SPRING 2025

UPDATE

DIABETES UK
KNOW DIABETES. FIGHT DIABETES.

The exclusive magazine for healthcare professional members

PROCESSED AND ULTRA-PROCESSED FOODS

Can they be part of a healthy diet?

REDUCING DIABETES TECH INEQUALITIES

What are the positive steps?

FROM SUBMISSION TO SYMPOSIA

Professor Nick Oliver, Editor-in-Chief of our journal Diabetic Medicine highlights his work in the field of diabetes research

omnipod 5
automated insulin delivery system

Omnipod® 5:
AUTOMATED INSULIN DELIVERY
Simplified

Omnipod® 5 with SmartAdjust™ technology adjusts on the go*

Explore the benefits of Omnipod 5 for your patients[1,2] **at omnipod.com/hcp**

In pivotal studies, Omnipod 5 demonstrated[1-4]:

- > Significantly reduced HbA1c
- > Improved time in range
- > Reduced diabetes distress in adults and children and their caregivers
- > Less time in hypoglycaemia in adults and very young children; hypoglycaemia remained low in children. Less time in hyperglycaemia

INDICATION: THE OMNIPOD® 5 AUTOMATED INSULIN DELIVERY SYSTEM IS INDICATED FOR USE BY INDIVIDUALS OF 2 YEARS OF AGE AND OLDER WITH TYPE 1 DIABETES MELLITUS.

References:
1. Study in 240 people with T1D aged 6 - 70 years involving 2 weeks standard diabetes therapy followed by 3 months Omnipod 5 use in Automated Mode. Average A1c in adults/adolescents and children, standard therapy vs. Omnipod 5 = 7.16% vs 6.78%; 7.67% vs 6.99%. Average time in Target Glucose range (from CGM) for standard therapy vs Omnipod 5 in adults/adolescents and children = 64.7% vs. 73.9%; 52.5% vs. 68.0%. Average time with high blood glucose in adults/adolescents and children, standard therapy vs. 3-month Omnipod 5: 32.4% vs. 24.7%; 45.3% vs. 30.2%. Median time with low blood glucose in adults/adolescents and children, standard therapy vs. 3-mo Omnipod 5: 2.0% vs. 1.1%; 1.4% vs. 1.5%. Brown et al. Diabetes Care (2021).
2. Study in 80 people with T1D aged 2 - 5.9 yrs involving 2 weeks standard diabetes therapy followed by 3 months Omnipod 5 use in Automated Mode. Average time in Target Glucose range (from CGM) for standard therapy vs Omnipod 5 = 57.2% vs. 68.1%. Average A1c in standard therapy vs. Omnipod 5 = 7.4% vs. 6.9%. Average time with high blood glucose (>180mg/dL) from CGM in standard therapy vs Omnipod 5 = 39.4% vs. 29.5%. Average time with low blood glucose (<70mg/dL) from CGM in standard therapy vs Omnipod 5 = 3.41% vs. 2.13%. Sherr JL, et al. Diabetes Care (2022).
3. Study in 115 people with T1D aged 18–70 years involving 2 weeks standard diabetes therapy followed by 3 months Omnipod 5 use in Automated Mode. Diabetes distress measured by Type 1 Diabetes Distress Scale (T1-DDS) baseline vs 3 months of Omnipod 5 use; 1.64 vs. 1.48 (P<0.0001) respectively. Polonsky WH, et al. Diabetes Res Clin Pract (2022).
4. Study in children and their caregivers (n=82) and adolescents and their caregivers (n=42) with type 1 diabetes involving 2 weeks standard diabetes therapy followed by 3 months Omnipod 5 use in Automated Mode. Diabetes distress measured by Problem Areas in Diabetes (PAID) in children and their caregivers as well as adolescents and their caregivers at baseline vs 3 months of Omnipod 5 use; 27.4 vs. 24.2; 47.1 vs. 40.7; 30.5 vs. 27.1; 45.0 vs. 38.0 (P<0.0001) respectively. Hood KK, et al. Pediatric Diabetes (2023)
*When used in automated mode with a compatible sensor, the Omnipod 5 System makes adjustments to insulin delivery every 5 minutes based on the user's current sensor glucose value, glucose values predicted 60 minutes in the future, glucose trend, and past insulin delivery to bring glucose to a user defined target; users still need to bolus for meals and correction.
Compatible glucose sensor sold separately and requires a separate prescription.

WELCOME TO THE SPRING ISSUE OF UPDATE

Welcome to the spring issue of Update. Thank you to Simon O'Neill who has now moved on from Diabetes UK, he has been invaluable in the way he has helped develop our work over the last 30 years, as well as in contributing to the magazine and we wish him all the best in his future ventures.

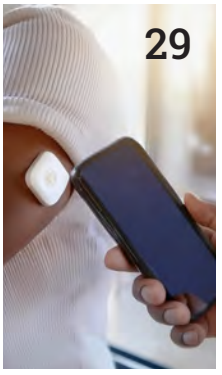
It was great to see you at the Professional Conference in Glasgow. As Director of Research and Clinical and Head of Clinical, we have been attending Professional Conference for many years and always come away feeling inspired and uplifted by the great work and progress being made for people at risk and living with diabetes. Highlights were seeing the rapid progress in the screening trial for type 1 children and the scale of the research collaboration driven by the Type 1 Grand Challenge (page 27).

We heard from our future leaders in the first Diabetes UK Rising Stars session, and colleagues paid powerful tributes to the late Dr Bob Young who did so much to improve the lives of people living with diabetes through his leadership of the National Diabetes Audit.

In this issue, Professor Nick Oliver, Editor-in-Chief of our journal Diabetic Medicine, highlights many of the hot topics covered at Professional Conference, including his work on the effective application of technologies and tackling stigma (page 22). We learn about a major new clinical trial, DIGEST (page 25), which is showing real promise in positive impact for mothers and their babies in restricting calories during gestational diabetes in pregnancy. We also learn about the genetic predisposition to early onset type 2 diabetes in South Asian communities (page 16). Finally, we discuss processed and ultra-processed foods and their effects on health in our Fact File (page 19).

Dr Elizabeth Robertson, Director of Research and Clinical and Douglas Twenefour, Head of Clinical.

In this issue



Cover image: Nick Oliver, article on page 22

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ARTICLES Update magazine is written by contributors, and may not always represent the views of Diabetes UK. Our policy statements are always clearly identified as such. We welcome original contributions from healthcare professionals. All potential submissions should be made in writing for editorial consideration and should include a synopsis of the suggested feature. Please email us at update@diabetes.org.uk

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THE IMPORTANCE OF QUALITY CONVERSATIONS AT TYPE 2 DIABETES DIAGNOSIS

A new paper, published in the British Journal of General practice and co-authored by our Diabetes Research Steering Groups (DRSG), has highlighted the challenges many people face at the point of a type 2 diabetes diagnosis and the critical role of effective communication with healthcare professionals.

Drawing on the experiences of people with type 2 diabetes shared through our helpline and forum, the findings emphasise the pressing need for better support and guidance during this pivotal moment. The diagnosis experience can profoundly shape a person's long-term relationship with their type 2 diabetes and the health system.

However, the DRSG's analysis uncovered common themes including a lack of emotional support, trust and communication barriers with healthcare teams, inadequate guidance on diabetes management, and missed opportunities to discuss remission.

Recent advancements in earlier diagnosis, interventions, new therapeutic options, and the growing possibility of remission, point to a need for healthcare professionals to rethink how they approach and communicate with newly diagnosed patients.

DRSG members call for more guidance on what optimal models of care should look like, incorporating personalised discussions to help people newly diagnosed understand their options and feel empowered to manage their condition.

Jenifer Freeman, Deputy Lay Chair for the DRSG on type 2 diabetes treatment and prevention, and co-author of the paper says, "Being involved in the writing of this paper was a great way to get the medical community talking about the diagnosis experience and how patients can be affected by the type of experience they receive. There is already a great deal of stigma around a diagnosis; this doesn't need to be made any worse. I was diagnosed with type 2 four years ago after a routine blood test. I was informed of my diagnosis by letter and received very little information, and it was weeks before I could see a healthcare professional.

> **"The diagnosis experience can profoundly shape a person's long-term relationship with type 2"**

"When I did see a healthcare professional it was all doom and gloom with no discussions around the possibilities of remission or living a relatively normal life if managed well. I know not everyone goes through this, and some have a good diagnosis experience, but I think it spurred me on to do something positive and proactive - to give something back!"

You can read the full paper at:
Barry E., et al (2024).
Conversations matter: improving the diagnosis experience for people with type 2 diabetes.
British Journal of General Practice, 74(748): 489-490. doi: 10.3399/bjgp24X739713.

ADVANCING EQUITY IN DIABETES CARE FOR BLACK POPULATIONS

Equity in diabetes care can be very practical. It can consist, for example, of helping healthcare professionals understand their community's food choices, and recognise subtle signs of foot complications in dark skin tones. This was one of many takeaways from the Diabetes Africa UK Forum in November 2024, convened in partnership with Diabetes UK, King's Health Partners, and Caribbean and African Health Network.

The forum brought together 148 participants to advance diabetes care practice for people of Black, African and Caribbean heritage. Clinicians, researchers, community leaders and NHS decision-makers explored equity by addressing a range of topics on obesity, the stigma around wearable technology, and diabetes care in pregnancy. The day's comprehensive programme brought together experts in their field and included discussions around many topics, such as kidney and eye health outcomes, and diabetes foot care. A highlight was the launch of a practical diabetes technology equity toolkit, endorsed by the Diabetes Technology Network UK. This resource equips healthcare teams with strategies to improve technology uptake, backed by case studies and implementation guidance.

The forum was a great success offering a glimpse of what is possible when clinical expertise and cultural understanding come together to enhance diabetes care for people of Black, African and Caribbean heritage.

You can find out more about Diabetes Africa and their work, and download a toolkit for decision-makers and healthcare teams at diabetesafrica.org/technology-toolkit/

PHOTOS: ADOBE STOCK; DIABETES AFRICA; PM LIVE

[Photo credit: PM Live: Winner: Diabetes Professional of the Year: Dawn Ackroyd (centre); Highly Commended: Type 1 Specialist Service, representatives from the University Hospitals of Leicester NHS Trust team (left); Commended: Diabetes Education Programmes - Healthcare Professionals, representatives from the Eden, Leicester Diabetes Centre, University Hospitals Leicester NHS Trust team (right).

BEST PRACTICE IN UK DIABETES CARE RECOGNISED AT QUALITY IN CARE DIABETES AWARDS

NHS teams from Birmingham Women's and Children's Foundation Trust, Manchester University NHS Foundation Trust, Royal Free London Foundation Trust and Leeds Children's Hospital (Leeds Teaching Hospitals NHS Trust) were among those recognised at the 14th annual Quality in Care (QiC) Diabetes Awards, partnered by Sanofi. QiC Diabetes recognises, rewards and shares innovative practice demonstrating quality in diabetes management, education, and services for people with diabetes and/or their families.

This year saw the new category 'Improvements in Diabetes Care Using Data' receive a high number of entries of an excellent standard.

The winner was Integrated Diabetes Care for People with Advanced CKD: Clinical Research Programme (Dr Hellena Habte-Asres) by Royal Free London Foundation Trust.

The QiC Diabetes team also worked with NHS Wales, who gave their support to the sixth NHS Wales Outstanding Contribution Award for Services in Diabetes, which went to Dr Sarah Davies, while the eighth NHS England Outstanding Contribution Award for Services in Diabetes, went to Professor Partha Kar and the NHS England Hybrid Closed Loop Team.

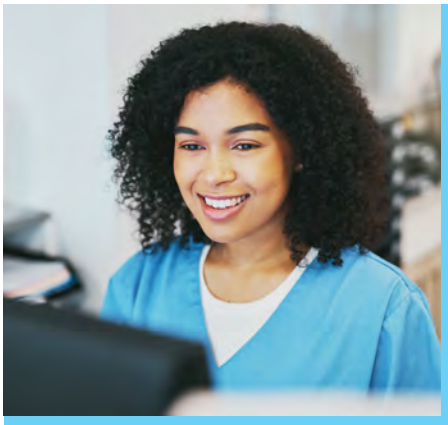
Also, for the second time, Sanofi were proud to support the Sanofi Green Award, which was won by Dr Vincent Simpson, Royal Devon University Healthcare NHS Foundation Trust and Dr Deepthi Lavu, APEx, University of Exeter. Finally, Dawn Ackroyd, Senior Diabetes Specialist Nurse, University Hospitals of Leicester, was recognised as Diabetes Professional of the Year.

Debbie Woods, Head of Medical General Medicines Sanofi UK & Ireland said, "Sanofi is delighted to support the QiC Programme in 2024 and recognise and reward the innovations that will benefit people living with diabetes.

The QiC programme is at the forefront of sharing best practices to improve the quality of care, through demonstrating novel solutions to problems encountered by healthcare professionals and those impacted by diabetes daily."

For a full list of winners, highly commended and finalist entries to the 2024 QiC Diabetes Awards, visit qualityincare.org/diabetes

Acknowledgement: QiC Diabetes is partnered by Sanofi and supported by: Association of British Clinical Diabetologists; Association of Children's Diabetes Clinicians; Diabetes Psychology Network; Diabetes Research & Wellness Foundation; Diabetes Specialist Nurse Forum UK; Diabetes UK; DISN UK Group; JDRF the type 1 diabetes charity; National Children and Young People's Diabetes Network; Primary Care Diabetes Society; TREND DIABETES; United Kingdom Clinical Pharmacy Association; Young Diabetologists and Endocrinologists' Forum.



ADD TO YOUR CPD WITH OUR FREE E-LEARNING MODULES

Boost your confidence, skills and knowledge, to support people living with or at risk of diabetes, with our free online courses. Our courses are available for all healthcare professionals working in diabetes care, and are evidence based and peer reviewed.

New modules are coming soon!

Type 2 Diabetes Prevention
Equip yourself with the latest skills and insight to confidently support people prevent the onset of type 2 diabetes.

Medicines and Treatment
Learn to navigate the range of treatments available, and help people with diabetes make informed choices with our new e-learning module.

JOIN OVER 20,000 HEALTHCARE PROFESSIONALS AND REGISTER TODAY AT DIABETES.ORG.UK/UP-CPD

NHS LEARNING HUB

NHS England Learning Hub is an easy to access platform with a wide range of educational resources, e-learning, specialist health and care content.

Their managing type 2 diabetes in children and young people programme consists of six learning sessions that offers healthcare professionals an overview that will help them understand and improve the care children and young adults with type 2 diabetes receive. These include; diagnosis and initial management; glycaemic targets; general lifestyle weight management and psychological interventions; pharmaceutical interventions; complications and comorbidities, and young adult care for 18 years and over

The e-learning will support paediatric diabetes consultants, diabetes specialist nurses, dietitians, psychology staff and primary care staff. Find more at **learninghub.nhs.uk/catalogue/Managing-Type-2-Diabetes-in-Children.**

PHOTOS: ADOBE STOCK

DIABETES IN PREGNANCY CONFERENCE

Peter Shorrick, our Head of Midlands & East of England, reports on our 13th Diabetes in Pregnancy UK conference, hosted by the Midlands & East region and held online in November 2024.

We welcomed around 800 delegates from around the world, including UK, US, Pakistan and Malta to our meeting, and we estimate that over 15,000 pregnancies affected by diabetes annually are supported by the delegates who attend our conference.

We received 25 high-quality abstracts on clinical case presentation, innovative practice, audit, and research. The conference programme included esteemed national leaders in the diabetes in pregnancy field who gave updates on clinical trials in gestational diabetes (GDM), the present and future of diagnosing GDM, preventing diabetes following GDM pregnancy, and it concluded with a plenary on hybrid closed-loop CamAPS FX in type 1 diabetes pregnancy. We received US media coverage from Close Concerns, based in San Francisco. They are an advocacy group led by people with type 1 diabetes, who produce Closer Look summaries of conferences with widespread distribution (more than 10,000 healthcare leaders and their teams in the US).

Highlights of the conference

Dr Clare Hambling, National Clinical Director for Diabetes & Obesity, NHS England, gave a spotlight on women's health, type 1 and type 2 diabetes and pregnancy priorities, national diabetes and gestational diabetes mellitus audit.

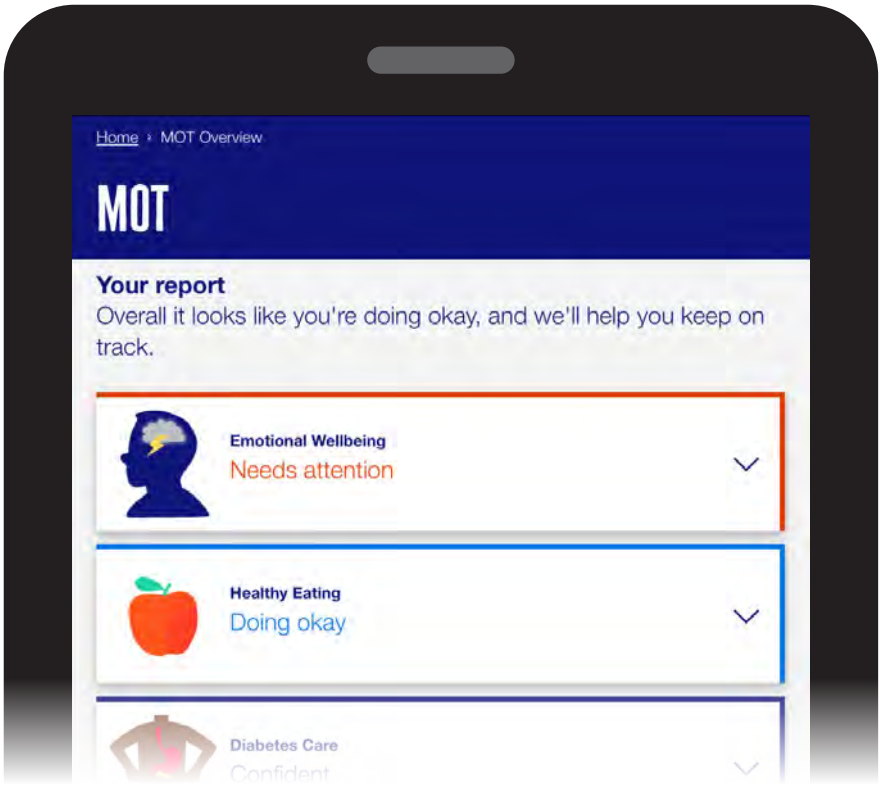
Professor Helen Murphy, Consultant national GDM lead, at King's College London delivered a plenary on hybrid closed-loop (HCL) systems in pregnant women with type 1 diabetes focusing on why the CamAPS FX system, a pregnancy-tuned HCL system, is uniquely recommended for type 1 pregnancies.

Professor Partha Kar, Consultant in Diabetes and Endocrinology at Portsmouth Hospitals NHS Trust, set an ambitious goal for 2025: to reach 60% uptake of HCL systems among women with type 1 who are pregnant or planning pregnancy. "Ambitious, yes, but worth attempting," he said, "as the paediatric population has already achieved around 85-90% uptake of HCL systems." Prof Kar emphasised this as part of the broader goal to improve diabetes care outcomes across the NHS, striving to bring the UK to the forefront globally in diabetes technology implementation.

Karen Kennedy, Assistant Director, National Diabetes Programme, NHS England, added that the 2023 NICE guidance prioritises HCL access for pregnant women or those planning pregnancy. She highlighted that this policy is bolstered by NHS England's commitment to scale up HCL adoption, with a goal to offer HCL to at least 60% of pregnant women with type 1 diabetes by the end of 2024 and 80% by 2025.

We are already planning this year's Diabetes in Pregnancy Conference, so please email Midlands@diabetes.org.uk to register your interest.

OUR NEW LOOK LEARNING ZONE



We've updated our award-winning, patient-centred e-learning platform, adding some brilliant new features to make it easier for people living with diabetes to fit learning and self-care into their everyday lives.

The new Learning Zone offers a range of interactive courses, tools and activities on topics from food swaps, physical activity, healthcare support and emotional health. It's a trusted source of information and advice that supports and complements NHS diabetes care.

We have:

- daily personalised recommendations
- short video posts and quizzes – to build knowledge
- top tips and recipes – to boost confidence
- checks planner – to help prepare for appointments
- diabetes MOT – a short survey and personalised report every three months.

With a variety of shorter content, as well as tried-and-trusted in-depth courses, the new Learning Zone has some additional features to help people manage their condition day-to-day, as well as improving their emotional wellbeing and overall health.

Additions to the tool:

- new courses – being introduced over the next few months
- daily check-in tool – to help spot trends over time
- quick community polls – learning from other people with diabetes
- more bite-size learning – breaking learning into manageable chunks.

Inform your patients, sign-in and create your own account here diabetes.org.uk/up-learningzone

"Learning Zone taught me everything I needed to know about the basics, as well as all those things I felt reluctant to ask about at a medical appointment"

George, who lives with type 1 diabetes

PHOTOS: ADOBE STOCK; DIABETES UK

Some of our courses

Taking Care

Understand more about managing your diabetes at home and the extra care you can get if you need it, both when you're newly diagnosed and beyond.

Food Hacks

Discover how you can make small changes to the foods you enjoy and have a big impact on your diabetes management.

Move In Tune

What do you need to be aware of when exercising with type 2 diabetes? Here we'll cover everything you need to know, so you can get active safely.

Let us Help

Being diagnosed with diabetes can feel life changing. But you don't have to deal with it on your own. Learn about all the incredible emotional support and help available here.

Diabetes Checks Planner

Use our planner to record which NHS health checks you've had for your diabetes this year and which ones you still need, to help keep you healthy.

TYPE 1 FAMILY WEEKENDERS AND SUMMER CAMPS

Volunteer your time to help us change lives

Our Type 1 Events are a unique experience for children and young people living with type 1 and their families. The events provide time and space for them to build confidence managing type 1 in a fun and safe environment.

These life-changing events couldn't happen without healthcare professionals like you who volunteer their time and expertise. By volunteering with us you'll enhance your professional practice, gaining valuable experience of type 1 in real-time away from clinic.

Find out more or apply now at
diabetes.org.uk/up-hcp-volunteering

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DIARY DATES

Upcoming events, conferences and webinars running throughout the year.

CONFERENCES AND EVENTS 2025

10 – 12 MARCH
SfE BES Conference, Harrogate

12 MARCH
International Conference on Diabetes and Endocrinology, London

19 – 22 MARCH
Advanced Technologies and Treatments for diabetes, Amsterdam

3 APRIL
Trend Diabetes National Conference, Belfast

7 – 8 APRIL
International Congress on Prevention of Diabetes and Complications, Vancouver

10 APRIL
International Conference on Diabetes and Metabolism, London

24 – 25 JUNE
23rd Global Conference of Diabetes, Endocrinology, and Primary Healthcare, Paris

9 – 10 JUNE
10th World Congress on Diabetes and Endocrinology, Zurich

AWARENESS EVENTS 2025

1 – 30 APRIL
Stress Awareness Month

5 – 11 MAY
Maternal Mental Health Awareness Week

12 – 18 MAY
Insulin Awareness Week

20 – 26 MAY
Type 2 Prevention Week

1 – 7 JUNE
Volunteers Week

16 – 22 JUNE
Diabetes Week

You can find more details about our events at diabetes.org.uk/up-events

Please note that every care has been taken to compile a list of relevant events. Publishing event details does not constitute an endorsement by Diabetes UK. Please make reasonable checks to ensure the event is suitable and accredited to the standard you require.

RETINAL SCREENING IN THE SPOTLIGHT

The British Association of Retinal Screening (BARS) conference was held in Liverpool on 26 and 27 September 2024. Highlights included an update on the English National Diabetic Eye Screening Programme (ENDESP), the challenges of implementing the new two-year screening intervals, refinement of R2 (pre-proliferative) diabetic retinopathy grading, and the optical coherence tomography pathway. Extending the regular screening interval from one year to two years is perhaps the biggest change introduced in diabetic eye screening in recent years. It applies to those considered to be at low risk of vision loss, after two successive screenings where no diabetic retinopathy has been identified.

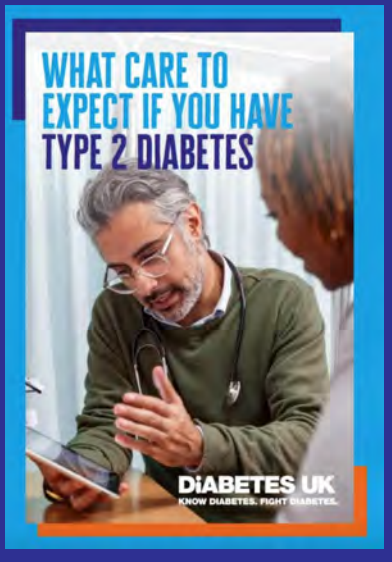
BARS president Samantha Mann gave a talk on hybrid closed loop (HCL) technology and its impact on diabetic retinopathy. Meanwhile, keynote speaker Professor Partha Kar, National Specialty Advisor, Diabetes, at NHS England, discussed the national rollout of continuous glucose monitoring for people living with type 1 diabetes and the introduction of HCL. Joshua Cook, Youth Worker at Together Type 1 presented a range of feedback – both positive and negative – from young people with diabetes on their experiences of diabetic eye screening. Finally, Rosamond Gilden, Diabetic Retinopathy Network South Pacific Regional Coordinator, talked about the challenges of providing screening and treatment to the Pacific Islands. Presentations from the conference are available at **eyescreening.org.uk**.

The 2025 BARS conference will be held in Birmingham on Friday 19 September. There will be a new one-day format, with talks on all aspects of diabetic eye screening that will be of value to all healthcare professionals working to help people with diabetes take care of their eye health.

Going forward, the BARS administration certificate will be updated to reflect the changes to ENDESP. There will also be more educational resources on NHS Futures, and the BARS website will be updated.

Photo: BARS

OUR GUIDES



We have a range of booklets, leaflets and guides which have been specifically created to help you support your patients.

Order or download a guide at diabetes.org.uk/up-guides

MAKE EVERY LENGTH COUNT WITH SWIM22

Looking for a challenge in 2025 that will leave you feeling energised, motivated and inspired? From 22 March, dive into Swim22 and swim towards a healthier you, and a brighter future for people living with and affected by diabetes.

Choose to swim 11, 22 or 44 miles over 12 weeks – at your own pace, in your own way. While getting fit in your local pool, you'll also be helping us fund lifesaving diabetes research.

Last year Kirstin took part in Swim22, on behalf of her youngest daughter, Isla, who has type 1 diabetes. Speaking about the diagnosis, which they received in 2022, Kirstin said: "It is a relentless disease, not an hour passes when we can forget about it."

Kirstin took part to help raise awareness and funds for research. She signed up to complete the full 22 miles and ended up doubling the distance to 44 miles – an incredible feat!

She said, "I hoped that I would manage to reach my target of 22 miles and raise some money towards finding a cure for this awful disease. Coming close to the 22 miles my donations were much higher than I had ever dreamed of, so I decided to keep swimming until the final date of the challenge. I managed to gain the 44-mile medal which my daughter wanted."

On the challenge itself, Kirstin commented, "Swimming made me feel great, it also gave me a chance to think about what Isla was going through and how lucky we are with all the developments they are making towards a cure for type 1 diabetes."

This spring, join thousands of others like Kirstin who have made every length count with Swim22. Take the plunge and sign up at diabetes.org.uk/up-swim22

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CPD E-LEARNING

For healthcare professionals

Evidence-based, peer reviewed. Build the confidence, skills and knowledge to support people living with or at risk of diabetes.

diabetes.org.uk/up-cpd

Scan to sign up for free today

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QUESTIONS ABOUT DIABETES?

We're here to talk.

If you or your patient is 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.

DAY IN THE LIFE OF LAURA CRETU

Laura Cretu is Pharmacy Manager, Tesco Cleethorpes Extra. She writes about her day working in a busy supermarket pharmacy.

My role as a community pharmacist involves managing patients' medicines, offering clinical services, supporting public health initiatives and providing accessible healthcare to our local communities. As I'm also a pharmacy manager at Tesco, my role expands beyond clinical responsibilities to encompass leadership, operational oversight, and strategic planning. I work shifts, so the day is divided into distinct periods, each with its own responsibilities and challenges.

Morning duties

The day begins with opening duties, which include reviewing the schedule for the day to anticipate high-demand periods and prioritising tasks to ensure a coordinated approach to the day's workload. Morning is the time for daily briefings, I host quick team meetings to share updates on targets, new services, or any recent policy changes, addressing any staffing concerns, such as covering shifts or redistributing workloads.

In the morning, patients drop and collect prescriptions. Each pharmacy must have a responsible pharmacist for the day, whose role is to secure the safe and effective running of the pharmacy when operational and complete a clinical review of all the prescriptions dispensed, which is what I do. I also provide advice to patients on medication usage, including any potential side effects or interactions, and conduct clinical consultations.

This could be one of the services offered like Pharmacy First, or helping newly diagnosed diabetes patients understand their treatment plans, or demonstrating how to use blood glucose monitors effectively.

Pharmacists play a pivotal role in improving health outcomes, particularly for chronic conditions like diabetes and asthma.

My responsibilities include:

- **Medicines management:** ensuring patients receive the correct medicines, including insulin and oral hypoglycaemics, and educating them on proper usage, lifestyle counselling and more.
- **Device demonstration:** teaching patients how to use blood glucose monitors, insulin pens, and other medical devices effectively and safely.
- **Collaborative care:** working closely with GPs, nurses, and other healthcare professionals to provide holistic care and ensure continuity of treatment.

> **"Pharmacists play a pivotal role in improving health outcomes, particularly for chronic conditions like diabetes..."**

Late shift

The late shift ends at 8pm and we often sees patients coming to us who are unable to visit during the day. Evening shifts often involve addressing more complex queries, as patients rely on our pharmacy for out-of-hours support and services, when their GP surgery is closed.

As the day winds down, I review stock, complete reports, and make sure that the pharmacy is ready for the next morning. This includes checking for any outstanding prescriptions or patient follow-ups. What I truly love about being a pharmacist is the privilege of being an integral part of my community's health. Every day, I get to help people improve our customers' lives – whether it's by managing a chronic condition like diabetes, providing advice that eases a parent's worry, or simply being a friendly, trusted face in moments of uncertainty.

I take pride in the relationships I've built with my patients. When someone comes back to thank me for guidance that made a difference, it reminds me why I chose this path. Whether it's explaining how to use a new inhaler or offering reassurance during a tough diagnosis, those interactions are incredibly fulfilling.

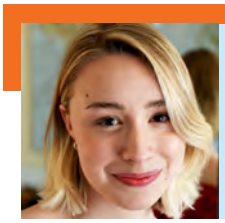
Working alongside a team of dedicated professionals is another highlight. Together, we tackle challenges, celebrate successes, and constantly strive to improve the care we provide. I also love the dynamic nature of the job – from clinical consultations to managerial tasks, every day is different, and there's always an opportunity to learn and grow.

Finally, being a pharmacist allows me to contribute meaningfully to public health. It's more than just dispensing medications, it's about empowering people to take control of their wellbeing and fostering a healthier community. It's a role that's both challenging and deeply rewarding, and I wouldn't trade it for anything.

Away from the job

Outside of work, I value spending quality time with family and friends. Whether it's sharing a meal, going for a walk, or simply catching up, these moments help me recharge and maintain balance in my life.

When I have some quiet time, I love reading or listening to music. A good book or a favourite playlist is the perfect way to relax and unwind after a busy day. Occasionally, I'll experiment in the kitchen, trying out new recipes or baking something special.



Freya Masters, our Research Communications Officer, reviews some recent research highlights.

GENETIC BASIS OF EARLY ONSET AND PROGRESSION OF TYPE 2 DIABETES IN SOUTH ASIAN PEOPLE

South Asian people often develop type 2 diabetes at a younger age and lower body weight. Landmark research published in Nature Medicine has revealed specific genetic factors behind this predisposition.

A team led by Professor Sarah Finer analysed data from over 50,000 British Pakistani and British Bangladeshi individuals in the Genes & Health study, including nearly 12,000 with type 2 and 2,000 with gestational diabetes. The goal was to uncover genetic contributions to these conditions.

The results showed that genetic risks linked to two key issues – insulin deficiency and unfavourable fat distribution (lipodystrophy) – are drivers of gestational diabetes and of the early onset and rapid progression of type 2 diabetes in South Asian populations.

People with a high genetic risk for insulin deficiency and lipodystrophy developed type 2 diabetes an average of eight years earlier and at lower body weights, compared to those with a low genetic risk. They also progressed quicker to insulin treatment and in developing microvascular complications. People with a high genetic risk for insulin deficiency were also less likely to respond to sodium-glucose co-transporter-2 (SGLT2) inhibitors.

The study further found that South Asian people carried a greater genetic susceptibility for insulin deficiency and lipodystrophy than White Europeans in the UK Biobank database.

This research highlights the pressing need for more high-quality genetic research involving South Asian and other underrepresented groups, with most existing research focusing on European populations.

These discoveries are a vital step towards understanding why type 2 diabetes affects South Asian people differently and tailoring care to meet their unique needs. It will also be essential to consider other contributors, such as social and cultural factors, to help tailor care and tackle health inequalities effectively in South Asian communities.

Hodgson S, Williamson A, Bigossi M et al. **Genetic basis of early onset and progression of type 2 diabetes in South Asians.** Nat Med (2024). https://doi.org/10.1038/s41591-024-03317-8

PHOTOS: ADOBE STOCK

'SMART' INSULIN RESEARCH MARKS PROMISING STEP FORWARD

A new study, published in Nature, has demonstrated that, in animal models, a newly developed form of insulin can switch on and off in response to changing blood glucose levels.

The new insulin, named NNC2215, was developed by an international team involving companies based in Denmark, the UK and the Czech Republic, as well as the University of Bristol. It features a sophisticated molecular 'switch' mechanism made of two parts: a ring-shaped structure and a molecule with a similar shape to glucose, called a glucoside.

When blood glucose levels are low, the glucoside binds to the ring, keeping the insulin in an inactive, or 'off', state, preventing hypoglycaemia. As blood glucose levels rise, the glucoside is replaced by glucose itself. This triggers the insulin to shift shape and become active, lowering blood glucose levels.

Laboratory studies demonstrated that this switch mechanism worked as researchers hoped – insulin was shown to bind more effectively to its receptor as blood glucose levels rose, making it more active at higher glucose concentrations. The researchers also found that NNC2215 was as effective as human insulin at lowering blood

glucose levels in rats and pigs.

Dr Tim Heise, Vice Chair of the Type 1 Diabetes Grand Challenge Novel Insulins Scientific Advisory Panel, commented: "This elegant study shows that it is feasible to quickly switch insulin action on and off depending on prevailing glucose levels and to minimise the risk of hypoglycaemia in pigs.

"While this study certainly is important progress, many more steps will have to follow to establish glucose-sensitive insulins as a treatment for people with diabetes. Nevertheless, I am confident that the intense research in glucose-sensitive insulins, including the developments funded by the Type 1 Diabetes Grand Challenge programme, will manage to achieve this goal."

No timeline has been announced for the next steps in developing this insulin or moving onto clinical trials, but this is a significant step forward in the search for more advanced insulin treatment for people with type 1 diabetes.

Hoeg-Jensen T et al. **Glucose-sensitive insulin with attenuation of hypoglycaemia.** Nature 634, 944–951 (2024). https://doi.org/10.1038/s41586-024-08042-3

SUGAR RATIONING IN EARLY LIFE AND TYPE 2 DIABETES RISK

Research published in Science suggests that limiting sugar in the first 1,000 days of life is linked to a lower risk of type 2 diabetes and hypertension years later.

Researchers took advantage of a natural experiment by comparing 60,000 adults in UK Biobank conceived during and shortly after post-war sugar rationing ended. When sugar rationing ended in 1953, the UK's average sugar consumption doubled almost immediately, meaning the two groups likely had different levels of sugar exposure in utero and early life.

The researchers found sugar rationing appeared to have a protective effect. People in the sugar-rationed group had a 35% lower chance of developing type 2 diabetes by their mid-60s compared to those born later. If they did develop type 2 diabetes, they were diagnosed on average four years later than those who didn't live through rationing.

Results showed the mother's diet during pregnancy was important – in utero sugar rationing alone accounted for about one-third of the risk reduction. However, the greatest benefits were seen when sugar rationing extended into early childhood, especially after age six months.

This study reinforces the evidence that early life is a critical period that can shape future health. Exposure to a high-sugar diet in utero and early life may increase the risk of obesity and influence food preferences in the long term. However, it's not clear whether exposure to less sugar alone accounted for the observed lowered type 2 risk.

Amanda Adler, Professor of Diabetic Medicine and Health Policy from the University of Oxford's Radcliffe Department of Medicine, commented, "We still don't really know if the children less likely to get type 2 diabetes later in life were indeed the ones not exposed to sugar in utero or after birth – even in a setting of rationing.

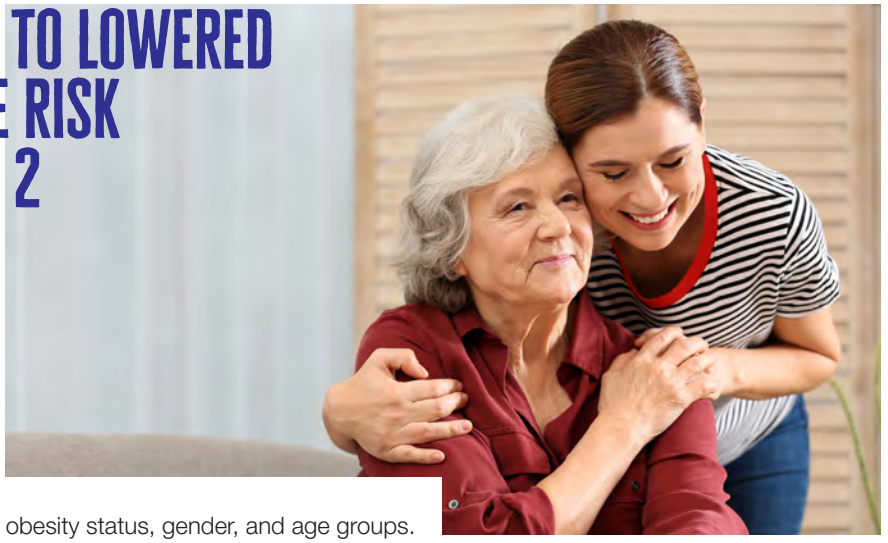
"It may be that at the same time rationing ended and people consumed more sugar, they also changed other habits, becoming, for example, less physically active. So, this may have influenced in part their risk for type 2 diabetes later in life.

"It's intriguing and entirely possible that a lower exposure to sugar in utero via the mother would lead to life-long benefits. This study is an open invitation to clinical trialists to clarify the 'right' levels of sugar to add to the diet for pregnant or lactating women and their infants."

It's also important to consider that the data came from UK Biobank, a database that tends to include healthier and wealthier people. Plus, today's food environment, dietary patterns and physical activity levels differ greatly from the 1950s. The same study in different groups of people or time periods may give us different results.

Gracner et al. **Exposure to sugar rationing in the first 1000 days of life protected against chronic disease.** Science 386,1043-1048 (2024). DOI:10.1126/science.adn5421

SEMAGLUTIDE LINKED TO LOWERED ALZHEIMER'S DISEASE RISK IN PEOPLE WITH TYPE 2



GLP-1 agonists have been shown to hold benefits beyond their blood glucose-lowering properties, including weight loss and protection against cardiovascular and kidney damage.

A study published in Alzheimer's & Dementia journal suggests that semaglutide may also help protect the brain. Researchers looked at the health records of over one million people with type 2 diabetes in the US. They tracked new diagnoses of Alzheimer's disease over a three-year period, comparing those taking semaglutide to people using other diabetes medications.

Semaglutide was linked to a significantly reduced risk of developing Alzheimer's disease. For example, compared to those taking insulin, people using semaglutide had a 67% lower risk of Alzheimer's. They also had a 40% lower risk compared to people taking other types of GLP-1 agonists. Risk reductions were consistent across obesity status, gender, and age groups. Additionally, people taking semaglutide required fewer Alzheimer's disease-related medications.

This study provides the first real-world evidence to suggest semaglutide may offer neuroprotective benefits for people with diabetes, with the potential to help delay or prevent Alzheimer's disease. However, clinical trials are necessary to confirm these effects. Continued research should also explore how long any protective effects might last and uncover the mechanisms responsible.

Wang W, Wang Q, Qi X et al. (2024). **Associations of semaglutide with first-time diagnosis of Alzheimer's disease in patients with type 2 diabetes: Target trial emulation using nationwide real-world data in the US.** Alzheimer's & dementia: The journal of the Alzheimer's Association, 10.1002/alz.14313. Advance online publication. https://doi.org/10.1002/alz.14313

QUICKER BLOOD SAMPLE PROCESSING COULD HELP DETECT MISSING GESTATIONAL DIABETES CASES

New research that we co-funded, published in Diabetic Medicine, suggests that the standard oral glucose tolerance test (OGTT) is failing to diagnose more than half of gestational diabetes cases. However, speeding up how blood samples are processed could help more women get an accurate diagnosis and the care they need.

Professor Claire Meek at the University of Leicester and researchers at the University of Cambridge evaluated the effect of OGTT with enhanced glucose processing on glucose concentrations, gestational diagnoses, health equity and pregnancy outcomes. They also investigated whether HbA1c was a suitable alternative to diagnose gestational diabetes.

The researchers recruited 1,308 women, who were first tested for gestational diabetes using the usual OGTT, then again using the OGTT with enhanced glucose processing (blood samples were processed in <2.5h). The OGTT involves taking blood before pregnant people consume a sugary drink. A further sample is taken and tested two hours later.

However, red blood cells in the sample continue to use up glucose after the blood is taken, so glucose concentrations fall over time in the sample tube. This can lead to inaccurate results. Processing the blood quickly means that the glucose levels in the sample are most similar to the glucose levels in the person's blood.

Researchers found that 9% of women were diagnosed with gestational diabetes using the standard procedure, compared to 22% with the enhanced glucose processing. This means that more than half the women found to have gestational diabetes in the study would have gone undiagnosed – and left untreated – using the standard test. Scaling up, the researchers estimate this could affect up to 30,000 pregnant women every year in the UK.

Among the women with gestational diabetes who were missed by the standard OGTT, 37% gave birth to large-for-gestational-age babies, highlighting the risks linked to missed diagnoses.

Furthermore, HbA1c was found not to be a suitable alternative predictor of gestational diabetes diagnosis. The team says that quicker blood processing (within two to four hours) would be achievable in most NHS settings, and this offers new opportunities to help improve the health of mothers and babies.

PHOTOS: ADOBE STOCK

PROCESSED AND ULTRA-PROCESSED FOODS

What are ultra-processed foods, and can they be part of a healthy diet?

The public's interest in the concept of 'ultra-processed food' (UPF) is showing no signs of waning. UPF refers to some highly processed foods and drinks, and their intake is increasing globally[1].

It is estimated that more than half of the calories an average person in the UK consumes are from foods that would be classified as UPF[2,3]. Further insights reveal that UPF consumption is even higher among UK adolescents, comprising nearly two-thirds of their daily calorie intake. Consumption is highest among adolescents from socioeconomically disadvantaged households or areas, people of White ethnicity, and younger adolescents (11 to 13 years old)[4].

What are processed foods?

The term 'processed food' does not have a consistent definition, and it could refer to any food that has undertaken any process, such as chopping, freezing, canning or cooking. Food fortification is also included. However, processed foods generally refer to foods with other foods or ingredients added.

Why are foods and drinks processed?

Foods are processed for various reasons – for example, making sure foods that would otherwise be inedible without processing are edible or safe to eat, such as pasteurising cow's milk. Processing is also used to increase a food or drink's shelf life, which has many benefits, including offering convenience to consumers and reducing the frequency of food shopping. Foods and drinks can be fortified to increase nutritional quality by adding vitamins or minerals – like adding calcium to plant-based milks. Processing some foods can also improve their palatability and make them taste better, for instance, creamy ice cream or melt-in-your-mouth chocolate.

What is an ultra-processed food?

The term 'ultra-processed food' comes from the NOVA food classification system, which created the definition of an 'ultra-processed' food distinct from processed food and was developed by researchers at the University of São Paulo, Brazil[5].

The NOVA food classification system places the foods we buy into four groups based on the amount of processing – from unprocessed to ultra-processed. According to the NOVA classification system, UPFs are typically foods with five or more ingredients and include those not commonly used in culinary preparations. However, this can be considered an unhelpful simplification:

- It does not recognise the nutritional benefit of some processed and UPFs in a person's diet. Many foods categorised as UPFs can benefit our health and provide important nutrients, such as yogurt and wholegrain bread.
- Not all processed foods are high in fat, salt, and sugar – and because of the nutrients they contain, some processed foods support a healthy, balanced diet. For example, baked beans are classified as ultra-processed but are low in fat and a source of fibre and protein. Half a standard 415g tin of baked beans also counts towards your five-a-day.
- UPFs can provide important nutrients – for example, plant-based milks would be classified as ultra-processed because some are fortified with vitamin D, B2 and B12 and calcium. This can help people who don't drink cow's milk meet their nutrient requirements.
- Some foods that would be classified as UPF, such as vegetable-based sauces, can help make low-cost, nutritious home-cooked meals. Adding vegetables and beans provides fibre and protein to the pre-made sauce, making it a quick and relatively cheap option for many people on a budget.
- UPFs can be beneficial to health, and they can be affordable. However, some UPFs are high in saturated fat, free sugar and salt and should not be the main stay of a healthy, balanced diet. It is recommended that individuals with and without diabetes limit their intake of saturated fat, free sugar and salt to help support good health. These guidelines align with existing UK dietary recommendations, including those related to HFSS (high fat, salt, and sugar) foods and the Eatwell Guide[6], which remain unchanged.

PHOTO: ADOBE STOCK

PHOTO: ADOBE STOCK

What does the evidence tell us?

Processed foods can increase or reduce the nutritional quality of an individual's diet. Growing evidence suggests higher consumption of UPFs is linked to excess energy intake and weight gain. With a dose-response relationship – participants in the highest quartile of UPF consumption had significantly higher risk of developing obesity (HR: 1.79; 95%CI: 1.06–3.03), abdominal obesity (HR: 1.30; 95%CI: 1.14–1.48), and a ≥5% increase in BMI (HR: 1.31; 95%CI: 1.20–1.43), waist circumference (HR: 1.35; 95%CI: 1.25–1.45), than those in the lowest quartile of consumption[7].

A randomised controlled crossover study was conducted involving 20 inpatient adults who were exposed to ultra-processed versus unprocessed diets[8]. Participants received either a UPF diet or an unprocessed diet for two weeks, followed immediately by the alternate diet for two weeks. Meals were designed to be matched for calories, energy density, macronutrients, sugar, sodium and fibre.

Subjects were instructed to consume as much or as little as desired. Results showed an increase of >500 kcal in daily energy intake compared with a similar period consuming a minimally processed diet. Weight changes were highly correlated with energy intake (with participants gaining 0.9±0.3 kg (p=0.009) during the ultra-processed diet and losing 0.9±0.3 kg (p=0.007) during the unprocessed diet.

> **"The British Nutrition Foundation, in its recent position statement concerning UPFs, highlight the importance of not demonising all foods, which can lead to feelings of guilt and stigma"**

Researchers are trying to establish whether the manufacturing, in addition to the nutrient content of the food, can explain these adverse health outcomes. Evidence suggests a link between energy density and texture of food and energy intake, with soft UPFs contributing to increased energy intake amongst participants, compared to study participants consuming hard, minimally processed meals[9].

In 2023, the Scientific Advisory Committee on Nutrition (SACN) explored the association between UPF intake and various adverse health outcomes, with 20 systematic reviews meeting the inclusion criteria. The 10 fully extracted systematic reviews considered associations between UPF intake and consistently reported that increased consumption was associated with increased risks of adverse and complex health outcomes[10].

The authors, however, acknowledged the limitation of their evidence, which did not provide clear evidence of a causal association between processing and health, concluding that more research is needed. Most of the included studies were largely based on observational studies, with inconsistent adjustment for key confounders or covariates, which may result in residual confounding.

We know consumption of UPF is often linked to a less healthy dietary pattern, with diets high in UPFs often energy-dense, high in saturated fat, salt, free sugars, and processed meat, and low in fruit, vegetables and wholegrains.

The available evidence cannot isolate the role of UPF and cannot determine whether these associations are independent of the 'unhealthy' nutrient profile usually found in a UPF. Many UPFs are energy-dense, high in saturated fat, free sugars and salt, and low in fibre. SACN found that there was a paucity of studies that included socially and ethnically diverse population groups, which may limit the applicability of the evidence to the UK population.

> **"Some ultra-processed foods can play an important role in increasing a person's nutritional intake..."**

A recent umbrella review was conducted of 45 distinct pooled meta-analyses of epidemiological studies from 14 review articles to assess the correlation between the consumption of UPFs classified by the NOVA system and adverse health outcomes[11]. The review articles were all published in the past three years and involved almost 10 million participants. The results show that higher exposure to UPFs was consistently associated with an increased risk of 32 adverse health outcomes, including cardiovascular mortality, gastrointestinal, cancer, common mental health disorders such as anxiety and depression, and type 2 diabetes.

The evidence is drawn from observational data, where the intake of UPFs is linked to confounding factors, such as lower socioeconomic status and diet quality, which also increase the risk of adverse health outcomes. It is, therefore, difficult to unravel the relationship between UPF and health outcomes.

In a recent study involving 21,730 participants with a mean age of 55.8 years from the UK Biobank (2007–2019), UPFs were defined using the NOVA food classification[12]. During a mean follow-up of 5.4 years, 305 incident type 2 diabetes cases were

identified. A gradient of elevated risk of type 2 associated with increasing quartiles of UPF intake was consistently observed (p-value for trend < 0.028). A significantly increased risk of type 2 diabetes was observed per 10 percentage points increment in UPF consumption (adjusted HR: 1.12, 95% CI: 1.04–1.20). Researchers concluded a diet high in UPFs is associated with a clinically important increased risk of type 2 diabetes. Conversely, certain UPFs are linked to a reduced risk of type 2, such as fermented dairy products, like unsweetened yogurt and cheese, and wholegrains bread and cereals[13].

Some UPFs can play an important role in increasing a person's nutritional intake. For example, gluten-free UPFs can provide an additional choice to people living with coeliac disease. Oral sip feeds can help supplement people with poor nutritional intake or status diet. Some fortified plant-based milks can be useful for people requiring a lactose-free diet. Plus, with the government's announcement at the end of 2024 that non-wholemeal flour will be fortified with folic acid by the end of 2026, it is hoped this will reduce neural tube defects and improve the health of pregnant women.

Concluding thoughts

The British Nutrition Foundation[14], in its recent position statement concerning UPFs, highlight the importance of not demonising all processed foods, which can lead to feelings of guilt and stigma around food choices, which we know many people with diabetes experience. And while it is helpful to educate people that processing food will often increase the free sugar, salt and saturated fat content of food, making them less healthy than their unprocessed equivalent, it should not be overlooked that some UPFs can be part of a healthy balanced diet, particularly among certain populations. People should be encouraged to read food labels, using our free labelling guide, to assess the ingredient list, nutritional composition and front-of-pack traffic light label to make informed choices about the food and drink they consume.

The nutritional quality of foods and overall dietary pattern is more important than whether a food is processed. Dietary patterns higher in fibre, vitamins and minerals based on nutrient-rich foods such as wholegrains, fruits and vegetables, fish, pulses, nuts, seeds and dairy foods, with reduced red and processed meat, salt, refined carbohydrates and sugar-sweetened foods and drinks are associated with better health outcomes and in the management of diabetes and prevention of type 2[12,13,15].

Further resources and reading

Food labels made easy – our free booklet explains the traffic light labels, back-of-pack labels and reference intakes, plus top tips for making healthy choices in the shops. Find out more: **diabetes.org.uk/up-labels**

Food Standards Agency, Ultra processed foods – what consumers need to know about ultra processed foods: **food.gov.uk/safety-hygiene/ultra-processed-foods**

BDA, The Association of UK Dietitians – Position statement Processed Food [PDF]: **bit.ly/4hSVTkT**

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FROM SUBMISSIONS TO SYMPOSIA

Nick Oliver, Editor-in-Chief for our journal Diabetic Medicine, talks to us about his work as a diabetes consultant, clinical researcher, and his passion for new projects and developments in the field of diabetes.

I am a diabetes consultant and clinical researcher working at Imperial College London and Imperial College Healthcare NHS Trust in north-west London. I am also Editor-in-Chief of Diabetic Medicine, the scientific journal of Diabetes UK.

As a junior doctor working in hospital medicine, I worked for Dr Rowan Hillson and the multidisciplinary team at Hillingdon Hospital. Up to that point, I was unsure what career in medicine I wanted to pursue, but I was inspired by Dr Hillson to be a diabetologist. She was a brilliant holistic physician, a passionate advocate for all her patients, hugely supportive to us as a team of resident doctors, and absolutely multidisciplinary in her approach.

Projects

My clinical work and research focus on how technologies can be most effectively applied for people living with diabetes. Much of my early research focused on continuous glucose sensors and both software and hardware approaches to self-management in type 1 diabetes. But we are now very fortunate to be at the point where both sensors and hybrid closed loop systems are standard of care for type 1 so our focus is moving to how we can utilise these fantastic technologies in type 2, and other forms of diabetes.

We have several clinical research studies exploring the use of diabetes technologies for people with more advanced complications. People living with the later stages of kidney disease are often excluded from clinical studies, as are people in hospital, people with altered gastric emptying and people with a recent heart attack. This means that the usability, impact and effectiveness of technologies in these groups are not known. We are conducting studies in all these groups with others planned, and it's really exciting to be able to look at different outcomes for new groups of people living with diabetes.

"We have several clinical research studies exploring the use of diabetes technologies for people with more advanced complications"

Challenges in diabetes

Since I first began training in diabetes there have been huge changes in the way that people self-manage type 1 and type 2 diabetes. We have multiple new classes of drugs for type 2 diabetes with extraordinary data supporting their use, and have changed how people measure their glucose and deliver insulin. But the incidence of type 1 and type 2 diabetes continues to rise, and health inequalities affecting minorities and people living in deprivation remain.

Addressing health inequalities and ensuring access to effective diabetes prevention is an enormous challenge, and the shift to prevention of type 1 diabetes is a new set of challenges for us to understand and address.

Diabetic Medicine publishes a large amount of psychological research, exploring the associations between diabetes and mental health, and describing diabetes-specific challenges including distress, burden, eating disorders and stigma. These are increasingly well understood but we still lack effective interventions to address them – an evidence base for ways to address mental health in diabetes is critical for a long-term condition with so much psychological comorbidity.

"I am incredibly fortunate to have a job that includes variety. In one day I may see people with type 1 diabetes in clinic, read submitted manuscripts, discuss some new data from our research, and think about new opportunities"

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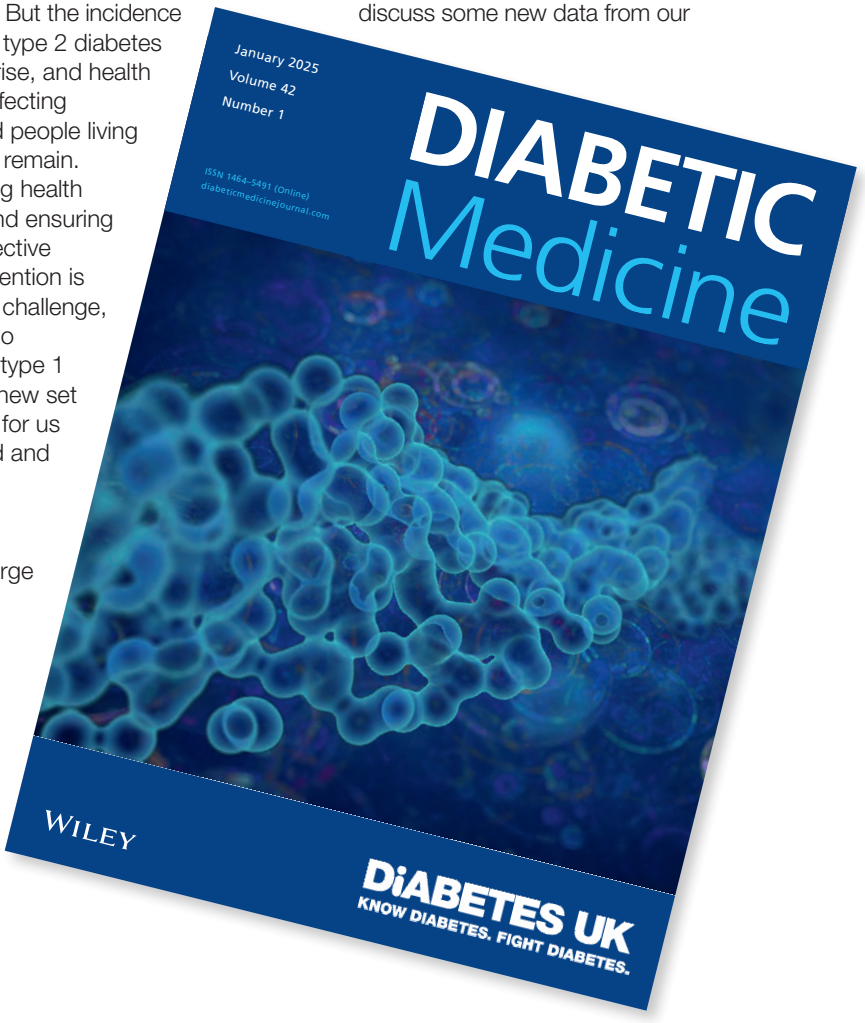


> **“I have been a member of Diabetes UK for many years and our team at Imperial has run several Diabetes UK-funded clinical research programmes including the ADDRESS-2 study, recruiting people with new-onset type 1 diabetes”**

research, and think about new opportunities. I find this really stimulating and enjoy the changing challenges that come from the different roles.

I think the two things I find most rewarding are getting a new project up and running from an early idea and seeing an outcome from something I have been involved with. New ideas and new projects really excite me, particularly the opportunity to be creative and share ideas with colleagues. The outcome might be a change in hypoglycaemia for a person I have seen in clinic, a set of data that we have worked on, or a manuscript published. I enjoy seeing progress.

I am very lucky to work with incredible clinical and research colleagues at Imperial College and throughout my collaborations, spending time with them is always rewarding and I learn something from them every day.

My work with Diabetes UK

I have been Editor-in-Chief of Diabetic Medicine for nearly four years now. I see around 1,000 submissions per year and, along with a brilliant editorial team, we assess and review them for publication, with the support of peer reviewers. We also write editorials and commentary, run a symposium at the annual Diabetes UK Professional Conference and publish all of Diabetes UK’s scientific guidelines, consensus statements, workshops and publications in the journal.

We recently appointed early-career editors from the funded Diabetes UK post-doctoral fellowships, supporting people at an early stage in their science careers to understand the publication process so that they can be involved throughout their career and leverage their understanding to be more impactful scientists. I have been a professional member of Diabetes UK for many years, and our team at Imperial College London has run several Diabetes UK-funded clinical research programmes including the ADDRESS-2 study, recruiting people with new-onset type 1 diabetes.

Future for diabetes

In the next few years we will have triple agonists for type 2 diabetes and obesity acting at the GLP-1, GIP and glucagon receptor; increasing data on the impact of screening for type 1 diabetes; more advanced and more effective technologies for type 1 diabetes; new interventions for early-stage type 1 diabetes with and without dysglycaemia, and an emerging evidence base for established intervention in new groups, such as those with complications; and new interventions for established groups, such as those with diabetes distress. They’re all exciting and will bring with them challenges for implementation and resources but the rapid progress is wonderful to see and be a part of.

REDUCING CALORIE INTAKE BENEFITS MOTHERS WITH GESTATIONAL DIABETES AND THEIR BABIES

The reduction of calorie intake in pregnancy found to be safe.

Findings from the Diabetes UK-funded DiGest (Dietary Intervention in Gestational Diabetes) trial, published in Nature Medicine, show that reducing calorie intake in pregnancy is both safe and beneficial for people living with gestational diabetes and overweight or obesity.

The DiGest trial explored whether a reduced-calorie diet could safely help women with gestational diabetes and a BMI over 25kg/m2 minimise weight gain during late pregnancy and improve health outcomes for them and their babies.

Professor Claire Meek, who led DiGest at the Universities of Leicester and Cambridge, explained, "We know that reduced-calorie diets promote weight loss and improve blood glucose levels for people with type 2 diabetes, but this has never before been tested in women with gestational diabetes."

The trial was a randomised controlled double-blind study involving 425 women. Participants were randomly assigned one of two different diet boxes from 29 weeks of pregnancy until they gave birth. The boxes contained all their breakfasts, lunches, dinners, and snacks. One group received a standard healthy balanced diet of 2,000kcal per day. The other group received a lower-calorie, nutritionally complete diet of 1,200 kcal per day.

The researchers monitored several antenatal and postnatal outcomes for mothers and babies, including body weight, insulin requirements, and blood glucose levels.

What did DiGest find?

The study found that a reduced-calorie diet during the third trimester of pregnancy is safe for women with gestational diabetes and overweight or obesity, and their babies.

The reduced-calorie diet decreased the need for long-acting insulin therapy at 36 weeks. In the control group, 39% required insulin, compared to 28% in the intervention group. While more research is needed to explore the drivers of this effect, Prof Meek highlighted its potential impact: "If we used a lower-calorie diet in pregnancy nationally, one in eight women with gestational diabetes could avoid needing long-acting insulin, which we estimate would benefit 8,000 to 9,000 women every year."

Overall, 40% of participants lost weight (an average of 3kg) during the third trimester. However, researchers did not find a significant difference in weight loss between the control and intervention groups. Regardless, modest weight loss across both groups was associated with several health benefits. Women who lost weight had better blood glucose control, with more time spent in target range (80% vs. 71%) and lower average glucose levels (5.63mmol/l vs. 5.94mmol/l).

> **"We know that reduced-calorie diets promote weight loss and improve blood glucose levels for people with type 2 diabetes, but this has never before been tested in women with gestational diabetes"**
>
> **– Professor Claire Meek**

They also had lower blood pressure and a 48% reduced risk of delivering a large-for-gestational-age baby compared to those who did not lose weight. This is associated with safer births, and as babies born larger than average have an increased risk of developing obesity and type 2 diabetes in later life, there could be potential life-long benefits for the next generation.

The research team also monitored women for three months after they'd given birth. Dr Laura Kusinski, Senior Postdoctoral Scientist at the University of Leicester, said, "Since women with gestational diabetes are at higher risk of going on to develop type 2 diabetes, we were very interested to see if modest weight loss in pregnancy would be helpful longer term."

> **"I felt honoured and fortunate to be offered the opportunity to participate in the DiGest study. It was easy to do, and I really enjoyed the food. It helped manage my weight over the last trimester of pregnancy and have a healthy baby girl. Diabetes research like this is invaluable"**
>
> **– Clodie Rolph**

The study found that women who'd lost weight in late pregnancy maintained weight loss and improved blood glucose levels postnatally. These lasting benefits are important. Dr Kusinski explained, "Women who lost weight in pregnancy saw longer-term benefits, with a lower weight and lower blood glucose levels at three months after the birth. This suggests that weight loss in pregnancy may be an effective and achievable way to reduce the risk of type 2 diabetes after gestational diabetes."

What's the impact of DiGest?

It is normal and healthy to gain weight during pregnancy to support the baby's growth and development, and current guidelines do not recommend weight loss during pregnancy for women with gestational diabetes. Instead, they focus on eating well to avoid gaining too much weight and help manage blood glucose levels.

However, findings from the DiGest trial suggest that losing a small amount of weight – about 3kg – in the third trimester of pregnancy can safely minimise overall weight gain and offer health benefits for mother and baby. The results could help inform new evidence-based guidelines on dietary advice and weight loss for women with gestational diabetes and overweight or obesity. They may also provide a new strategy to help prevent type 2 diabetes in this high-risk group.

Dr Elizabeth Robertson, Director of Research at Diabetes UK, commented, "Gestational diabetes touches the lives of thousands of women in the UK each year. If left untreated, it also increases the risk of poor health for them and their baby, not only during pregnancy but over their lifetimes. We're proud to have funded this pivotal research that addresses a critical missing piece in our understanding of how to safely treat gestational diabetes with dietary changes. With this new understanding, we have the opportunity to help more mothers experience a healthy pregnancy, give birth to healthy babies, and reduce their risk of type 2 diabetes in the future."

Clodie Rolph, a participant in DiGest, shared her experience: "I felt honoured and fortunate to be offered the opportunity to participate in the DiGest study. It was easy to do, and I really enjoyed the food. It helped me manage my weight over the last trimester of pregnancy and have a healthy baby girl. Diabetes research like this is invaluable."

Prof Meek added, "We are so grateful to the mothers who took part in the DiGest trial and to the great team at the Universities of Leicester and Cambridge who supported our work. For women with gestational diabetes with a BMI over 25kg/m2, following a lower-calorie diet in pregnancy is safe and healthy, both for mothers and their babies."

Prof Meek hopes that most people with gestational diabetes and overweight or obesity could safely follow this kind of diet with guidance from their pregnancy diabetes care team without needing extra medical supervision. A healthy version of a reduced-calorie diet should focus on low glycaemic index foods, plenty of vegetables, lean proteins, and some dairy to ensure enough nutrients. Cutting out entire food groups, like carbohydrates, is not recommended, as low-carb diets may not be safe during pregnancy.

What's next?

Prof Meek is now leading a three-year postnatal follow-up study to explore the long-term effects of modest weight loss in pregnancy, including its impact on type 2 diabetes and prediabetes rates in mothers and growth outcomes in their children.

Future research could also examine how modest weight loss during pregnancy could provide further benefits for long-term postnatal health, especially if combined with self-management and educational programmes.

TOP PRIORITIES FOR RESEARCH INTO TYPE 1 DIABETES REVEALED

The 10 refreshed priorities for type 1 diabetes highlight the advancements in care over the last decade and will now help shape our future research into the condition.

Hundreds of people with type 1 diabetes, their families and healthcare professionals have chosen their most pressing research priorities for type 1 diabetes.

The top 10 priorities will help guide future type 1 research to ensure it has the greatest possible benefit for people with the condition. As the UK's largest charitable funder of diabetes research, it's critical for our funds to address the specific challenges and needs of people with diabetes and those who care for them. It's also essential that we make sure others – academics, healthcare professionals and research funders – hear these views loud and clear and act on them.

We've previously contributed to Priority Setting Partnerships (PSP), run by the James Lind Alliance (JLA) and supported by the National Institute for Health and Care Research (NIHR), in type 1 diabetes, type 2 diabetes and diabetes and pregnancy.

These initiatives bring the views of people with real-life diabetes experience into research via a rigorous prioritisation process.

The last Type 1 Diabetes PSP was published in 2011. Since then, research has driven type 1 diabetes care forward and answered many of the priorities set by people affected by the condition – including the top three questions on the use of diabetes technologies. So, the priorities were due for an update.

More than 1,000 people submitted questions they wanted research to answer, generating 2,937 initial priorities. These priorities were grouped into themes and then condensed into 65 questions. These were then ranked in a second survey before being whittled down to 19 interim questions that advanced to a final workshop. Here, group discussion identified the top 10 pressing concerns and questions for research to answer.

The new top 10 priorities

1. Can the use of artificial intelligence or fast acting insulins help achieve fully closed loop insulin delivery?
2. Is time in range a better predictor of diabetes management and complications compared to HbA1c (an average reading of blood sugar over a three-month period)?
3. What impact do hormonal phases such as the perimenstrual period and menopause play in glycaemic management, and what treatments are most effective for managing glucose levels around these times?
4. What interventions are the most effective for reducing diabetes-related distress and burnout?
5. What are the long-term implications of frequent hypoglycaemia on physical and mental health?
6. What impact does type 1 diabetes (including frequent low blood sugar) have on memory and cognition in older adults?
7. How can healthcare professionals better take into account the physical, psychological and social aspects of type 1 diabetes in clinics?
8. How can access to potential therapies like stem cell therapy, transplants and medications that modify the immune systems be improved so that everyone with type 1 diabetes can be guaranteed access?
9. Why do some people with type 1 diabetes become insulin resistant, and does resistance increase with the number of years a person has diabetes, and if so, why?
10. Can technology assist in accurately counting carbohydrates without having to weigh or measure all foods and drinks?

The refreshed top 10 priorities highlight how far care has advanced in the last decade. In 2011, there was a focus on the use of insulin pumps, continuous glucose monitors, and closed loop therapy – now all part of routine diabetes care. By 2024, priorities have expanded to include artificial intelligence in insulin delivery, technology for accurate carbohydrate counting, and access to advanced therapies like stem cell transplants and immunotherapy.

New topics in the refreshed priorities include managing hormonal changes and the cognitive effects of type 1 diabetes in older adults. Persistent themes from the original PSP include hypoglycaemia prevention, addressing the psychological burden of type 1 diabetes, and prioritising person-centred care.

Turning priorities into progress

Progress since the 2011 Type 1 Diabetes PSP demonstrates the transformative power of research grounded in the needs of people affected by diabetes. We want to achieve the same impact with the new top 10. We will use these research priorities to help decide how research is funded, and they will inform the work of the Diabetes Research Steering Groups.

We will also champion these priorities widely to researchers and funding organisations, encouraging them to put these critical areas at the forefront of their agendas.

Dr Christine Newman, Lead Clinical Researcher at the Health Research Board Diabetes Collaborative Clinical Trial Network in Ireland, who founded the PSP, emphasised the importance of these findings, “This study is a powerful example of how public and patient involvement can shape the future of healthcare. This work highlights the real-world challenges and unmet needs of adults living with type 1 diabetes. By focusing on these top 10 priorities, we can ensure that future research and healthcare services are aligned with what truly matters to those affected by the condition.”

Newman C., Kinsella S., Rooney P., et al. (2024).
The top 10 priorities in adults living with type 1 diabetes in Ireland and the United Kingdom – A James Lind Alliance priority setting partnership.
Diabetic Medicine, 41:e15429.
doi:10.1111/dme.15429

REDUCING DIABETES TECH INEQUALITIES

Anthony Walker, our Senior Policy Officer looks at how the use and need for diabetes tech is increasing, but inequalities and inequity to its access still exist.

Inequalities in access to diabetes tech has long been highlighted as an area of focus amidst the increased use of devices like continuous glucose monitors (CGM), insulin pumps and closed loop systems. Trends in data reported by national audits have shown that people with type 1 diabetes, who are of White ethnicity and living in least deprivation are more likely to be using diabetes technology, compared to people from other minority ethnic backgrounds, or people experiencing higher levels of deprivation. This deep concern has been the catalyst for a range of initiatives to address this concerning gap, and work to ensure that the benefits of using tech – its associations with improved Hba1c, time-in-range and reductions in the risks of complications, as well as reducing the burdens of daily self-management – are shared equitably among the diabetes population.

Poverty proofing

Within the work focused on tackling these inequalities for children and young people, NHS England provided funding for pilot projects to address gaps in access to diabetes tech in 2022 - 2023. This supported paediatric services to test a range of targeted interventions to help level the playing field in their area, such as training youth workers to provide education on diabetes tech and increase engagement with underserved families. Additionally, the National Children and Young People's Diabetes Network, a group of regional networks that work together to improve the care of children and young people with type 1 diabetes, is rolling out Poverty Proofing training nationwide. This helps teams identify the barriers of individuals living in poverty and to create and consider how to mitigate them, while advocating for equal access to care, with tech being a key aspect of this. You can read more about Poverty Proofing at **cypdiabetesnetwork.nhs.uk**

> **"Poverty Proofing training nationwide helps teams to identify the barriers to living in poverty and to create and consider how to mitigate them"**

Core20Plus5 framework

Highlighting the importance of diabetes tech inequalities on the national agenda, diabetes was selected as one of the five clinical priority areas within the Core20Plus5 framework for reducing health inequalities for children and young people. There was a specific call to increase access to CGM and insulin pumps for those from the most deprived quintiles and minority ethnic backgrounds.

The benefits of a sustained focus on this issue across the health system and an inclusive approach to providing diabetes tech have been reflected in national audits which have shown reductions in inequality gaps.

Recent quarterly reported data from the National Paediatric Diabetes Audit from July to August 2024, has uptake of CGM for children and young people seen by paediatric units in England at 88% for those of White ethnicity, 84% for minority ethnic groups, 90% for least deprived and 86% for most deprived areas.

Though the processes for collecting and reporting quarterly data are different for those from annual reports and prevents a direct side-by-side ▶

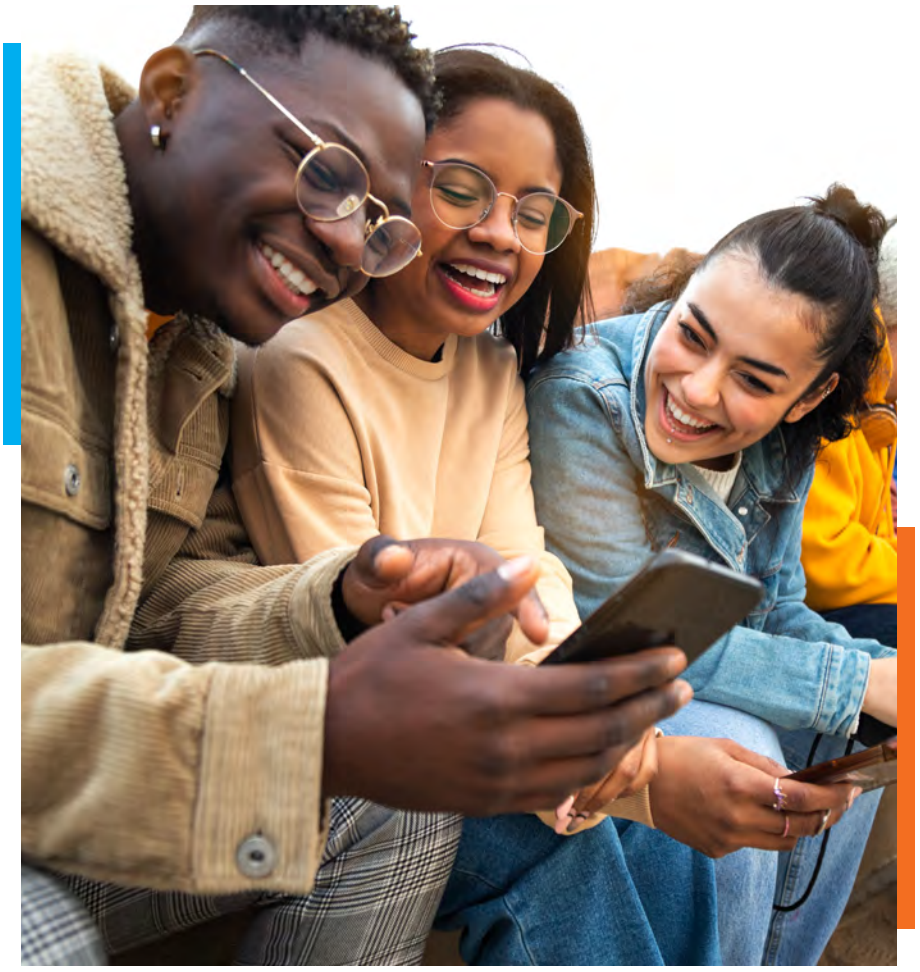
comparison with previous audit data, this nonetheless signals gaps in uptake significantly closing and demonstrates the progress being made.

The raising of the profile of this issue through approaches like Core20Plus5, encouraging the use of data to understand and interrogate inequities to identify barriers, has played an important role in driving improvements. Furthermore, the children and young people diabetes tech inequity pilots, availability of specalised training, and the establishment of tackling inequalities, as a core pillar within the hybrid closed loop implementation plan which started in 2024 – where the initial focus has been rolling out the tech to children and young people – have been highly impactful.

A report drawing out some of the findings from the diabetes tech inequity pilots in further detail is expected this year. But some initial examples of projects undertaken by selected sites show the breadth of interventions that were trialled and could potentially be adapted and scaled for greater impact. For example, some pilot sites provided additional time and opportunities for training diabetes tech specialists within teams, to increase staff capacity.

Others held recreational events to encourage peer support and gather insights on young people's preferences. And others explored routes to accessing additional tech, like mobile phones, from those that needed them to use diabetes tech but didn't have the required devices to do so. You can read more the Core20plus5 framework at **england.nhs.uk/about/equality/equality-hub/national-healthcare-inequalities-improvement-programme/core20plus5/core20plus5-cyp/**

"The raising of the profile of this issue through approaches like Core20Plus5, encourages the use of data to understand and interrogate inequalities to identify barriers"



Advancing equity

A piece of work that views the issue through a slightly different lens, though still laser focused on tackling inequalities, is Diabetes Africa's 'Advancing equity in diabetes technology' toolkit published in November 2024.

This practical guide, developed in collaboration and endorsed by Diabetes Technology Network, aims to promote equal access to tech amongst children, young people and adults with diabetes within the Black, African and Caribbean communities. It takes a holistic view and covers the assessment of barriers and enablers to access through to implementation and includes considerations for frontline staff and strategic decision-makers in health system.

The toolkit features case studies, sharing learnings that unpack the process of offering diabetes tech and suggest possible solutions. Building on wider work to tackle inequalities, it seeks to move away from offering diabetes tech as a simple yes or no question, to understand why some groups are more likely to refuse and suggest more effective approaches to advancing equity. For example, one case study highlights the use of tech cafes to warm people to new tech and allow them to discuss it outside a clinical setting with others.

Another speaks to the benefits of using face-to-face visits from nursing teams to root tech in lived context and better understand how people self-manage in their home environment, providing tailored onboarding to those who need it. You can find out more about the toolkit at **diabetesafrica.org**

Positive steps

Health inequalities are systematic, unfair, and avoidable differences in health between groups of people in society and, although challenging, can be prevented.

Positive steps are being made in expanding access to diabetes tech because of consistent work to tackle inequalities that can't be taken for granted and must be built upon, with the wider availability of useful tools and evidence of best practice offering a growing bank of resources that can be used to drive further improvement.

An insight and experience in research within the field of diabetes and endocrinology

One of the many appeals of a career in diabetes and endocrinology is the opportunity to get involved in research in this ever-advancing field. Three members of the Young Diabetologists and Endocrinologists' Forum (YDEF) committee reflect on their research experiences as medical students and resident doctors.

RESEARCH EXPERIENCES IN DIABETES AND ENDOCRINOLOGY

Dr Rama Lakshman

After finishing medical school, I applied for an Academic Foundation Programme (now called the Specialised Foundation Programme) post, which allows resident doctors to incorporate research experience into their first two years being a doctor. In my case this meant a four-month research block with the diabetes team at King's College London (KCL) – an incredible experience that defined my career aspirations. I was able to work with the teams running three exciting clinical research studies:

- STEADY – trialling a novel cognitive behavioural therapy intervention for people with type 1 diabetes and disordered eating – which was in the final stages of trial design.
- Hypo-METRICS – aimed to improve our understanding of the definition and impacts of sensor detected hypoglycaemia which was actively recruiting.
- HARPdoc – trialling a complex cognitive behavioural intervention for people with type 1 diabetes and problematic hypoglycaemia - which was in the final stages of analyses.

Although my role often didn't seem clearly defined, looking back I learnt so much about all stages of clinical trials, from ethics submissions to consenting participants, and statistical analysis. I also realised this was the sort of research I wanted to do. I loved the extra time I was able to spend with trial participants compared to on the ward and it was obvious to see the translational benefit.

The team at KCL put me in touch with a clinician-academic from the artificial pancreas team at Cambridge University, who encouraged me to apply for a clinical research associate post. I was lucky enough to get the position and soon realised that this was my dream job! Over the year in the role, I worked on clinical trials of the CamAPS® FX hybrid and fully closed loop systems, including getting opportunities to write protocols and papers, as well as leading a qualitative study, including successfully applying for small grant funding.

The team were wonderful mentors, and very supportive, allowing me to stretch my abilities and give me responsibilities, despite the fact I was clinically junior. The knowledge I gained about hybrid closed loop systems through supporting trial participants has come in very useful clinically, and was perfect timing given how quickly they are now becoming standard of care for people with type 1 diabetes.

Prior to this role, I wasn't aware of the clinical research associate positions and would definitely recommend new resident doctors interested in doing some research to look into them. While it can be daunting to take time out from clinical training, I know the skills, mentorship and role models I gained will shape the rest of my career.

> **"The knowledge I gained about hybrid closed loop systems through supporting trial participants has come in very useful clinically"**

Dr Angelica Sharma

My research journey began in the third year of medical school where I was awarded a Wellcome Trust INSPIRE research grant in diabetes and endocrinology. The project analysed differences in demographics, morbidity and mortality between individuals with type 1 diabetes cared for in primary care versus secondary care.

I was subsequently selected to deliver an oral presentation on this topic at the Diabetes UK Professional Conference. This was the first time I had attended a national conference, and I was quite nervous to speak in front of esteemed clinicians – what could a medical student possibly add? To my surprise, I received positive feedback, debated methodology and even gained ideas on how to develop my initial research question. This experience was the stepping stone in building my interest and confidence as both a clinician and researcher within the field.

My tip: it's never 'too early' or 'too late' in your career to start attending conferences and presenting your work!

I subsequently undertook an intercalated BSc (iBSc) in Endocrinology at King's College London. On the first day, we were given a long list of potential project ideas – I knew I had an interest in diabetes-related complications, and I also knew I was indecisive. I had the added pressure of needing to enjoy it for a whole year in order to deliver it well. My colleagues chose topics such as cardiometabolic outcomes of type 2 diabetes, lipid disorders and bone metabolism, while to their horror I chose a project entitled 'clinical features and burden of new onset diabetic foot ulcers post simultaneous pancreas kidney (SPK) and kidney only transplantation.' Diabetes-related foot disease carries a high rate of morbidity and mortality, which rises further following amputation. The risk of developing diabetes-related foot disease remains despite kidney-only/ SPK transplantation and development of diabetes-related foot ulceration may contribute to graft failure (REF). This resulted in a first-author publication and oral presentations at international conferences but more importantly, this work highlighted the need to empower people with diabetes on the importance of regular foot checks and ensuring provision for educating healthcare professionals.

My tip: being a researcher directly informs our evidence for clinical practice, however our experiences in clinical practice lead to many research questions – never be afraid to explore a new area!

As an academic clinical fellow (ACF), I focused on co-chairing the DEKODE (Digital Evaluation of Ketosis and Other Diabetes Emergencies) initiative. This is an international audit model to evaluate presentation and outcomes of diabetes-related ketoacidosis, hypoglycaemia, and hyperglycaemic hyperosmolar state (HHS). Our team provides individualised performance feedback to each participating institution and analyses trends in individuals who develop acute diabetes complications. We can use this data to conduct novel, real-world sub-studies. I have (after watching many YouTube videos and attending courses) developed skills in using specialised statistical software, writing ethics applications, research grants and manuscripts.

In addition, I have developed skills in leadership, management, and organisation. Endlessly scrolling through 'big data' is tedious, and I am greatly appreciative of working within a multidisciplinary team which includes medical students, resident doctors, specialist nurses and senior clinicians. Through the ACF, and to further my interest in medical education, I have obtained specialised qualifications including the PGCert in Clinical Education and Fellowship of the Higher Education Academy (FHEA).

My tip: when undertaking any research project – make sure you know your team and what you can help each other with! There is no hierarchy in research, and medical students have confidently taught me how to use software (for which I'm so grateful!).

My current work as an ACF involves writing grant applications, exploring PhD options, and formulating competitive funding applications. Don't forget – it's never too late to get involved in research – you can start today.

"My tip: it's never 'too early' or 'too late' in your career to start attending conferences and presenting your work!"

PHOTOS: ADOBE STOCK; DIABETES UK

Dr Becky Sagar

During medical school, I developed an interest in research and was fortunate enough to be involved in a national surgical research collaborative during my fourth year. This was my first 'hands-on' experience of research. This opportunity then led to me to an academic foundation post (now known as Specialised Foundation Programme) in Leeds, which I undertook within gastroenterology. I was supported by mentors to take a lead on my own project, and this ultimately allowed me to develop numerous skills including in data collection/analysis as well as manuscript writing. Following completion of foundation training, I continued in pure clinical training. While on a full-time clinical rota I was still able to continue my involvement in several different research projects across both gastroenterology, endocrine and diabetes as I had not yet fully decided on a speciality.

In hindsight, this was a huge benefit as I could develop a wider skill set and gained a huge amount from involvement in research across these different specialities. One of my main projects was investigating glucocorticoid-induced adrenal insufficiency in rheumatology patients. This was a fantastic opportunity to work alongside multiple specialities, and this work was recently cited in international guidance.

When it came to applying for higher specialist training, there were no integrated academic posts available in my region, which at the time felt like a big setback. Instead, with one of my mentors, I explored the option of proceeding directly into a PhD project at the start of endocrine and diabetes training. We applied for a clinical fellowship (PhD) grant with the British Heart Foundation (BHF) which allowed me to take time out of training and come fully out of the programme for research. My PhD investigated maladaptive platelet phenotypes in young adults with type 1 diabetes and insulin resistance. The work was a good interface of clinical and fundamental science, with detailed clinical phenotyping of the individuals alongside in-depth mechanistic lab work. This allowed me to gain skills in the lab as well as in ethics, study design and statistical analysis. I was also able to contribute to lectures at the medical school and develop research-specific leadership skills.

During the final stages of the PhD, I was clear I wanted to continue in integrated academic training. Following submission of my thesis, I was fortunate enough to successfully obtain an NIHR academic clinical lecturer post. The post allows me to progress in my clinical training while continuing to have protected research time, with a 50:50 split. My work now focuses on multi-morbidity and the impact of glucocorticoids.

There is often a huge misconception that clinical academics must follow one path and commit to a speciality very early. My path so far has certainly not been linear and with the benefit of hindsight, it is the perceived obstacles along the way that have led to even greater opportunities. Clinical academia is facing a challenging future and as a speciality we must continue to actively encourage and support doctors in training wanting to get involved.

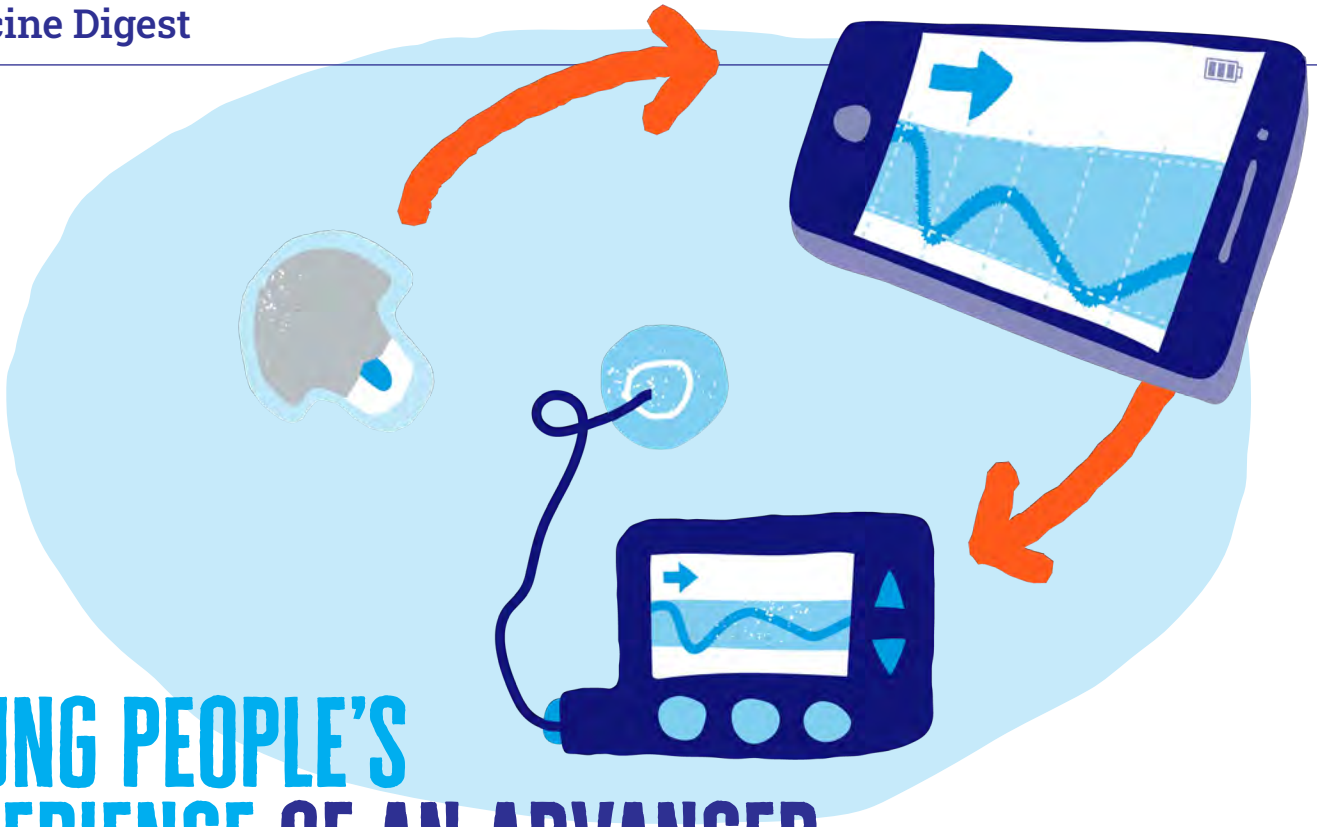
"There is often a huge misconception that clinical academics must follow one path and commit to a speciality very early. My path so far has certainly not been linear... and has led to greater opportunities"

CONCLUSION

The rapidly increasing incidence of diabetes, diversity of endocrine conditions, and significant pharmaceutical activity within the speciality makes diabetes and endocrinology the perfect speciality for research, which extends from bench to bedside. We hope our experiences have provided a taster of the opportunities available.

There is further information on the YDEF website **youngdiabetologists.org.uk/research/** and we aim to signpost opportunities in our newsletter as well.

If you have any suggestions on how research opportunities in the speciality could be made more accessible to resident doctors, we would love to hear from you, contact us at **info@youngdiabetologists.org.uk**



YOUNG PEOPLE'S EXPERIENCE OF AN ADVANCED HYBRID CLOSED LOOP SYSTEM

A new study looks at the benefits of moving from daily injections to a hybrid closed loop. Susan Aldridge reviews the report from Diabetic Medicine.

A new study from New Zealand suggests that the transition from multiple daily injections to an advanced hybrid closed loop (AHCL) resulted in many benefits for a group of young people living with type 1 diabetes.

Meeting glycaemic targets can be particularly difficult for adolescents and young adults living with type 1 diabetes. Data from the US type 1 diabetes (T1D) exchange clinic registry in 2018 revealed that across the lifespan, HbA1c is highest between 15 and 18 years. Similar statistics are found in other diabetes registries. Could hybrid closed loop (HCL) help meet this challenge by improving glucose levels, reducing treatment burden and improving quality of life?

NHS England has been planning a national rollout of hybrid closed-loop systems, also called an artificial pancreas, since April 2024. The first of these systems received regulatory approval in 2016 – its primary function being the automated adjustment of basal insulin.

Safety features, including limitations to maximum insulin delivery, led to a high workload for those using these devices. Reported barriers to the use of HCL include alarm fatigue, burden of calibrations, safety-driven exits from automation mode, device size, concerns about accuracy, disappointment in glucose levels, fear of hypoglycaemia and prohibitive cost. These barriers disproportionately affect young people. In one study of 92 people aged between 8 and 25 using HCL, it was found that 30% had discontinued use by six months.

However, these first-generation systems have now been superseded by AHCL systems which, in addition to basal insulin, also deliver automated correction boluses. There are several AHCL systems on the market and research has demonstrated their safety and efficacy. The exploration of user experience plays an important role in evaluating such technologies. This is traditionally done with standardised questionnaires. However, this approach may not have sufficient insight into user experience.

A recent systematic review of mainly quantitative data on psychosocial outcomes in adolescents using HCL systems found conflicting results for impact on diabetes-related burden, fear of hypoglycaemia, quality of life and treatment satisfaction. The use of qualitative research to generate rich, context-specific accounts of young people's experience of second-generation may provide these much-needed insights. Understanding

the experience of young people with chronically elevated glucose levels is vital, as this is the group that potentially has the most to gain from AHCL systems.

Ben Wheeler at the University of Otago, and colleagues elsewhere in New Zealand, carried out a qualitative study aimed at capturing the experiences and perspectives of 20 young people with chronically elevated glucose levels transitioning to AHCL. This was intended to complement quantitative data on health and wellbeing outcomes in a clinical trial. Areas of enquiry included:

- the acceptability of the system
- changes in diabetes self-management
- impact on wellbeing
- comparison to previous management.

An understanding of these factors may promote more effective use of AHCL therapy in routine diabetes care and inform future technology development.

Collecting lived experience of AHCL

This new study was part of a single-arm prospective investigation of AHCL in 20 young people with chronically elevated glucose, who had previously been on multiple daily injections (MDI). They were aged between 13 and 25 years, with duration of type 1 diabetes of one year or more and HbA1c of ≥ 69mmol/mol. Participants used the AHCL mode on MiniMed™ 780G insulin pump for 12 months and the Guardian 3 continuous glucose monitoring system, switching to the Guardian 4 between one and four months later. All 20 participants in the main investigation were invited to take part in a semi-structured interview once they had been using AHCL for at least three months and 14 of them came forward. The interviews, lasting between 32 and 58 minutes, were recorded and then analysed by the researchers.

The following three themes were identified from the content of the interviews:

- substantially improved glucose levels improved perceptions of overall health
- features of AHCL help in its adoption and ongoing self-management
- burden of care was reduced through automation of insulin delivery.

These themes were explored and are summarised below.

Improved glucose levels

All participants found AHCL to be effective in keeping glucose levels within the clinically recommended range (3.9–10mmol/L) and nine of them said the improvement exceeded their expectations. There were broad-ranging physical and mental health impacts – most of them positive.

These included: having more energy, feeling less sick, having fewer headaches and aches and pains. Sleep quantity and quality was also improved. Participants reported worrying less about glucose being out of range leading to improved mental wellbeing. They also experienced a reduction in the anxiety that they felt from living with type 1 diabetes.

> **“Before I got on this pump, my HbA1c was 168 mmol/mol and I was close to DKA and, in only a couple of months, it’s now 63. My diabetes has never been this good in the close to 14 years that I’ve had it”**
>
> **Male, aged 23 years**

However, some participants thought that the automated system did not always do enough to correct hyperglycaemia and occasionally resorted to manual correction, fearing the pump might not react quickly enough. Four experienced ‘pseudo-hypoglycaemia’ – where symptoms of a hypo are experienced even though glucose is still in range – early in the study, but this did resolve later. Some also described hypos that they perceived to result from overcalculation of mealtime boluses. The insulin delivery suspend mode and hypo alerts were acknowledged as useful and seven participants reported fewer or less severe hypos when on AHCL. Four reported less fear of hypoglycaemia which meant they enjoyed more freedom to take part in recreational activities, work and exercise. But three reported ongoing fear and avoidant behaviours like under-dosing their food boluses and vigilance of glucose levels overnight.

Improved glucose also meant less conflict with caregivers for over half the participants, which had a positive impact on their sense of autonomy. Finally, five male participants reported weight gain, which they perceived as healthy, as they had perceived themselves as underweight before embarking on the trial.

Adoption of AHCL and ongoing self-management

Before transitioning to AHCL, several participants held negative views about insulin pumps, believing they would hurt or be cumbersome to wear. They admitted that transitioning from MDI to AHCL did involve some effort but got easier with time. Some noted that, although it was simple to learn how to use a pump, it was also demanding because of the several days training involved. Once familiar with the system, most found it intuitive to use and all of those previously holding negative views about pumps found AHCL to be more acceptable than expected.

The young people also pointed to the features of the system. For instance, the wearability meant there was less chance of losing or forgetting equipment. And Bluetooth connectivity between the CGM system and insulin pump simplified checking blood glucose and administering insulin boluses.

Thus, a successful transition to AHCL was linked with better self-management, such as fewer omissions of mealtime insulin. Participants reported being more aware of their glucose levels and being more likely to remember to administer a bolus 15 minutes before eating, which had not been a habit when on MDI. They reported being motivated by the prospect of the ‘flat line’ glucose trends they could now achieve. Other skills that improved thanks to AHCL therapy included increased familiarity and confidence in carbohydrate counting and an increased understanding of individual insulin requirements.

Finally, most participants appreciated that AHCL is discreet and easy to use in public.

> **“I’d never had a pump before. I thought they were quite unpleasant. But they were actually better than I thought... I thought the entire mechanism was strapped to you and having a needle constantly inside you would hurt. But they hurt way less than the injections”**
>
> **Male, aged 15 years**

Improved glucose also meant less conflict with caregivers for over half the participants, which had a positive impact on their sense of autonomy.

Reducing diabetes burden

Most participants felt that AHCL had reduced the diabetes-related burden of care. The system was described as having the ability to 'tend to itself' and required 'no input' to respond to blood glucose levels. And the work required to maintain the system, like changing pump sites was offset by the reduced requirements to check and respond to blood glucose levels. This meant that AHCL allowed a greater capacity for participants to engage in activities like being out of the house for longer, go on adventurous holidays, take part in sport and engage in unplanned activities. Most said they would recommend AHCL for others with type 1 diabetes, particularly those with chronically elevated blood glucose levels.

The most burdensome aspect of AHCL was the requirement for 12-hourly calibrations with the Guardian 3 CGM system. Participants also described frustration at receiving calibration alarms, particularly when this disrupted sleep. But switching to the Guardian 4 system improved sleep as calibrations were no longer required.

> **"I would definitely recommend it, especially if someone's blood sugar was quite bad, like all over the place, because it really gets it where it's supposed to be all the time. And it's a lot easier to manage"**
>
> **Female, aged 13 years**

Advanced hybrid closed loop delivers benefit

This new study looks at how transitioning from MDI to AHCL impacts young people with chronically elevated glucose levels and self-reported low motivation towards diabetes self-management. Understanding the experiences of this group is vital. They are underrepresented in clinical research, yet they potentially have the most to gain from advanced diabetes technology. The participants here all experienced substantial glucose improvement. They also reported benefits to their physical, mental and social wellbeing, including:

- increased energy levels
- improved sleep
- greater sense of control over blood glucose
- increased motivation towards self-management
- increased ability to engage in normal activities
- reduced burden of care.

The participants all perceived AHCL as being burden-reducing and effective. They noted that they could 'rely too much' on AHCL therapy yet still achieve acceptable glucose levels. This is consistent with other studies, where unannounced meal challenges or simplified carbohydrate entries could still achieve or be close to achieving time-in-range targets. The data suggests that precise carbohydrate counting need not be a barrier to successful AHCL use in this population. Indeed, the main investigation (of which this new study forms a part) found that mean HbA1c decreased by 31mmol/mol after three months of AHCL use, with benefits sustained out to 12 months.

Diabetes care providers should, however, take note of some behavioural changes in response to AHCL reported here. For instance, there were unannounced correction boluses given by insulin pen. While experiences from this study do reassure that the system responds appropriately to such challenges to the algorithm design, unannounced corrections carry the risk of insulin overdose. The efficacy of AHCL lies in the automation of insulin delivery. Users are unlikely to realise its full potential, if its machine learning is impeded by unannounced insulin. Providers should be aware of the reasons for individual self-management habits and provide personalised support that empowers effective use of AHCL therapy.

Another potentially harmful habit is fabrication of calibrations with lower glucose values arising from the belief that insulin causes weight gain, as found in a case series of four adolescents. In this study, weight gain did occur but was viewed in a positive way by male participants. However, the issue was not discussed with female participants, so the results may not be representative of the wider population. Weight gain on AHCL therapy requires ongoing surveillance, given the importance of body image in this age group.

In conclusion, this study adds to the evidence base that AHCL therapy can have a transformational effect on quality of life and engagement in diabetes management for young people with type 1 diabetes. Automated insulin delivery, fast becoming the gold standard in diabetes care, has much to offer those in the highest risk groups and prior pump experience is not necessary for successful transition.

Wong JY, Styles SE, Wiltshire EJ et al. **Experiences of adolescents and young adults with type 1 diabetes and chronically elevated glucose levels following the transition from multiple daily injections to advanced hybrid closed-loop: A qualitative study.** Diabetic Medicine, 2024; [online] 00:e15449. https://doi.org/10.1111/dme.15449

See also: NICE (2023). 1 Recommendations | **Hybrid closed loop systems for managing blood glucose levels in type 1 diabetes | Guidance | NICE. [online]** Available at: https://www.nice.org.uk/guidance/ta943/chapter/1-Recommendations

GIUSEPPE MALTESE

Consultant in Diabetes, Endocrinology and Geriatric Medicine

Describe your work/ role.

I currently work as a hospital consultant in diabetes and endocrinology. I provide tailored, individualised care to patients with type 1 and type 2 diabetes across all ages. My work focuses on optimising diabetes management, addressing their medical and day-to-day needs, to improve the patient's overall wellbeing and quality of life.

I also work as a community consultant for Surrey Downs Health and Care Diabetes Service. This allows me to bridge the gap between hospital-based care and the community setting, collaborating with general practitioners and other primary care and community healthcare professionals. This dual role enables me to offer a more integrated approach to patient care, ensuring continuity and coordination across both hospital and community services.

A key part of my role involves managing complex, frail, and vulnerable older individuals, many of whom may have different levels of independence or require daily assistance with both diabetes management and activities of daily living. I work closely with patients and their families to develop personalised care plans that address not only their diabetes but also their broader health needs, helping them maintain as much independence and quality of life as possible.

How did you develop an interest in diabetes work?

I developed a special interest in diabetes during my geriatrics and general medicine training about 20 years ago. I was particularly struck by how diabetes acts as a risk factor for accelerated ageing and its association with loss of independence and frailty. This understanding made me realise that diabetes is not just a metabolic condition but also a significant driver of diminished quality of life in older adults. It can contribute to a cascade of challenges that affect mobility, independence, and overall wellbeing.

During my speciality training, I had the opportunity to conduct diabetes research, which deepened my interest in how it intersects with the ageing process. This research consolidated my belief that managing diabetes effectively is essential for promoting successful ageing, as it directly impacts on a person's ability to remain independent and healthy into later life.

> **"During my speciality training, I had the opportunity to conduct diabetes research, which deepened my interest in how it intersects with the ageing process"**

After completing my specialty training and pursuing a PhD on the biology of ageing, I embarked on an academic clinical lectureship in diabetes and endocrinology. This role further strengthened my special interest in the relationship between diabetes and ageing, providing me with a platform to explore these themes in greater depth and contribute to advancing the field.

For me, addressing diabetes is not just about managing blood glucose levels, but it's also about improving overall quality of life and reducing the risk of frailty and loss of independence. This has become a core focus of my career, and I am committed to helping individuals age more healthily, with the aim of preventing or delaying the onset of the complications associated with both diabetes and ageing.

What work / projects have you done or are currently doing?

In the last five years, my clinical and research work has primarily focused on diabetes care in older people, with a particular emphasis on promoting diabetes technology. The use of technology in this age group is crucial for mitigating glucose variability, reducing the risk of hyperglycaemia and hypoglycaemia, and improving overall quality of life. However, among the significant barriers to overcome are age-related cognitive and physical impairments, living arrangements, and the level of assistance required if a person has lost independence. These factors can impact the adoption and effectiveness of diabetes technology.

In addition to this, I have worked closely with my team to improve diabetes care in care homes, collaborating with colleagues in primary care and within the community setting. This work focuses on addressing the unique challenges of diabetes management in care home residents, with the goal of improving the quality of care and ensuring residents receive the best possible support for their health and wellbeing.

What are you excited about and keeps you motivated?

Recently, I've been excited about a couple of significant achievements that keep me motivated. In 2024, I was invited to publish an article in Diabetologia journal of the European Association for the Study of Diabetes (EASD), as part of a special issue focused on diabetes technology. It was a review which highlighted the latest evidence on the benefits of diabetes technology in older adults, addressing both the potential and the barriers to its use, while also exploring important future research questions in this field.

Additionally, I was involved in work with the National Advisory Panel on Care Homes Diabetes, led by Professor Alan Sinclair. As the senior author, I contributed significantly to the development of a consensus statement providing practical guidance on the management of type 1 diabetes in care homes, aimed at improving care for residents in these settings.

“My work has highlighted several gaps and shortfalls in diabetes management... including a lack of adequate training for care home staff, insufficient knowledge about diabetes care and clear policies...”

Current challenges in diabetes

One of the most significant challenges in diabetes care today lies in addressing the unique needs of older adults, particularly those in care homes or who are frail and housebound. In the care home setting, my work has highlighted several gaps and shortfalls in diabetes management. These include a lack of adequate training for care home staff, insufficient knowledge about diabetes care, and the absence of clear policies around critical areas like hypoglycaemia management. Despite our efforts to promote training programs and provide resources, it has been challenging to engage care homes and encourage them to participate in these initiatives. This lack of engagement represents a persistent barrier to improving diabetes care in this setting.

Similarly, managing older adults who are housebound or bedbound presents its own set of challenges. These individuals often rely on district nurses for insulin administration and glucose monitoring, which can lead to variability in their glucose levels and an increased risk of hypoglycaemia. These situations frequently require emergency call-outs, placing additional strain on healthcare resources and creating significant risks for the individuals involved.

What is most rewarding in your work?

The most rewarding part of my work is making a meaningful difference in people’s lives, especially as they navigate ageing with diabetes. My mission is to empower my patients to age well, helping them maintain their health, independence, and quality of life while living with diabetes.

Based on the evidence, I now firmly believe that diabetes does not compromise the chance to live long and achieve longevity. With the right support, diabetes can be managed in a way that allows for living and ageing with dignity and vitality.

Tell us about the involvement you have with Diabetes UK.

Last year I completed the Diabetes UK Clinical Champion Programme, which has enhanced my leadership skills.

I was also a speaker at the last Diabetes UK Professional Conference and have presented my research work at previous conferences.

My involvement with Diabetes UK has provided valuable opportunities to collaborate with colleagues and contribute to advancing diabetes care and research.

Exciting things on the horizon

One of the most exciting developments on the horizon for diabetes care is the rapid advancement of diabetes technology. These innovations are transforming the way we manage diabetes, leading to improved outcomes for people living with the condition.

What’s particularly promising is the increasing use of this technology among older adults; even those who rely on caregivers or family members for support, are becoming more comfortable and accepting of technology.

This represents a significant cultural shift and requires a change in mindset, both among individuals and within healthcare systems.

What do you like to do outside of work to relax?

Outside of work, I enjoy spending quality time with people I love, including family and friends. Building connections and sharing moments with them is truly fulfilling.

I also have several hobbies that help me unwind, such as playing tennis, travelling on my motorbike, and immersing myself in music, whether by playing the guitar or simply listening to my favourite songs. These activities help me recharge and bring balance to my life.

One of my greatest passions is cooking. I believe food is culture; it’s not just about nourishment, but also about creating an experience. I really enjoy preparing meals for friends and loved ones, and I find great happiness in pleasing them with my recipes.

The perfect blend of flavours and textures can turn a meal into something deeply satisfying and exciting, and I love sharing that joy with others.

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