GI can be a good way of working out whether a carb-containing food or drink will raise your blood sugar levels quickly, moderately or slowly after you have it. This can help you choose carbs to best help you manage your diabetes or reduce the risk of developing diabetes if you have prediabetes.

However, GI isn't just about individual foods – it's also influenced by what else you eat with them. Protein, fat and fibre slow the digestion and absorption of carbohydrates, which can lower the overall GI of a meal. It's important to remember that GI is only one part of a healthy, balanced diet.

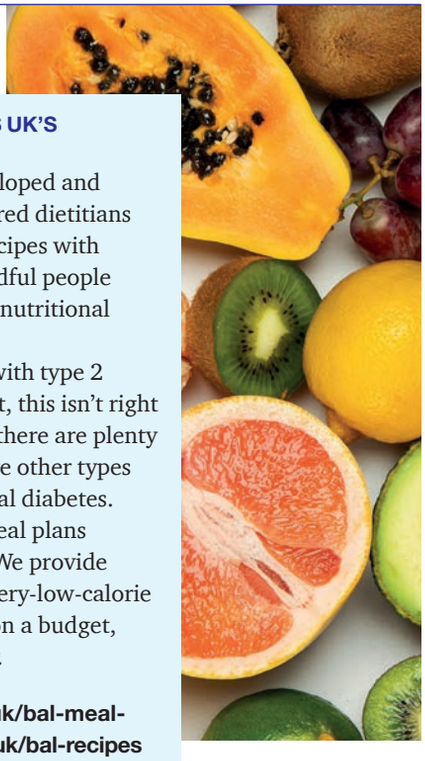
Most fruits and vegetables are either low or medium GI and they also provide important nutrients such as vitamin C and fibre, so they are good to include in your daily diet.

Examples of low-GI foods include:

- **fruits, such as strawberries, apples, pears and oranges**
- **vegetables, such as carrots, tomatoes and broccoli**
- **starchy carbs, such as beans, lentils, rye bread, yam and plantain, which are also high in fibre, minerals and vitamins**

For good overall health, best choices include plenty of whole fruits and vegetables, small portions of unsalted nuts and seeds, and wholegrains, pulses, dairy products, oily fish and healthy fats, such as olive or rapeseed oil and spreads, and avocados.

Words: **Sabeha Syed**. Photography: **Adobestock, Pexels, Unsplash**



### RESISTANT STARCH

Starch is the most common type of carb in our diets. It's a chain of glucose molecules linked together. Our bodies absorb the glucose from cooked starchy carbs, like white rice, pasta and potatoes, almost as quickly as the glucose in a sugary drink. And these foods have a high GI.

When starchy carbs cool down, the enzymes in our guts can't break them down as easily. These foods now contain more 'resistant starch' and essentially become fibre. There is some research that shows that when starchy foods are cooled and then reheated, more resistant starch is created. If you eat a meal made with resistant starch, it can help you manage your blood sugar levels better. Resistant starch also increases the amount of fibre content and can help you feel fuller for longer after a meal.

For some healthy food swaps for resistant starch, try:

- **Cooked and cooled pasta in a pasta salad, instead of hot pasta with a sauce.**
- **Cold, boiled new potatoes as part of a green salad, instead of hot, boiled new potatoes.**

**For more on resistant starch, visit: diabetes.org.uk/bal-carbohydrates**

### IS THE AMOUNT OF CARBS IN DIABETES UK'S RECIPES ALWAYS THE SAME?

All our information and recipes are developed and reviewed by our internal team of registered dietitians and a nutritionist. We have a range of recipes with differing amounts of carbs, as we're mindful people coming to our website will have varying nutritional requirements.

Although we know that some people with type 2 diabetes will benefit from a low-carb diet, this isn't right for everyone. So, we want to make sure there are plenty of options, including for people who have other types of diabetes, such as type 1 and gestational diabetes.

This way, you can choose recipes or meal plans from our website that are right for you. We provide lower-carb, Mediterranean, vegan and very-low-calorie diets, as well as meal plans for cooking on a budget, cooking for one and cooking for a family.

**Explore meal plans at: diabetes.org.uk/bal-meal-plans and recipe finder at: diabetes.org.uk/bal-recipes**

Research shows that choosing low-GI foods can particularly help manage long-term blood sugar levels (HbA1c) if you're living with type 2. There's less evidence to support this if you're living with type 1. But what we do know is that choosing low-GI foods on a daily basis can help reduce the risk of diabetes complications, including heart and kidney problems. You can find out more about GI and diabetes on our website, at: **diabetes.org.uk/bal-glycaemic-index**

## Low-carb diets

Eating a low-carb diet generally means cutting down on the amount of carbs you eat to less than 130g a day. Putting this in context, a medium-sized slice of bread contains about 15g to 20g of carbs. This would be the same as a regular apple. A large jacket potato could have as much as 90g of carbs, which is the same as 1 litre of orange juice. There are different types of low-carb diets, but they aren't for everyone.

### CARB COUNTING FOR TYPE 1

There is limited evidence supporting low-carb diets for people with type 1 and they are not recommended for children with diabetes. If you have type 1, carb counting is the best established method for managing your blood sugar levels. This means matching how much insulin you take to the amount of carbs in your meal, snack or drink.

Until more research clarifies how safe it is in the long term, how it affects insulin needs and dosing, managing blood glucose and the risks of hypos, we wouldn't recommend following a low-carb diet if you have type 1.

### LOW-CARB DIETS AND TYPE 2

Low-carb diets can be safe and effective in helping people with type 2 manage their weight, blood sugar levels and risk of heart disease in the short term. (See 'Ask the experts', page 20.) If you are living with overweight or obesity, losing weight can significantly reduce your risk of developing type 2.

We'd recommend speaking to your healthcare team if you're thinking of going on a low-carb diet – or any type of diet. This is so that you can get advice to ensure you're having all the nutrients you need, as well as review your diabetes medications. Reducing your carbohydrate intake and changes to your body weight may mean your insulin and diabetes medication needs to be adjusted.

# LESSONS FROM... AN EXTREME FUNDRAISER

**Amy Boyd, 34, from Stirling, has lived with type 1 diabetes since she was 11 years old. Back in September, Amy did a 10k car pull to raise money for Diabetes UK and represent the challenges that living with the condition can bring to people's lives**

## 1 Extreme challenges are exciting and empowering for me

Extreme physical challenges prove to me that while navigating a life of highs, lows and constant worrying about blood sugar levels, I'm still strong and powerful enough to do something incredible.

I wasn't a sporty child but started going to the gym about nine years ago. Over that time, my focus has shifted to being as fit and strong as possible. I completed two HYROX fitness competitions and a marathon. I also came third in a competition in Stirling which is based on strength, endurance and fitness.

I'm now a personal trainer supporting women to feel strong and confident both mentally and physically – and to love their bodies!

## 2 We are capable of amazing things

Last year my mum and her friend cycled across Vietnam and Cambodia to raise money for a cancer charity. It inspired me to take on my own challenge. I wanted to raise money for Diabetes UK and show people that the condition doesn't need to hold us back. I chose a challenge that represented what it was like living with type 1. The weight of the car represents the weight of all the decisions I make about my diabetes on a daily basis.

The car weighed between 1,200kg and 1,400kg and I pulled it for a distance of 10k. I raised £1,500, which makes me so proud. It took me three and a half hours, including a 20-minute hypo break!

## 3 Training with diabetes can be difficult

Some exercise makes your blood sugar levels go low and some make them go high. I have my blood sugar levels constantly displayed on my smart watch as my continuous glucose monitor (CGM) is linked to it. This way I can keep a close eye on my sugar levels. Thankfully, I got round the car pull with only one hypo. It was easy to handle because I could just sit down and treat it.

In preparation, I spent a lot of time working on my calves and heavy sled pushing and pulling to mimic the position I would be in. And I also spent a lot of time on the staircase to work on endurance.

## 4 Diabetes is what gives me my strength and resilience

I wouldn't be the same person if I didn't have it. I do find myself resenting my type 1 when I have a hypo mid workout. But I think you can prove that you are much more capable of things than you think you are. For me, having diabetes means dealing with so many decisions every day that may seem small, but altogether they weigh a lot. If I can do that, I can do anything.

I think you just have to remind yourself how amazing we are. What on the outside might just look like a few injections and finger-prick blood tests, managing diabetes is so much more than that. I know I'm a fighter. It's my superpower.

# BREAKING WITH TRADITION

**It's the time of year when roasts take centre stage. Although delicious and comforting when temperatures plummet, they can also be high in fat and calories. Read on for easy ways to enjoy a healthier roast this season**

When you think of a roast, crispy potatoes and root veg, and succulent meat or a meat-free alternative as the crowning glory, are the main players. Whether it's the festive season or a gathering of friends or family, sitting down to a roast is often a way to relax and enjoy yourself at this time of year.

If you have diabetes, or you're close to someone who does, that shouldn't stop you from enjoying a roast dinner. With a few simple tweaks, you can make it a healthier option that everyone can enjoy – full of flavour and goodness.

## Making it meaty

**Keep them lean:** If you're having a meat roast, stick to leaner choices – chicken and turkey are lower in saturated fat compared with beef, pork and lamb. You don't even need to add any oil – just remove the skin and add lemon and garlic to give it a great flavour. It will cook in its own juices and stay tender. If you're pushing the boat out and going for a more expensive piece of meat, such as beef, trim off any visible fat before cooking.

If you're having chicken or turkey, choose skinless breast meat to reduce saturated fat. Thinking about your portion sizes, opt for a serving of slices of turkey (about 90g–120g) and no more than 90g of cooked red meat. Fish can make a healthy change from traditional roast meats – buying frozen fish can work out cheaper, too.

## Veggie and vegan

■ **Up the veg count:** While meat often takes centre stage when you're cooking a roast, serving up a veggie or vegan alternative for a change can up the veg count of your meal.

■ **Making it meat-free:** If you're vegetarian or vegan, think carefully about any plant-based meat alternatives you buy to make sure they're not almost as high in saturated fat as a piece of red meat. While roast meat substitutes should generally be lower in fat and calories, it's not always the case. And some meat alternatives can be highly processed, too.

## Spuds you'll like

■ **Think big:** When you're prepping your potatoes for a roast, keep them big and chunky. This way, they won't soak up so much oil.

■ **A matter of fat:** Keep the skins on and parboil them first, too. Keeping the skin on your roast potatoes adds fibre and minerals to your meal. Parboiling them means less time required for cooking and crisping up, and can reduce the amount of oil needed and absorbed.

Rapeseed oil – in small amounts – is a healthier fat choice for roasts. Limit the amount of oil you use, or use spray oil, so that you're dry-roasting your potatoes. Try serving a mixture of roasted and boiled potatoes to help reduce the amount of oil used – and therefore cut down on calories.

■ **Mix it up:** Cook your roast potatoes with rosemary and garlic for extra flavour. You could even use sweet potatoes and butternut squash in the roasting tray for a modern twist on the traditional, and you'll be adding more fibre, too.

■ **Air to try:** If you have one, using an air fryer to roast your potatoes can be a much healthier way of cooking them. Rather than roasting with lashings of oil, one teaspoon of rapeseed oil, or a few pumps of a low-calorie cooking spray, will give you crispy potatoes in as little as 20 minutes, depending on your model of air fryer.

## Eat your greens

■ **Pile them high:** Load up on your favourite veg for more colour and nutrition. Aim to fill a third of your plate with vegetables. Steaming your greens, such as broccoli and cabbage, preserves their nutrients. Roast root veg, like parsnips and carrots, to bring out a delicious flavour.

Try including more of a variety of vegetables to your roasting tin, such as squashes. Just cut up your veg into equal pieces, toss in a small amount of olive oil – say 1 teaspoon, and roast until golden. Alternatively use a little spray oil.

## All the trimmings

■ **Sound seasoning:** A roast just isn't the same without gravy, and sauces like mint and mustard. These can contain free sugars and salt, so check nutrition labels and choose ones without added free sugars and with less salt. So keep the amount of salt and any added free sugars you're having to a minimum by checking labels of sauces you use. Rather than reaching for the salt cellar, season with pepper, and make use of garlic and any herbs you like, too.

Opt for reduced-salt stock cubes or powder for your home-made gravy. If you're using gravy granules, go for a reduced-salt version. When making gravy from your roast meat, skim the fat off the top before serving – skimming just one teaspoon of fat can cut around 12g of fat and about 100 calories.

■ **Pigs in blankets:** These are classed as processed meat, alongside gammon and hams, which are often served up with a roast during the festive season, too. It's best to try to limit the amount of processed meat you eat. Eating these foods frequently could raise your blood pressure and increase your blood cholesterol, which increases your risk of cardiovascular disease. Processed meat is also associated with an increased risk of some cancers, in particular bowel cancer.

■ **Stuffing:** Although it brings rich and delicious flavours to your roast, sausage meat can be high in saturated fat and is a processed meat. For a healthier option, try a vegetarian stuffing that you cooked in a separate dish, rather than with the chicken or turkey, to avoid it absorbing extra fat from the meat.

### COOKING TIPS

Making your own pigs in blankets can lower the fat content by choosing low-fat cocktail sausages and wrapping in lean back-bacon that has had any fat trimmed away. Pierce the skins of the cocktail sausages and grill them so that any excess fat can drain away.

Or for a healthier change, use low-fat chicken or vegetarian sausages. Cut them into smaller pieces and wrap in courgette ribbons before baking in the oven with a couple of pumps of low-calorie cooking spray, or one teaspoon of rapeseed oil, sprinkled with some dried mixed herbs and freshly ground black pepper. If you're opting for veggie sausages, check the salt content before you buy.

■ **Cook up delicious and healthy food with our recipe finder. Visit: diabetes.org.uk/bal-recipes**

■ **For more on managing diabetes in the festive season, visit: diabetes.org.uk/bal-christmas**

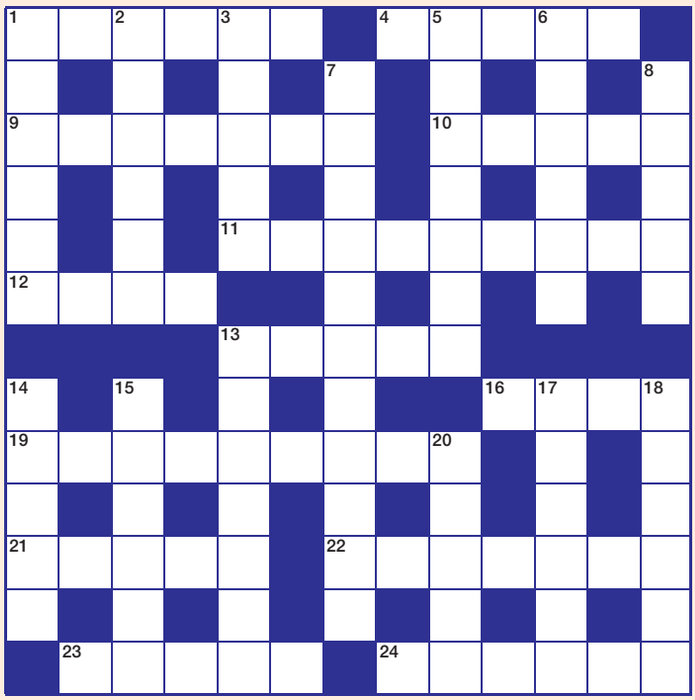
Words: **Sabeha Syed**. Photography: **Pexels, Unsplash**

# CROSSWORD


**TO ENTER:**
**Send the grid to the Balance address – Diabetes UK, 126 Back Church Lane, London E1 1FH.**
**See T&Cs, below.**

## ACROSS

**1** Surgical knife (6)
**4** Region's plant life (5)
**9** Assistance, support (7)
**10** Equipment for a Highland fling? (5)
**11** Keyboard instrument with foot-operated bellows (9)
**12** Colour of unbleached linen (4)
**13** Musical composition; dissociative state of mind (5)
**16** Brandy made from grape refuse (4)
**19** Capital of Mongolia (4, 5)
**21** Extra clause added to document (5)
**22** Inoculation (7)
**23** Alphabetical list (5)
**24** Cure (6)



Name_____

Address_____

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## DOWN

**1** Sheen (6)
**2** Drink of the gods in Greek myth (6)
**3** Geological or historical age (5)
**5** Sugar found in milk (7)
**6** Poor batsman, informally (6)
**7** Entitlement, right (11)
**8** Ingrained dirt (5)
**13** Russian artist known for his jewelled eggs (7)
**14** Subatomic particle; fermented dairy product (5)
**15** Cube of bacon (6)
**17** Plant such as edelweiss (6)
**18** Vegetable, its leaf stalks used in salads (6)
**20** Pleat of fabric (5)

**SOLUTION for last issue's crossword:**
**ACROSS: 4** Lascar, **7** Amends, **8** Terrapin, **9** Ages, **10** Earth, **12** Iona, **18** Anther, **19** Retina, **20** X-ray, **23** Flail, **27** Avon, **28** Dovetail, **29** Allium, **30** Gander. **DOWN: 1** Omega, **2** Anise, **3** Ester, **4** Larch, **5** Swami, **6** Alien, **11** Apex, **13** Olio, **14** Ahab, **15** Marx, **16** Stoa, **17** Peri, **21** Rioja, **22** Yield, **23** Flair, **24** Aslan, **25** Ladle, **26** Locum.

**T&Cs: 1.** Opens 8 December 2025. **2.** Closing date is 12 February 2026. **3.** The prize is an M&S gift card, worth £50. **4**. Open to UK residents aged 18 and over. **5.** Promoter: The British Diabetic Association operating as Diabetes UK (English charity no 215199 and Scottish charity no. SC039136), Wells Lawrence House, 126 Back Church Lane, London E1 1FH. **6.** Go to diabetes.org.uk/bal-comp-terms for full T&Cs.

# WIN

**A luxury overnight escape for two at Aldwark Manor Estate**

# RELAX IN YORKSHIRE

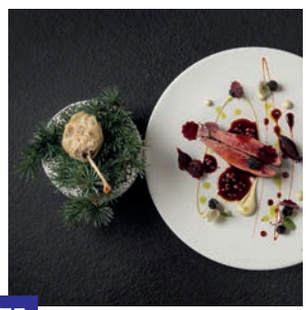
Where timeless charm meets modern indulgence in the heart of North Yorkshire's countryside. Your stay includes a restful night in one of the beautifully appointed classic double bedrooms in the main manor building, designed to balance comfort and elegance, with views across our stunning 200-acre grounds.

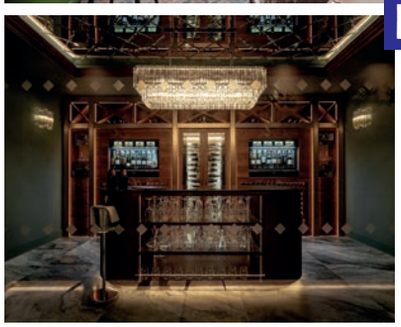
As evening falls, enjoy a three-course dinner in Elements Restaurant, crafted with seasonal ingredients and culinary flair. In the morning, wake refreshed and indulge in a delicious Yorkshire breakfast, prepared with care and served with the warm hospitality that defines Aldwark Manor. Whether you prefer a leisurely start with coffee and pastries or a hearty cooked breakfast, you'll be perfectly set for the day ahead.

And for the ultimate in relaxation, you'll have full access to the hotel's new Salus Spa, a sanctuary of health and wellbeing. Unwind in the thermal suite, take a dip in the pool or simply recharge in serene surroundings, where every detail is designed to soothe body and mind.

This is your chance to pause, refresh, and reconnect in true luxury. Enter now for the opportunity to win this unforgettable escape.

**To book a stay with Aldwark Manor Estate, visit: aldwarkmanorestate.co.uk**





THE ALDWARK MANOR ESTATE

**PRIZE**

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- A three-course dinner in Elements Restaurant.
- Full access to the Salus Spa

**To enter, scan the QR code using the camera app on your phone or tablet, or go to: diabetes.org.uk/bal-comp**

**Terms and conditions:** Prize excludes Christmas, New Year, Valentine's Day and Bank Holidays. Prize cannot be used in conjunction with another offer and is non-transferable. Prize must be taken within six months of winner being notified. All additional charges must be settled on departure. Transport to and from the hotel is not included. For full terms and conditions, visit aldwarkmanorestate.co.uk/terms. Closing date is 12 February 2026.

# MEET THE... NUTRITIONIST STEPHANIE

**Stephanie Kudzin, our in-house nutritionist, talks about her passion for food and health, and how she helps create healthy, delicious recipes for people living with diabetes**

I'm a registered nutritionist and work on all the food content across the charity, including working with a recipe developer to create the healthy, delicious recipes you see in each issue of Balance. The recipes include different cuisines and ingredients to ensure there's something for everyone. I am a qualified fitness instructor, and support people at local gyms with their nutrition. I enjoy the variety and balance in my roles.

I grew up on a Mediterranean diet, watching my mother in the kitchen prepare meals from scratch with love and dedication. I loved helping her create meals which were full of flavour using plenty of healthy ingredients such as vegetables, beans and, of course, olive oil. I come from a mixed heritage, half Cypriot and half English, and was exposed to both the Western and Mediterranean diets. My passion for food and health led me to pursue a career where I could positively impact the lives of others. I began volunteering for Diabetes UK, raising awareness of diabetes and its risks in local communities.

After university, I worked on weight management and healthy lifestyle programmes to support adults, children and families to make healthy and sustainable changes. The experience I gained and the skills I developed while working on those programmes have been invaluable in my current role.

I love seeing the articles and recipes I've collaborated on with others published in magazines and printed materials. Sometimes there are many revisions and changes to get it just right, so it's rewarding to see the final product. Knowing that my work is reaching far and wide – positively impacting many people's lives, fuels my dedication to the cause.

As a foodie, I love the chance to eat out with friends or when visiting family. Most evenings, I unwind by cooking at home. I get inspired by the recipes I develop at work and often decide to give them a go. I set myself a personal aspiration when I joined Diabetes UK to cook all the recipes on our website! I also occasionally enjoy experimenting on my colleagues with a few baked goods for our team meetings.

## FUN FACT

- **I live in Brighton and in the summer, I love a day at the beach. Even catching 30 minutes on the beach before or after work can do wonders for my mood and mind.**
- **I enjoy keeping fit and have competed in different sports over the years, including figure skating and ballroom dancing.**

**"I love seeing the articles and recipes I've collaborated on with others published in magazines"**

DiABETES UK
KNOW DIABETES. FIGHT DIABETES.

# QUESTIONS ABOUT DIABETES?

## We're here to talk.

If you're looking for someone to speak to about living with diabetes, get in touch by calling or emailing our helpline. We're here 9am to 6pm, Monday to Friday.

Call **0345 123 2399***
Email **helpline@diabetes.org.uk**

*Calls to 0345 numbers cost no more than calls to geographic (01 and 02) numbers and must be included in inclusive minutes on mobile phones and discount schemes. Calls from landlines are typically charged between 2p and 10p per minute while calls from mobiles typically cost between 10p and 40p per minute. Calls from landlines and mobiles to 0345 numbers are included in free call packages. Calls may be recorded for quality and training purposes.

# Make diabetes management a smaller part of

# LIFE


**ADJUSTS**
**basal insulin automatically**[1]

**CORRECTS**
**high glucose values with microbolusing.**[2,3]

**PROTECTS**
**by decreasing or pausing insulin delivery.***[2,3]

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INDICATION: FOR PEOPLE WITH INSULIN REQUIRING TYPE 1 DIABETES AGED 2 YEARS AND OLDER. AUTOMATED MODE REQUIRES A COMPATIBLE SENSOR. COMPATIBLE SENSOR SOLD AND RESCRIBED SEPARATELY. AVAILABILITY OF COMPATIBLE SENSORS MAY VARY BY COUNTRY AND REGION.

The Omnipod 5 Automated Insulin Delivery System is a single hormone insulin delivery system intended to deliver U-100 insulin subcutaneously for the management of type 1 diabetes in persons aged 2 and older requiring insulin. The Omnipod 5 System is intended to operate as an automated insulin delivery system when used with compatible Continuous Glucose Monitors (CGM). When in automated mode, the Omnipod 5 system is designed to assist people with type 1 diabetes in achieving glycaemic targets set by their healthcare providers. It is intended to modulate (increase, decrease or pause) insulin delivery to operate within predefined threshold values using current and predicted CGM values to maintain blood glucose at variable target glucose levels, thereby reducing glucose variability. This reduction in variability is intended to lead to a reduction in the frequency, severity, and duration of both hyperglycaemia and hypoglycaemia.The Omnipod 5 System can also operate in a manual mode that delivers insulin at set or manually adjusted rates. The Omnipod 5 System is intended for single patient use. The Omnipod 5 System is indicated for use with NovoLog®/NovoRapid®, Humalog® / Liprolog®, Admelog® / Insulin lispro Sanofi®, Trurapi® / Insulin aspart Sanofi®, and Kirsty® U-100 insulin. Warning: SmartAdjust™ technology should NOT be used by anyone under the age of 2 years old. SmartAdjust™ technology should also NOT be used in people who require less than 5 units of insulin per day as the safety of the technology has not been evaluated in this population. The Omnipod® 5 System is NOT recommended for people who are unable to monitor glucose as recommended by their healthcare provider, are unable to maintain contact with their healthcare provider, are unable to use the Omnipod® 5 System according to instructions, are taking hydroxyurea and using a Dexcom Sensor as it could lead to falsely elevated CGM values and result in over-delivery of insulin that can lead to severe hypoglycaemia, and do NOT have adequate hearing and/or vision to allow recognition of all functions of the Omnipod® 5 System, including alerts, alarms, and reminders. Device components including the Pod, CGM transmitter, and CGM sensor must be removed before Magnetic Resonance Imaging (MRI), Computed Tomography (CT) scan, or diathermy treatment. In addition, the Controller and smartphone should be placed outside of the procedure room. Exposure to MRI, CT, or diathermy treatment can damage the components.

**1.** In Automated Mode, SmartAdjust™ technology uses your total daily insulin (TDI) to set a new Adaptive Basal Rate for you. Requires a compatible sensor. Compatible sensor prescribed and sold separately. **2.** Brown S. et al. Diabetes Care. 2021;44:1630-1640. Prospective pivotal trial in 240 participants with T1D aged 6 - 70 yrs. Study included a 14-day standard therapy (ST) phase followed by a 3-month Omnipod 5 hybrid closed-loop (HCL) phase. Mean time in hyperglycaemic range (>10.0 mmol/L or >180mg/dL) as measured by CGM in adults/adolescents and children ST vs. 3-mo Omnipod 5: 28.9% vs. 22.8%; 44.8% vs 29.7%, P<0.0001, respectively. Mean time in hypoglycaemic range (<3.9 mmol/L or <70 mg/dL) as measured by CGM in adults/adolescents and children ST vs. 3-mo Omnipod 5: 2.89% vs. 1.32%, P<0.0001; 2.21% vs. 1.78, P=0.8153, respectively. Study funded by Insulet. **3.** Sherr J. et al. Diabetes Care. 2022; 45:1907-1910. Single-arm multicenter clinical trial in 80 pre-school children (aged 2-5.9 yrs) with T1D. Study included a 14-day standard therapy (ST) phase followed by a 3-month AID phase with Omnipod 5 system. Mean time in hyperglycaemic range (>10.0 mmol/L or >180mg/dL) as measured by CGM in children ST vs. 3-mo Omnipod 5: 39.4% vs. 29.5%, P<0.0001, respectively. Mean time in hypoglycaemic range (<3.9 mmol/L or <70 mg/dL) as measured by CGM in children ST vs. 3-mo Omnipod 5: 3.43% vs. 2.46%, P=0.0204. Study funded by Insulet.

Pod shown without necessary adhesive. Screen is an example and for illustrative purposes only. Suitability for Omnipod should be discussed with your Healthcare Professional

*It will always pause insulin when the last sensor glucose value recorded was below 3.3 mmol/L or 60 mg/dL. †The demo Pod is a needle-free Pod that does not deliver insulin. Controller not included.


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omnipod 5
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