

# Diabetes

## Current Awareness Bulletin

November 2024

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## **Embracing community sport to promote global health**

**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Gilbert N, Dudfield O, Bull F

**Publication Date:** 2024

[On the occasion of the Olympic Games, Paris 2024, we reflect on how physical inactivity has become a pervasive issue worldwide. This lack of physical activity is contributing to the burgeoning burden of non-communicable diseases (NCDs), adding substantial stress to global health systems. Alarming, one in three adults and three in four adolescents worldwide do not meet the WHO recommended levels of physical activity. <sup>1</sup> Such inactivity increases the risk of premature death by 20% to 30%. <sup>2</sup> Each year, NCDs claim the lives of 17 million people before the age of 70 years, predominantly in low-income and middle-income countries where 86% of these premature deaths occur. <sup>3</sup> Diabetes accounted for 1·5 million deaths, worldwide, in 2019. <sup>4</sup> Physical activity through sport not only helps prevent and manage various NCDs, including type 2 diabetes, but also supports mental health, improving symptoms of depression and anxiety, and enhancing cognitive function. <sup>4</sup> Yet, despite the known benefits, global efforts have yet to substantially increase levels of physical activity.]

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## **The fundamentals of diabetes care**

**Journal:** British Journal of Nursing

**Authors:** Gordon C, Hill B.

**Publication date:** 2024

[Diabetes mellitus is a chronic metabolic disorder characterised by elevated blood glucose levels with complications associated with micro- and macrovascular damage that has become a prevalent health concern worldwide. Nurses play a pivotal role in the prevention and management of this condition, providing both direct care and education. This article explores the fundamentals of diabetes care for registered nurses, highlighting the advancements and practical strategies in nursing practice in this area.]

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## **Not all healthcare inequities in diabetes are equal: a comparison of two medically underserved cohorts**

**Journal:** *BMJ Open Diabetes Research and Care*

**Authors:** Walker A.F., Haller M.J., Addala A, et al

**Publication date:** 2024

[**Introduction:** Diabetes disparities exist based on socioeconomic status, race, and ethnicity. The aim of this study is to compare two cohorts with diabetes from California and Florida to better elucidate how

health outcomes are stratified within underserved communities according to state location, race, and ethnicity.]

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## **Cardiovascular Disease**

### **Adherence to cardio-protective medications and cardiovascular disease in adults with type 1 diabetes**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Lithovius R, Mutter S, Parente E.B., et al.

**Publication date:** 2024

[**Aims:** We estimated overall refill adherence to all antihypertensive [AHT] and/or lipid-lowering drugs in the treatment regimen and its association with cardiovascular disease (CVD) in adults with type 1 diabetes, taking kidney disease into account.]

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### **Association between personality, lifestyle behaviors, and cardiovascular diseases in type 2 diabetes mellitus: a population-based cohort study of UK Biobank data**

**Journal:** BMJ Open Diabetes Research and Care

**Authors:** Park C.S., Choi J, Kwak S, et al.

**Publication date:** 2024

[**Introduction:** Various strategies aim to better assess risks and refine prevention for patients with type 2 diabetes mellitus (T2DM), who vary in cardiovascular disease (CVD) risk. However, the prognostic value of personality and its association with lifestyle factors remain elusive.]

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### **Clinical pharmacokinetics and pharmacodynamics of empagliflozin in patients with heart failure**

**Journal:** British Journal of Clinical Pharmacology

**Authors:** Rascher J, Cotton D, Haertter S, et al.

**Publication date:** 2024

[**Aims:** The aim of this work is to compare empagliflozin systemic exposure between patients with heart failure (HF) and patients with type 2 diabetes (T2D).]

## **Epidemiology and Burden of Peripheral Artery Disease in People With Type 2 Diabetes: A Systematic Literature Review**

**Journal:** Diabetes Therapy

**Authors:** Verma S, Leiter L.A., Mangla K.K., et al.

**Publication date:** 2024

[Type 2 diabetes (T2D) and lower-extremity peripheral artery disease (PAD) are growing global health problems associated with considerable cardiovascular (CV) and limb-related morbidity and mortality, poor quality of life and high healthcare resource use and costs. Diabetes is a well-known risk factor for PAD, and the occurrence of PAD in people with T2D further increases the risk of long-term complications. As the available evidence is primarily focused on the overall PAD population, we undertook a systematic review to describe the burden of comorbid PAD in people with T2D. The MEDLINE, Embase and Cochrane Library databases were searched for studies including people with T2D and comorbid PAD published from 2012 to November 2021, with no restriction on PAD definition, study design or country. Hand searching of conference proceedings, reference lists of included publications and relevant identified reviews and global burden of disease reports complemented the searches. We identified 86 eligible studies, mostly observational and conducted in Asia and Europe, presenting data on the epidemiology (n = 62) and on the clinical (n = 29), humanistic (n = 12) and economic burden (n = 12) of PAD in people with T2D. The most common definition of PAD relied on ankle-brachial index values  $\leq 0.9$  (alone or with other parameters). Incidence and prevalence varied substantially across studies; nonetheless, four large multinational randomised controlled trials found that 12.5%-22% of people with T2D had comorbid PAD. The presence of PAD in people with T2D was a major cause of lower-limb and CV complications and of all-cause and CV mortality. Overall, PAD was associated with poor quality of life, and with substantial healthcare resource use and costs. To our knowledge, this systematic review provides the most comprehensive overview of the evidence on the burden of PAD in people with T2D to date. In this population, there is an urgent unmet need for disease-modifying agents to improve outcomes.]

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## **Prevalence of peripheral arterial disease among individuals with type 2 diabetes mellitus in India - A systematic review and meta-analysis**

**Journal:** Diabetes & Metabolic Syndrome: Clinical Research & Reviews

**Authors:** Arora E, Regan R, Surendra V.U., et al.

**Publication date:** 2024

[**Background:** Peripheral arterial disease (PAD) is a prevalent complication of type 2 diabetes mellitus (T2DM). As India ranks second in the population afflicted by T2DM, and the objective of this systematic review was to estimate the pooled prevalence of PAD in individuals living with T2DM in India.]

## **Summary of Research: Cardiovascular and Kidney Outcomes with Finerenone in Patients with Type 2 Diabetes and Chronic Kidney Disease-The FIDELITY Pooled Analysis**

**Journal:** Diabetes Therapy

**Authors:** Humle K, Klanger B, Kolkhof P, et al.

**Publication date:** 2024

[People living with type 2 diabetes (T2D) and chronic kidney disease (CKD) are at risk of CKD progression and kidney failure. This is a summary of the FIDELITY pooled analysis where two clinical trials (FIDELIO-DKD and FIGARO-DKD) were performed to investigate the safety and efficacy of finerenone in people with T2D and CKD. The data from these two studies were combined and analyzed and it was found that those who took finerenone on top of standard-of-care medicine had a 14% reduced risk of having a cardiovascular event and 23% reduced risk of having a kidney event versus those who took placebo. Those who took finerenone were also more likely to have high blood potassium, but this was mostly manageable. A graphical abstract and translations of all content (Chinese, Japanese, German, Spanish, Brazilian-Portuguese, French) are available for this article.]

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### **Eye Diseases**

#### **Association of continuous subcutaneous insulin therapy and diabetic retinopathy in type 1 diabetes: A national cohort study**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Thykjær A.S., Rosengaard L, Andersen N, et al.

**Publication date:** 2024

[**Aim:** This study aimed to investigate the short-and long-term effect on diabetic retinopathy (DR) in individuals with type 1 diabetes treated with continuous subcutaneous insulin injections (CSII) compared to those using multiple daily injections (MDI).]

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### **Guidelines**

#### **Faricimab for treating visual impairment caused by macular oedema after retinal vein occlusion**

NICE; 2024

[Evidence-based recommendations on faricimab (Vabysmo) for treating visual impairment caused by macular oedema after retinal vein occlusion in adults.]

## **Kidney Disease**

### **Can immature granulocytes and neutrophil-lymphocyte ratio be biomarkers to evaluate diabetic nephropathy?: A cross-sectional study**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Yay F, Bayram E, Aggul H, et al.

**Publication Date:** 2024

[**Aims:** We aimed to examine the role of circulating immature granulocytes (IGs) in assessing Diabetic Nephropathy (DN) mainly and also associations of other leukocyte parameters with DN.]

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### **Evaluation of a program designed to prevent diabetic nephropathy aggravation: A retrospective cohort study using health checkups and claims data in Japanese municipalities**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Ihana-Sugiyama N, Sano K, Sugiyama T, et al.

**Publication date:** 2024

[**Aims:** Japan started the Diabetic Nephropathy Aggravation Prevention Program. Its early impact was assessed in this study.]

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### **Investigation of end-stage kidney disease risk prediction in an ethnically diverse cohort of people with type 2 diabetes: use of kidney failure risk equation**

**Journal:** BMJ Open Diabetes Research and Care

**Authors:** Goubar A, Mangelis A, Thomas S, et al.

**Publication date:** 2024

[**Introduction:** The four variable kidney failure (KF) risk equation (KFRE) is recommended to estimate KF risk (ie, need for dialysis or kidney transplantation). Earlier referral to clinical kidney services for people with high-risk of kidney failure can ensure appropriate care, education and support are in place pre-emptively. There are limited data on investigating the performance of KFRE in estimating risk of end-stage kidney disease (ESKD) in people with type 2 diabetes mellitus (T2DM) and chronic kidney disease (CKD). The primary ESKD endpoint event was defined as estimated glomerular filtration rate (eGFR) <10 mL/min/1.73 m<sup>2</sup> and secondary endpoint eGFR <15 mL/min/1.73 m<sup>2</sup>.]

## **Summary of Research: Cardiovascular and Kidney Outcomes with Finerenone in Patients with Type 2 Diabetes and Chronic Kidney Disease-The FIDELITY Pooled Analysis**

**Journal:** Diabetes Therapy

**Authors:** Humle K, Klanger B, Kolkhof P et al.

**Publication date:** 2024

[People living with type 2 diabetes (T2D) and chronic kidney disease (CKD) are at risk of CKD progression and kidney failure. This is a summary of the FIDELITY pooled analysis where two clinical trials (FIDELIO-DKD and FIGARO-DKD) were performed to investigate the safety and efficacy of finerenone in people with T2D and CKD. The data from these two studies were combined and analyzed and it was found that those who took finerenone on top of standard-of-care medicine had a 14% reduced risk of having a cardiovascular event and 23% reduced risk of having a kidney event versus those who took placebo. Those who took finerenone were also more likely to have high blood potassium, but this was mostly manageable. A graphical abstract and translations of all content (Chinese, Japanese, German, Spanish, Brazilian-Portuguese, French) are available for this article.]

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### **Liver Disease**

#### **Impact of rosuvastatin on metabolic syndrome patients with moderate to severe metabolic associated fatty liver disease without overt diabetes: A randomized clinical trial**

**Journal:** Diabetes & Metabolic Syndrome: Clinical Research & Reviews

**Authors:** Wang X, Lyu L, Li W, et al.

**Publication date:** 2024

[**Objective:** This investigation aimed to evaluate the efficacy and safety of rosuvastatin in treating moderate to severe metabolic associated fatty liver disease (MAFLD).]

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#### **Serum isthmin-1 is a potential biomarker for metabolic dysfunction associated fatty liver disease in patients with metabolic syndrome and type 2 diabetes mellitus**

**Journal:** BMJ Open Diabetes Research and Care

**Authors:** Lei X, Chen H.Y., Xu Y.X., et al.

**Publication date:** 2024

[**Introduction:** Metabolic dysfunction associated fatty liver disease (MAFLD) is a prevalent condition in patients with type 2 diabetes mellitus (T2DM). Isthmin-1 (ISM1) is an adipokine that promotes glucose uptake and improves glucose tolerance and hepatic steatosis. Although ISM1 has been shown to be associated with T2DM, its role in patients with MAFLD and metabolic syndrome (MetS) remains insufficiently examined. This study aimed to investigate the relationship between serum ISM1 and MAFLD in patients with T2DM and the potential involvement of MetS in this association.]

**Complications (find here atherosclerosis, claudication, diabetic foot, ulcers etc)**

**Diabetes-related complications: a toll too high**

**Journal:** The Lancet Diabetes & Endocrinology

**Publication date:** 2024

[According to research from the York Health Economics Consortium, commissioned by the charity Diabetes UK, potentially preventable diabetes-related complications (due to type 1 diabetes, type 2 diabetes, and gestational diabetes) cost the UK National Health Service (NHS) £6.2 billion in the period 2021–22. With diagnosis and treatment of diabetes costing a further £4.4 billion, total direct costs for diabetes accounted for 6% of the overall UK health budget. Although the cost of diabetes-related complications fell from 80% of total diabetes costs in 2012 to 60% by 2021–22—due to improvements in glycaemic control—overall costs are rising, with those for complications projected to reach £10.3 billion by 2035 amidst total direct diabetes costs of £18 billion. Despite imposing a heavy toll on the UK health budget, direct diabetes costs account for even higher proportions of health care expenditure in other countries such as the USA (7%) and Germany (10%).]

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**Individual cereals intake is associated with progression of diabetes and diabetic chronic complications**

**Journal:** Diabetes & Metabolic Syndrome: Clinical Research & Reviews

**Authors:** Tang S, Luo W, Li T, et al.

**Publication date:** 2024

[**Background and aims:** The relationship between cereals intake and diabetes is unclear. We aimed to explore associations between individual cereals intake and risks of incident and progression of diabetes.]

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**Diabetic Foot**

**Atherogenic markers and 1-year amputation risk in adults with diabetic foot in a tertiary level hospital: A retrospective cohort study**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Benites-Meza J.K., Malo-Castillo J, Herrera-Añazco P, et al.

**Publication date:** 2024

[**Aim:** To determine the association between atherogenic markers, such as total cholesterol/high density lipoprotein cholesterol ratio (TC/HDL-C), triglycerides/HDL-C ratio (TG/HDL-C), and



triglycerides-glucose index (TyG), and the risk of 1-year amputation in adults with diabetic foot in a tertiary level hospital.]

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### **Correlation of cerebral small vessel disease burden with outcome after lower extremity amputation**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Kolasa M, Arponen O, Kaartinen I, et al.

**Publication date:** 2024

[**Aims:** This study assessed whether changes associated with cerebral small vessel disease (CSVD) evaluated from head computed tomography (CT) images captured for non-related clinical purposes predict overall survival (OS), leg salvage (LS), and amputation-free survival (AFS) after lower extremity amputation (LEA).]

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### **The effect of bariatric surgery on diabetes related foot complications among patients with type 2 diabetes: A systematic review**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Wang Z, Crowe F.L., Tahrani A.A., et al.

**Publication date:** 2024

[**Background:** Bariatric surgery leads to considerable weight loss and improved glycaemic control and seems to have a favourable impact on diabetes related foot complications (DFC).]

**Objectives:** To assess the effect of bariatric surgery on diabetes related foot complications in patients with type 2 diabetes and determine whether DFC symptoms are improved after bariatric surgery.]

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### **Diabetic Ketoacidosis**

#### **Association of sodium glucose co-transporter-2 inhibitors with risk of diabetic ketoacidosis among hospitalized patients: A multicentre cohort study**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Sarma S, Hodzic-Santor B, Raissi A, et al.

**Publication date:** 2024

[**Introduction:** Sodium glucose co-transporter-2 inhibitors (SGLT-2i) are increasingly being used among hospitalized patients. Our objective was to assess the risk of diabetic ketoacidosis (DKA) among hospitalized patients receiving an SGLT-2i.]

## **Diabetes and pregnancy**

### **Cardiometabolic outcomes in offspring of women treated with metformin versus insulin for gestational diabetes: A Systematic Review and meta-analysis**

**Journal:** Diabetes & Metabolic Syndrome: Clinical Research & Reviews

**Authors:** Rawat D, Gupta Y, Yadav A.K., et al

**Publication date:** 2024

**[Introduction:** Gestational diabetes mellitus (GDM) is commonly managed with either metformin or insulin, but their comparative effects on offspring cardiometabolic outcomes are not fully understood.

**Objective:** To investigate the impact of metformin and insulin, two distinct pharmacological interventions, on cardiometabolic outcomes in offspring of mothers with GDM.]

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## **Diabetes mellitus Type 1**

### **Adherence to cardio-protective medications and cardiovascular disease in adults with type 1 diabetes**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Lithovius R, Mutter S, Parente E.B., et al.

**Publication date:** 2024

**[Aims:** We estimated overall refill adherence to all antihypertensive [AHT] and/or lipid-lowering drugs in the treatment regimen and its association with cardiovascular disease (CVD) in adults with type 1 diabetes, taking kidney disease into account.]

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### **Adolescent-Preferred financial incentives to promote type 1 diabetes Self-Care: A discrete choice experiment**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Wright D.R., Chen T, Chalmers K.D

**Publication date:** 2024

**[Aims:** This study aimed to quantify preferences for the characteristics of a financial incentives program that would motivate adolescent engagement in type 1 diabetes (T1D) self-care.]

**Association of continuous subcutaneous insulin therapy and diabetic retinopathy in type 1 diabetes: A national cohort study**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Thykjær A.S., Rosengaard L, Andersen N et al.

**Publication date:** 2024

[**Aim:** This study aimed to investigate the short-and long-term effect on diabetic retinopathy (DR) in individuals with type 1 diabetes treated with continuous subcutaneous insulin injections (CSII) compared to those using multiple daily injections (MDI).]

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**Cluster analysis of adult individuals with type 1 diabetes: Treatment pathways and complications over a five-year follow-up period**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Somolinos-Simón F.J., García-Sáez G, Tapia-Galisteo J, et al

**Publication date:** 2024

[**Aims:** To identify subgroups of adults with type 1 diabetes and analyse their treatment pathways and risk of diabetes-related complications over a 5-year follow-up.]

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**Development of a three-dimensional scoring model for the assessment of continuous glucose monitoring data in type 1 diabetes**

**Journal:** BMJ Open Diabetes Research and Care

**Authors:** Dawnbringer J, Hill H, Lundgren M, et al

**Publication date:** 2024

[**Introduction:** Despite the improvements in diabetes management by continuous glucose monitoring (CGM) it is difficult to capture the complexity of CGM data in one metric. We aimed to develop a clinically relevant multidimensional scoring model with the capacity to identify the most alarming CGM episodes and/or patients from a large cohort.]

## **Increased incidence of neurodegenerative diseases in Finnish individuals with type 1 diabetes**

**Journal:** BMJ Open Diabetes Research and Care

**Authors:** Satuli-Autere S, Harjutsalo V, Eriksson M.I., et al.

**Publication date:** 2024

[**Introduction:** Diabetes is linked to neurodegenerative diseases (NDs), but data in type 1 diabetes are scarce. Our aim was to assess the standardized incidence ratios (SIRs) of different NDs in type 1 diabetes, and to evaluate the impact of diabetic vascular complications and age at diabetes onset.]

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## **Insulin combined with *N*-acetylcysteine attenuates type 1 diabetes-induced splenic inflammatory injury in canines by inhibiting the MAPKs-NF- $\kappa$ B signaling pathway and pyroptosis**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Zhang X, Qiu W, Huang J, et al.,

**Publication date:** 2024

[**Purpose:** Type 1 diabetes (T1DM) is a chronic metabolic disorder that can cause damage to multiple organs including the spleen. Sole insulin therapy is not satisfactory. This study aims to investigate the effects and mechanisms of combined treatment with insulin and *N*-acetylcysteine (NAC) on spleen damage in T1DM canines, in order to identify drugs that may better assist patients in the management of diabetes and its complications.]

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## **An online tool using clinical factors to estimate the probability of partial clinical remission of adult-onset Type 1 diabetes**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Januszewski A.S., Grzelka-Wozniak A, Flotynska J, et al.,

**Publication date:** 2024

[A type 1 diabetes (T1D) diagnosis is often followed by a period of reduced exogenous insulin requirement, with acceptable glucose control, called partial clinical remission (pCR). Various criteria exist to define pCR, which is associated with better clinical outcomes. We aimed to develop formulae and a related online calculator to predict the probability of pCR at 3- and 12-months post-T1D diagnosis. We analysed data from 133 adults at their T1D diagnosis (mean  $\pm$  SD age: 27  $\pm$  6 yrs., HbA1c 11.1  $\pm$  2.0 %, 98  $\pm$  22 mmol/mol), 3- and 12-months later. All patients were enrolled in the prospective observational InLipoDiab1 study ( NCT02306005 ). We compared four definitions of pCR: 1) stimulated C-peptide >300 pmol/l; 2) insulin dose-adjusted HbA1c  $\leq$ 9 %; 3) insulin dose <0.3 IU/kg/24 h; and HbA1c  $\leq$ 6.4 % (46 mmol/mol); and 4) insulin dose <0.5 IU/kg/24 h and HbA1c <7 % (53 mmol/mol). Using readily available demographics and clinical chemistry data exhaustive search

methodology was used to model pCR probability. There was low concordance between pCR definitions (kappa 0.10). The combination of age, HbA1c, diastolic blood pressure, triglycerides and smoking at T1D onset predicted pCR at 12-months with an area under the curve (AUC) = 0.87. HbA1c, triglycerides and insulin dose 3-mths post-diagnosis had an AUC = 0.89. A related calculator for pCR in adult-onset T1D is available at <http://www.bit.ly/T1D-partial-remission>.]

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### **Presentation and characteristics of children with screen-detected type 1 diabetes: learnings from the ELSA general population pediatric screening study**

**Journal:** BMJ Open Diabetes Research and Care

**Authors:** Quinn L.M., Dias R.P., Bidder C, et al

**Publication date:** 2024

**[Introduction:** We describe the identification and management of general population screen-detected type 1 diabetes (T1D) and share learnings for best practice.]

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### **Diabetes mellitus Type 2**

#### **Ameliorating effect of Chinese jujube polyphenol on blood glucose oxidative stress in type 2 diabetic rats**

**Journal:** Journal of Diabetes and Its Complications

**Author:** Liao M, Wang X.

**Publication date:** 2024

**[Background:** Type 2 diabetes mellitus (T2DM) is a common metabolic disease characterized by insulin resistance and insufficient relative insulin secretion, leading to elevated blood sugar and the development of diabetic complications. T2DM not only seriously affects people's health and quality of life, but also brings a heavy burden to society and economy. At present, the treatment of T2DM mainly relies on drug therapy, but these drugs often have problems such as side effects, resistance and high cost, and can not fully meet the needs and expectations of patients. Therefore, it is of great significance and value to find safe and effective natural medicines or functional foods to assist the treatment and prevention of T2DM.

**Objective:** Chinese jujube are a common fruit that contain abundant polyphenolic compounds, which exhibit multiple physiological activities, such as antioxidation, anti-inflammation, and blood glucose lowering. The objective of this study was to explore the impact of red date polyphenols on glycemic control and oxidative stress status in patients with type 2 diabetes mellitus (T2DM).]

## **Association between temperatures and type 2 diabetes: A prospective study in UK Biobank**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Wang S.Y., Lei Y.T., Wang X.L., et al

**Publication date:** 2024

[**Objective:** This study aims to prospectively examine the association between temperatures and the occurrence of type 2 diabetes (T2D).]

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## **Correction to Lancet Diabetes Endocrinol 2024; published online July 19.**

### **Understanding the cause of type 2 diabetes**

**Journal:** The lancet Diabetes and Endocrinol

**Authors:** Taylor, Roy

**Publication date:** 2024

[*Taylor R. Understanding the cause of type 2 diabetes. Lancet Diabetes Endocrinol 2024; published online July 19. [https://doi.org/10.1016/S2213-8587\(24\)00157-8](https://doi.org/10.1016/S2213-8587(24)00157-8)—* In this Review, the second sentence of the second paragraph in the Twin cycle hypothesis and typical BMI section should read "...with only 25% of the cohort having a BMI greater than 30 kg/m<sup>2</sup>".]

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## **Early findings from the NHS Type 2 Diabetes Path to Remission Programme: a prospective evaluation of real-world implementation**

**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Valabhji J, Gorton T, Barron E, et al

**Publication date:** 2024

[**Background:** Randomised controlled trials have shown that total diet replacement (TDR) can lead to remission of type 2 diabetes. In 2019, the English National Health Service (NHS) committed to establishing a TDR-based interventional programme delivered at scale within real-world environments; development followed of the NHS Type 2 Diabetes Path to Remission (T2DR) programme, a 12-month behavioural intervention to support weight loss involving an initial 3-month period of TDR. We assessed remission of type 2 diabetes for programme participants.]

## **Effect of Replacing Sucrose in Beverages with Nonnutritive Sweetener Sucralose on Cardiometabolic Risk Factors Among Asian Indian Adults with Type 2 Diabetes: A 12-Week Randomized Controlled Trial**

**Journal:** Diabetes Therapy

**Authors:** Mohan V, Manasa V.S., Abirami K, et al

**Publication date:** 2024

[**Introduction:** Country-specific evidence-based research is crucial for understanding the role of nonnutritive sweeteners (NNS) in managing type 2 diabetes (T2D). The main aim of this study was to explore the effect of replacing sucrose with sucralose in coffee/tea in Asian Indians with type 2 diabetes (T2D).]

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## **Effect of sodium–glucose co-transporter-2 inhibitors on survival free of organ support in patients hospitalised for COVID-19 (ACTIV-4a): a pragmatic, multicentre, open-label, randomised, controlled, platform trial**

**Journal:** The Lancet Diabetes & Endocrinology

**Authors:** Kosiborod M.N., Windsor S.L., Vardeny O, et al.

**Publication date:** 2024

[**Background:** Patients hospitalised for COVID-19 are at risk for multiorgan failure and death. Sodium–glucose co-transporter-2 (SGLT2) inhibitors provide cardiovascular and kidney protection in patients with cardiometabolic conditions and could provide organ protection during COVID-19. We aimed to investigate whether SGLT2 inhibitors can reduce the need for organ support in patients hospitalised for COVID-19.]

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## **The Effects of Bariatric Surgery on the Requirement for Antihypertensive Treatment in Type 2 Diabetes: Insights from a Long-Term Follow-Up Study**

**Journal:** Diabetes Therapy

**Authors:** Heald A, Mannan F, Wiltshire R, et al.

**Publication date:** 2024

[**Introduction:** Bariatric surgery (BS) has emerged as an effective intervention in achieving significant and sustained weight loss in patients with type 2 diabetes (T2D). However, comprehensive data on the long-term impact of BS on hypertension is scarce. We aimed to investigate the long-term impact of BS on blood pressure management in individuals within a T2D cohort.]

## Food additive emulsifiers and risk of type 2 diabetes

**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Chen J, Zheng S

**Publication date:** 2024

[We read with great interest the study by Salame and colleagues <sup>1</sup> published in *The Lancet Diabetes & Endocrinology*, which explored the association between the intake of food additive emulsifiers and the risk of type 2 diabetes. The methodical approach using the NutriNet-Santé cohort effectively exhibited dietary effects on health. Detailed dietary records were used to estimate emulsifier intake and multivariable Cox models were used to illuminate key aspects of the dietary effects on health. We commend the authors for their work and offer some suggestions.]

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**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Cui Y

**Publication date:** 2024

[The Article published in *The Lancet Diabetes & Endocrinology* by Salame and colleagues <sup>1</sup> adds important insights into the associations between food additive emulsifiers and the risk of type 2 diabetes. I appreciate this novel perspective and would like to offer some constructive suggestions to deepen the understanding of these associations.]

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**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Fu X, Yuan Y, Deng Y, et al

**Publication date:** 2024

[We read the Article by Salame and colleagues <sup>1</sup> in *The Lancet Diabetes & Endocrinology* with great interest. This Article addresses an important issue in public health, which is the effect of food additive emulsifiers, commonly found in ultra-processed foods, on the incidence of type 2 diabetes. The study analysed 104 139 participants for an average of 6·8 (SD 3·7) years, and revealed that intakes of specific emulsifiers, including carrageenans and guar gum, are associated with an increased risk of type 2 diabetes. This association highlights the urgent need for a re-evaluation of the use and regulation of food emulsifiers, considering their widespread presence in the global food supply.]



## **Food additive emulsifiers and risk of type 2 diabetes – Authors' reply**

**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Srour B, Salame C, Touvier M

**Publication date:** 2024

[We read with great interest the Correspondences by Chen and colleagues, Cui and colleagues, and Fu and colleagues on our Article. We thank the authors for their input and ideas and provide below a few elements to answer their questions.]

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## **Implementing type 2 diabetes remission interventions in the real world: what have we learnt?**

**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Bellary S

**Publication date:** 2024

[Type 2 diabetes has long been considered a progressive condition requiring long-term treatment for maintaining glycaemic control. This notion, however, has been challenged by evidence from intensive weight management interventions such as bariatric surgery and very low-calorie diets. 1 2 3 Studies in individuals with type 2 diabetes undergoing these interventions have shown that type 2 diabetes remission is indeed possible through substantial reductions (>15–20%) in bodyweight.]

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## **The incidence of acute pancreatitis with GLP-1 receptor agonist therapy in individuals with a known history of pancreatitis**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Lomeli L.D., Kodali A.M., Tsushima Y, et al

**Publication date:** 2024

[Glucagon-like peptide-1 receptor agonists (GLP-1RA) have been reported to increase the risk of acute pancreatitis (AP). This real-world study did not observe a higher frequency of AP with GLP-1RA exposure in adults with T2D and a prior history of AP regardless of etiology.]

## **Interaction Between Primary Hyperlipidemias and Type 2 Diabetes: Therapeutic Implications**

**Journal:** Diabetes Therapy

**Authors:** Zubirán R, Cruz-Bautista I, Aguilar-Salinas C.A

**Publication date:** 2024

[There is a gap of knowledge about the clinical and pathophysiological implications resulting from the interaction between primary hyperlipidemias and type 2 diabetes (T2D). Most of the existing evidence comes from sub-analyses of cohorts; scant information derives from randomized clinical trials. The expected clinical implications of T2D in patients with primary hyperlipidemias is an escalation of their already high cardiovascular risk. There is a need to accurately identify patients with this dual burden and to adequately prescribe lipid-lowering therapies, with the current advancements in newer therapeutic options. This review provides an update on the interactions of primary hyperlipidemias, such as familial combined hyperlipidemia, familial hypercholesterolemia, multifactorial chylomicronemia, lipoprotein (a), and type 2 diabetes.]

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## **Machine learning and statistical models to predict all-cause mortality in type 2 diabetes: Results from the UK Biobank study**

**Journal:** Diabetes & Metabolic Syndrome: Clinical Research & Reviews

**Authors:** Zhang T, Huang M, Chen L, et al

**Publication date:** 2024

[**Aims:** This study aims to compare the performance of contemporary machine learning models with statistical models in predicting all-cause mortality in patients with type 2 diabetes mellitus and to develop a user-friendly mortality risk prediction tool.]

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## **Meat consumption and incident type 2 diabetes: an individual-participant federated meta-analysis of 1·97 million adults with 100 000 incident cases from 31 cohorts in 20 countries**

**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Li C, Bishop T.R.P., Imamura F, et al.

**Publication date:** 2024

[**Background:** Meat consumption could increase the risk of type 2 diabetes. However, evidence is largely based on studies of European and North American populations, with heterogeneous analysis strategies and a greater focus on red meat than on poultry. We aimed to investigate the associations of unprocessed red meat, processed meat, and poultry consumption with type 2 diabetes using data from worldwide cohorts and harmonised analytical approaches.]

## **Meat consumption and type 2 diabetes**

**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Aune D

**Publication date:** 2024

[In *The Lancet Diabetes & Endocrinology*, Chunxiao Li and colleagues <sup>1</sup> report a federated meta-analysis of meat consumption and the risk of type 2 diabetes, including data from nearly 2 million participants in 31 cohorts and 107 000 incident cases of type 2 diabetes. The Article is both timely and important and the authors are to be commended for their comprehensive analyses. An association between higher intake of red meat and processed meat and increased risk of type 2 diabetes has been observed in many previous cohort studies and several meta-analyses and umbrella reviews. <sup>1</sup>]

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## **Modern Management of Cardiometabolic Continuum: From Overweight/Obesity to Prediabetes/Type 2 Diabetes Mellitus. Recommendations from the Eastern and Southern Europe Diabetes and Obesity Expert Group**

**Journal:** Diabetes Therapy

**Authors:** Janez A, Muzurovic E, Bogdanski P, et al

**Publication date:** 2024

[The increasing global incidence of obesity and type 2 diabetes mellitus (T2D) underscores the urgency of addressing these interconnected health challenges. Obesity enhances genetic and environmental influences on T2D, being not only a primary risk factor but also exacerbating its severity. The complex mechanisms linking obesity and T2D involve adiposity-driven changes in  $\beta$ -cell function, adipose tissue functioning, and multi-organ insulin resistance (IR). Early detection and tailored treatment of T2D and obesity are crucial to mitigate future complications. Moreover, personalized and early intensified therapy considering the presence of comorbidities can delay disease progression and diminish the risk of cardiorenal complications. Employing combination therapies and embracing a disease-modifying strategy are paramount. Clinical trials provide evidence confirming the efficacy and safety of glucagon-like peptide 1 receptor agonists (GLP-1 RAs). Their use is associated with substantial and durable body weight reduction, exceeding 15%, and improved glucose control which further translate into T2D prevention, possible disease remission, and improvement of cardiometabolic risk factors and associated complications. Therefore, on the basis of clinical experience and current evidence, the Eastern and Southern Europe Diabetes and Obesity Expert Group recommends a personalized, polymodal approach (comprising GLP-1 RAs) tailored to individual patient's disease phenotype to optimize diabetes and obesity therapy. We also expect that the increasing availability of dual GLP-1/glucose-dependent insulinotropic polypeptide (GIP) agonists will significantly contribute to the modern management of the cardiometabolic continuum.]

## **Practicalities and importance of assessing urine albumin excretion in type 2 diabetes: A cutting-edge update**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Lalić K, Popović L, Lukač S.S

**Publication date:** 2024

[Type 2 diabetes (T2D) is associated with increased risk for chronic kidney disease (CKD). It is estimated that 40 % of people with diabetes have CKD, which consequently leads to increase in morbidity and mortality from cardiovascular diseases (CVDs). Diabetic kidney disease (DKD) is leading cause of CKD and end-stage renal disease (ESRD) globally. On the other hand, DKD is independent risk factor for CVDs, stroke and overall mortality. According to the guidelines, using spot urine sample and assessing urine albumin-to-creatinine ratio (UACR) and estimated glomerular filtration rate (eGFR) are both mandatory methods for screening of CKD in T2D at diagnosis and at least annually thereafter. Diagnosis of CKD is confirmed by persistent albuminuria followed by a progressive decline in eGFR in two urine samples at an interval of 3 to 6 months. However, many patients with T2D remain underdiagnosed and undertreated, so there is an urgent need to improve the screening by detection of albuminuria at all levels of health care. This review discusses the importance of albuminuria as a marker of CKD and cardiorenal risk and provides insights into the practical aspects of methods for determination of albuminuria in routine clinical care of patients with T2D.]

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## **Ramadan as religious ritual: Experiences of Muslim people with Type 2 Diabetes in Türkiye regarding Ramadan**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Keskin A.Y., Şentürk S, Teke Z.B

**Publication date:** 2024

[This study aims to determine the experiences of Muslim people with Type 2 Diabetes Mellitus (DM) about Ramadan in Türkiye. This phenomenological study was conducted with 30 Muslim people with Type 2 DM. The data were collected by holding in-depth individual interviews with a semi-structured interview form and analyzed using Colaizzi's seven-stage analysis and the MAXQDA-20 program. As a result, three main themes with 12 categories were determined as follows: (i) "the month of Ramadan and the meaning of fasting", (ii) "the effects of fasting", and (iii) "coping with difficulties". The participants stated that the month of Ramadan is one of the pillars of Islam and that it includes worshiping, finding peace, completing oneself in the religious sense, purifying oneself from sins, resting physically and spiritually, and appreciating the meaning of hunger, thirst, and blessings. However, some people reported that there was social pressure when they did not fast. Health professionals should provide people with DM with regular and safe training specific to Ramadan, establish support groups, and cooperate with religious officials (imams) to meet their religious demands.]

## **Sodium–glucose co-transporter-2 inhibitors for hospitalised patients with COVID-19: a prospective meta-analysis of randomised trials**

**Journal:** The Lancet Diabetes & Endocrinology

**Authors:** Vale C, Godolphin P.J., Fisher D, et al

**Publication date:** 2024

[**Background:** Sodium–glucose co-transporter-2 (SGLT2) inhibitors have been proposed as a potential treatment for adults hospitalised with COVID-19, due to their potential anti-inflammatory and endothelial protective effects. Published evidence from randomised control trials (RCTs) does not provide evidence of benefit. We aimed to estimate the effect of oral administration of SGLT2 inhibitors compared with usual care or placebo in adults hospitalised with COVID-19.]

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## **Understanding the cause of type 2 diabetes**

**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Taylor R

**Publication date:** 2024

[Type 2 diabetes has long been thought to have heterogenous causes, even though epidemiological studies uniformly show a tight relationship with overnutrition. The twin cycle hypothesis postulated that interaction of self-reinforcing cycles of fat accumulation inside the liver and pancreas, driven by modest but chronic positive calorie balance, could explain the development of type 2 diabetes. This hypothesis predicted that substantial weight loss would bring about a return to the non-diabetic state, permitting observation of the pathophysiology determining the transition. These changes were postulated to reflect the basic mechanisms of causation in reverse. A series of studies over the past 15 years has elucidated these underlying mechanisms. Together with other research, the interaction of environmental and genetic factors has been clarified. This knowledge has led to successful implementation of a national programme for remission of type 2 diabetes. This Review discusses the paucity of evidence for heterogeneity in causes of type 2 diabetes and summarises the in vivo pathophysiological changes, which cause this disease of overnutrition. Type 2 diabetes has a homogenous cause expressed in genetically heterogenous individuals.]

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## **Glucose monitoring and control**

### **Association of Changes in A1C Following Continuous Glucose Monitoring Acquisition in People with Sub-Optimally Treated Type 2 Diabetes Taking GLP-1 RA Therapy**

**Journal:** Diabetes Therapy

**Authors:** Miller E, Chuang J.S., Roberts G.J, et al

**Publication date:** 2024

[**Introduction:** Both glucagon-like peptide-1 receptor agonists (GLP-1 RA) and continuous glucose monitoring (CGM) improve glycemia in patients with type 2 diabetes (T2D). However, it is unknown

whether adding CGM to GLP-1 RA therapy further improves A1c. We evaluated changes in A1c levels 6 months after initiation of FreeStyle Libre (FSL) in adults with sub-optimally controlled T2D already on GLP-1 RA therapy.]

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**Effects of Sumac Consumption on Blood Pressure, Glycemic Indices, and Body Composition in Adults: A GRADE-assessed Systematic Review and Dose-response Meta-analysis**

**Journal:** Diabetes & Metabolic Syndrome: Clinical Research & Reviews

**Authors:** Taheri S, Sohrabi Z, Bahari H, et al

**Publication date:** 2024

[**Background:** Owing to the rich phytochemical content of *Rhus coriaria* L. (Anacardiaceae), known as Sumac, it may affect blood pressure, glycemic, and anthropometric indices. We, therefore, aimed to examine evidence on effect of Sumac on these factors by conducting a meta-analysis of RCTs.]

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**Flash Glucose Monitoring is Associated with HbA1c Improvement in Type 2 Diabetes Managed with Multiple Daily Injections of Insulin in the UK: A Retrospective Observational Study**

**Journal:** Diabetes Therapy

**Authors:** Adamson K.A., Gibb F.W., McLaren J, et al

**Publication date:** 2024

[**Introduction:** There is a growing body of evidence demonstrating the benefit of flash glucose monitoring in people living with type 2 diabetes mellitus (T2DM). This real-world study aimed to evaluate the effect of initiating flash glucose monitoring on change in HbA1c after 3-6 months in adults living with T2DM treated with multiple daily injections of insulin.]

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**Tirzepatide Improved Health-Related Quality of Life Compared with Insulin Lispro in Basal Insulin-Treated Adults with Type 2 Diabetes and Inadequate Glycaemic Control: A Randomised Controlled Phase 3b Trial (SURPASS-6)**

**Journal:** Diabetes Therapy

**Authors:** Boye K.S., Poon J.L., Landó L.F, et al.

**Publication date:** 2024

[**Introduction:** Patients with type 2 diabetes (T2D) who require intensification of basal insulin therapy need treatment options that can improve their health-related quality of life (HRQoL) and translate into better outcomes. These analyses compared patient-reported outcomes (PROs) in patients with T2D receiving tirzepatide or insulin lispro.]

## **β-cell function and long-term glycemic control in patients newly diagnosed with type 2 diabetes with moderate hyperglycemia after a 6-month course of basal insulin therapy**

**Journal:** *Diabetes Research and Clinical Practice*

**Authors:** Kuo C.S., Chen H.S.

**Publication date:** 2024

[**Aims:** To evaluate whether treatment with insulin is advantageous compared with oral anti-diabetic drugs (OAD) for patients newly diagnosed with type 2 diabetes with moderate hyperglycemia.]

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## **Medication-Induced Hyperglycemia and Diabetes Mellitus: A Review of Current Literature and Practical Management Strategies**

**Journal:** *Diabetes Therapy*

**Authors:** Jain A.B., Lai V.

**Publication date:** 2024

[With the increasing global incidence of diabetes mellitus, physicians may encounter more patients with acute and chronic complications of medication-induced hyperglycemia and diabetes. Moreover, medication-induced diabetes may be an important contributing factor to the high rates of diabetes, and recognizing its impact and risk is a critical step in curtailing its effect on the global population. It has long been recognized that multiple classes of medications are associated with hyperglycemia through various mechanisms, and the ability to foresee this and implement adequate management strategies are important. Moreover, different antihyperglycemic medications are better suited to combat the hyperglycemia encountered with different classes of medications, so it is critical that physicians can recognize which agents should be used, and which medications to avoid in certain types of medication-induced hyperglycemia. In this review, we will discuss the evidence behind the main classes of medications that cause hyperglycemia, their mechanism of action, specific agents that are associated with worsened glycemic control, and, most importantly, management strategies that are tailored to each specific class.]

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## **Prediabetes remission in people with obesity**

**Journal:** *Lancet Diabetes & Endocrinology*

**Author:** Bergman M

**Publication date:** 2024

[Prediabetes (intermediate hyperglycaemia) and obesity are conditions of great public health concern worldwide. By 2045, the global prevalence of impaired glucose tolerance among people aged 20–79 years is projected to increase from 9·1% (464 million) in 2021 to 10·0% (638 million) and that of impaired fasting glucose from 5·8% (298 million) in 2021 to 6·5% (414 million).<sup>1</sup> Furthermore, the prevalence of obesity (BMI ≥30 kg/m<sup>2</sup>) is expected to increase from 14% in 2020 to 24% by 2035,

affecting nearly 2 billion adults, children, and adolescents. <sup>2</sup> It is therefore becoming more and more necessary to address these inter-related burgeoning epidemics with effective, safe, and well tolerated interventions.]

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## **Insulin therapies**

### **Association of continuous subcutaneous insulin therapy and diabetic retinopathy in type 1 diabetes: A national cohort study**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Thykjær A.S., Rosengaard L, Andersen N, et al.

**Publication date:** 2024

[**Aim:** This study aimed to investigate the short-and long-term effect on diabetic retinopathy (DR) in individuals with type 1 diabetes treated with continuous subcutaneous insulin injections (CSII) compared to those using multiple daily injections (MDI).]

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### **Correction to: Basal Insulinotherapy in Patients Living with Diabetes in France: The EF-BI Study**

**Journal:** Diabetes Therapy

**Authors:** Gourdy P, Darmon P

**Publication date:** 2024

[In the original article, the figure 1 caption was published incorrectly as Adjusted Kaplan–Meier survival curves for the persistence with basal insulin therapy in the newly treated patients (T1DM right curves, T2DM left curves).]

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### **High glutamic acid decarboxylase antibody titers may be associated with a decline in $\beta$ -cell function over time and future insulin deficiency in latent autoimmune diabetes in adults**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Haisa A, Oikawa Y, Satomura A, et al

**Publication date:** 2024

[**Aims:** Latent autoimmune diabetes in adults (LADA) is characterized by positive islet-associated autoantibodies including glutamic acid decarboxylase antibody (GADA), and gradual decline in insulin secretion, progressing to insulin dependency. This cross-sectional study aimed to determine whether GADA by enzyme-linked immunosorbent assay (GADA-ELISA) titer of  $\geq 180$  U/mL could be associated with decline in  $\beta$ -cell function in participants with LADA.]



## **Managing insulin resistance: the forgotten pathophysiological component of type 2 diabetes**

**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Abdul-Ghani M, Maffei P, DeFronzo R.A

**Publication date:** 2024

[Glucagon-like peptide-1 (GLP-1) receptor agonists have gained widespread use in the treatment of individuals with type 2 diabetes because of their potent weight loss promoting effect, ability to augment  $\beta$ -cell function, and cardiovascular protective effects. However, despite causing impressive weight loss, GLP-1 receptor agonists do not normalise insulin sensitivity in people with type 2 diabetes and obesity, and the long-term effects of this class of antidiabetic medication on muscle mass, frailty, and bone density have been poorly studied. Although GLP-1 receptor agonists improve insulin sensitivity secondary to weight loss, the only true direct insulin-sensitising drugs are thiazolidinediones. Because of side-effects associated with type 2 diabetes therapy, these drugs have not gained widespread use. In lieu of the important role of insulin resistance in the cause of type 2 diabetes and in the pathogenesis of atherosclerotic cardiovascular disease in type 2 diabetes, development of potent insulin-sensitising drugs that can be used in combination with GLP-1 receptor agonists remains a large unmet need in the management of individuals with type 2 diabetes.]

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## **Patients with type 2 diabetes who achieve reduced postprandial glucose levels during insulin intensive therapy may have a better recovery of $\beta$ -cell function**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Chen P, Sun Q, Xu L, et al

**Publication date:** 2024

[**Objectives:** To explore parameters that may determine the improvement in C-peptide levels in patients with type 2 diabetes (T2D) receiving continuous subcutaneous insulin infusion (CSII) therapy.]

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## **Mental health and diabetes**

### **Cytochrome P450-soluble epoxide hydrolase oxylipins, depression and cognition in type 2 diabetes**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Anita N.Z., Herrmann N, Ryoo S.W.

**Publication date:** 2024

[**Aims:** This study examined serum cytochrome P450-soluble epoxide hydrolase (CYP450-sEH) oxylipins and depressive symptoms together in relation to cognitive performance in individuals with type 2 diabetes mellitus (T2DM).]

## **Intentional Insulin Overdose and Depression in Subjects with and Without Diabetes Mellitus: A Commentary**

**Journal:** Diabetes Therapy

**Authors:** Gouveri E, Gkouveri A, Popovic D.S., et al

**Publication date:** 2024

[Insulin is an essential medication for people with type 1 diabetes mellitus and for some people with type 2 diabetes. Interestingly, insulin abuse has been reported as a mode of suicide, not only among people with diabetes, but also among their relatives, and among medical and paramedical personnel who have access to insulin. The aim of the present commentary was to raise awareness of potential depression-related intentional insulin overdose and its complications, as well as of the diagnosis and treatment of this entity. Insulin overdose may lead to severe and prolonged hypoglycemia, hypoglycemic coma, and death. Moreover, hypokalemia, hypomagnesemia, hypophosphatemia, and elevated liver enzymes are common. Insulin overdose should be suspected among people with diabetes in case of unexplained prolonged hypoglycemia and among people without diabetes who exhibit hypoglycemia and may have access to diabetic medications. The ratio of insulin to C-peptide helps distinguish exogenous insulin administration from endogenous secretion. The cornerstone of therapy is prompt administration of concentrated glucose infusions for days with simultaneous oral intake, when possible, and intense glucose monitoring to prevent hypoglycemia. Moreover, monitoring of serum electrolyte levels is recommended. Finally, psychiatric evaluation aiming at early identification of depression and suicidality is of paramount importance.]

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## **A roadmap for integrating mental health and diabetes services**

**Journal:** Lancet Diabetes & Endocrinology

**Authors:** Ismail K, Stadler M, Holloway M, et al

**Publication date:** 2024

[It is well recognised that people with long-term conditions, including diabetes, have higher rates of mental disorders and disease-specific psychological burden. There is an increasing appreciation internationally that many people requiring health care have multiple long-term conditions, whereas health-care systems have generally evolved to care for single conditions. A recent study investigated the overall burden of combinations of diabetes and other long-term conditions in England. <sup>1</sup> In this analysis, people with both type 1 and type 2 diabetes and a mental disorder (depression or schizophrenia) had higher numbers of both years lived-with and years of life lost to these conditions. Other evidence suggests that mental disorders are underdiagnosed in people with diabetes. <sup>2</sup>]

## Pharmacological management of diabetes

### Decreased risk of recurrent acute pancreatitis with semaglutide and tirzepatide in people with type 2 diabetes or obesity with a history of acute pancreatitis: A propensity matched global federated TriNetX database-based retrospective cohort study

**Journal:** Diabetes & Metabolic Syndrome: Clinical Research & Reviews

**Authors:** Nassar M, Nassar O, Abosheaishaa H, et al

**Publication date:** 2024

**[Background:** Acute pancreatitis (AP) is a significant health concern with potential for recurrent episodes and serious complications. The risk of recurrence in type 2 diabetes (T2D) or obesity can be influenced by various factors and treatments, including GLP-1 receptor agonists (GLP-1RAs). This study evaluates the risk of recurrent AP among patients with a history of the condition, focusing on the effects of different GLP-1RA treatments.

**Objectives:** Our objective is to compare the recurrence risks of AP between patients treated with different GLP-1RAs.]

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### Efficacy and Safety of Escalating the Dose of Oral Semaglutide from 7 to 14 mg: A Single-Center, Retrospective Observational Study

**Journal:** Diabetes Therapy

**Authors:** Sato G, Uchino H, Hirose T

**Publication date:** 2024

**[Introduction:** The efficacy and safety of oral semaglutide, the first glucagon-like peptide 1 receptor agonist available in tablet form for the treatment of type 2 diabetes, were established in the phase 3a PIONEER program. However, evidence regarding the titration of oral semaglutide in real-world clinical settings remains insufficient. This study aimed to elucidate the therapeutic advantages of escalating the dose of oral semaglutide from 7 to 14 mg through clinical data analysis.]

## **Efficacy and safety of once-weekly semaglutide 2·4 mg versus placebo in people with obesity and prediabetes (STEP 10): a randomised, double-blind, placebo-controlled, multicentre phase 3 trial**

**Journal:** Lancet Diabetes & Endocrinology

**Authors:** McGowan B.M., Bruun J.M., Capehorn M, et al.

**Publication date:** 2024

[**Background:** There are currently limited data regarding the effect of semaglutide 2·4 mg in individuals with obesity and prediabetes in clinical trials. We aimed to assess the efficacy and safety of semaglutide 2·4 mg for weight management and glycaemic control in participants with obesity and prediabetes.]

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## **Methylglyoxal induces death in human brain neuronal cells (SH-SY5Y), prevented by metformin and dapagliflozin**

**Journal:** Journal of Diabetes and Its Complications

**Authors:** Victor-Sami S, Kamali-Roosta A, Shamsaldeen Y.A

**Publication date:** 2024

[Diabetes mellitus is a metabolic disorder caused by a dysfunction in insulin action or secretion, leading to an elevation in blood glucose levels. It is a highly prevalent condition and as a result, the NHS spends 10 % of its entire budget on diabetes mellitus care, that is equivalent to £10 billion a year. Diabetes mellitus has been linked with vascular and neurological complications which may be associated with the progression of neurodegeneration and Alzheimer's disease. Chronic hyperglycaemia increases the production of the reactive oxidant species (ROS) such as methylglyoxal (MGO). MGO has been linked with vascular complications, neuropathy and cytotoxicity. The main aim of this study was to investigate the potential beneficial effect of antidiabetic agents such as metformin and dapagliflozin on human brain neuronal cells (SH-SY5Y) treated with MGO. SH-SY5Y cells were cultured in DMEM/F12 media and subjected overnight incubation with one of the following treatment conditions: Control (untreated); MGO (1  $\mu$ M); MGO (100  $\mu$ M); metformin (100  $\mu$ M) + MGO (100  $\mu$ M); and dapagliflozin (10  $\mu$ M) + MGO (100  $\mu$ M). Several assays were conducted to explore the effect of the treatment groups on the SH-SY5Y cells. These included: MTT assay; LDH assay, peroxynitrite fluorescence assay, and laser scanning confocal microscopy. MGO (100  $\mu$ M) led to significant cell injury and damage and significantly reduced the survival of the cells by approximately 50–75 %, associated with significant increase in peroxynitrite. The addition of metformin (100  $\mu$ M) or dapagliflozin (10  $\mu$ M) represented significant protective effects on the cells and prevented the cell damage caused by the high MGO concentration. As a result, the findings of this research reveal that MGO-induced cell damage may partly be mediated by the generation of peroxynitrite, while the antidiabetic agents such as metformin and dapagliflozin prevent brain cell death, which potentially may play prophylactic roles against the risk of dementia in diabetic patients.]

## **PIONEER REAL Sweden: A Multicentre, Prospective, Real-World Observational Study of Oral Semaglutide Use in Adults with Type 2 Diabetes in Swedish Clinical Practice**

**Journal:** *Diabetes Therapy* 2024

**Authors:** Catrina S.B., Amadid H, Braae U.C., et al.

**Publication date:** 2024

[**Introduction:** The study was designed to assess outcomes with once-daily oral semaglutide in adults with type 2 diabetes (T2D) naïve to injectable glucose-lowering agents, in Swedish clinical practice.]

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## **Risk of new-onset diabetes with high-intensity statin use**

**Journal:** *Lancet Diabetes & Endocrinology*

**Authors:** Diamond D.M., Kip K.E

**Publication date:** 2024

[The Cholesterol Treatment Trialists' (CTT) Collaboration published a meta-analysis of findings from randomised controlled trials of statin therapy that assessed their use and risk of new-onset diabetes. <sup>1</sup> The summary rate ratio of statin treatment versus placebo for development of new-onset diabetes was 1·10 (95% CI 1·04–1·16) for low-intensity or moderate-intensity statin users and 1·36 (95% CI 1·25–1·48) for high-intensity statin users. The authors concluded that the statin-induced moderate increase in risk of new-onset diabetes (and worsening glycaemic control) is offset with the higher net benefits of reduced risk of major vascular events.]

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## **Suitability and Usefulness of a Flexible Dosing Timing of Oral Semaglutide to Maximize Benefit in Clinical Practice: An Expert Panel**

**Journal:** *Diabetes Therapy*

**Authors:** Candido R, Di Loreto C, Desenzani P, et al

**Publication date:** 2024

[From clinical trials and observational data, oral semaglutide has proven to be the most effective second-line oral therapy for the management of patients with type 2 diabetes. This review aims to describe the perspective of an Italian expert panel that addressed the potential challenges arising during the use of oral semaglutide in the free-living conditions of routine clinical care. A group of Italian experts discussed and generated insights into the use of oral semaglutide in clinical practice. Key topics included the effectiveness of oral semaglutide in clinical practice, the positioning of the agent to optimize the treatment benefits, the possibility to adopt flexibility in the administration schedule, critical issues encountered, the role of patient communication and information in the importance of dose escalation and management of adverse events. Available data on efficacy and effectiveness of oral semaglutide from randomized clinical trials and real-world studies were reported, along with factors that determine tolerability and persistence on treatment. The debate over a fixed versus a flexible dosing

schedule was critically addressed, providing anecdotal clues from a small case series and a real-world database. Additionally, a set of recommendations for clinicians to consider when prescribing oral semaglutide and during the process of patient monitoring were provided.]

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### **Tirzepatide: A Double Agonist for Various People Living with Type 2 Diabetes**

**Journal:** Diabetes Therapy

**Authors:** Strollo F, Guarino G, Satta E, et al

**Publication date:** 2024

[Tirzepatide is the first ever once-weekly, injectable gastric inhibitory peptide/glucagon-like peptide 1 (GIP/GLP-1) dual agonist approved by the European Medicines Agency for type 2 diabetes. The efficacy and safety of tirzepatide have been evaluated in five global, randomized, double-blind or open-label, phase 3 studies which enrolled over 7000 people living with type 2 diabetes, across various stages of disease and with different characteristics at baseline. In this short commentary we report the salient data of the most recent trials on tirzepatide and GLP-1 receptor agonists from a clinical point of view, with the aim of highlighting similarities and mutual differences.]

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### **Teenagers with diabetes**

#### **Adolescent-Preferred financial incentives to promote type 1 diabetes Self-Care: A discrete choice experiment**

**Journal:** Diabetes Research and Clinical Practice

**Authors:** Wright D.R., Chen T, Chalmers K.D., et al

**Publication date:** 2024

[**Aims:** This study aimed to quantify preferences for the characteristics of a financial incentives program that would motivate adolescent engagement in type 1 diabetes (T1D) self-care.]

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