

# Diabetes & Obesity

## RESEARCH REVIEW™

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Issue 146 – 2021

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#### Abbreviations used in this issue

BP = blood pressure  
CV = cardiovascular  
HbA<sub>1c</sub> = glycosylated haemoglobin  
LDL = low-density lipoprotein  
OR = odds ratio

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## Welcome to issue 146 of Diabetes and Obesity Research Review.

This issue begins with an article published in the Lancet reporting that patients with pre-existing diabetes derived a greater survival/life-expectancy benefit from metabolic-bariatric surgery than obese nondiabetics, although both groups benefited from surgery compared with usual care. There are also two trials of interventions for type 2 diabetes management that seem like they should work, but didn't work very well: one looked at an intervention of information and communications technology and contact with nonphysician personnel, and the other trialled a 'game' that assigned participants points and levels for achieving step goals and bodyweight loss targets. Other included research explored the expectations of parents of children with type 1 diabetes regarding perceived barriers to and benefits of monthly video consultations combined with regular outpatient care.

We hope you find this research update stimulating and informative. As always, we appreciate your comments and suggestions.

Best regards,

Professor Jeremy Krebs

[jeremykrebbs@researchreview.co.nz](mailto:jeremykrebbs@researchreview.co.nz)

## Association of metabolic-bariatric surgery with long-term survival in adults with and without diabetes

Authors: Syn NL et al.

**Summary:** This was a one-stage meta-analysis of 16 matched cohort studies and one prospective controlled study (n=174,772) reporting on all-cause mortality after metabolic-bariatric surgery versus nonsurgical management in obese individuals. There were 7712 deaths recorded over 1.2 million patient-years of follow-up. Metabolic-bariatric surgery was found to be associated with a reduced hazard rate of death (49.2% [95% CI 46.3, 51.9]), with an increase in median life expectancy of 6.1 years, compared with usual care. All-cause mortality was reduced in patients with and without diabetes at baseline (respective hazard ratios 0.409 [0.370, 0.453] and 0.704 [0.588, 0.843]), with a greater treatment effect seen in those with diabetes (I<sup>2</sup> 95.7% [p<0.0001]); the respective numbers needed to treat to prevent one additional death over 10 years were 8.4 and 29.8, respectively. There was no evidence of differential treatment effects according to bariatric surgery type. It was estimated that every 1.0% increase in metabolic-bariatric surgery utilisation rate would yield 5.1 million and 6.6 million potential life-years for patients with and without diabetes, respectively.

**Comment:** Whilst bariatric surgery is not appropriate for everyone with type 2 diabetes, there has been ample evidence published to date that it is a very effective treatment for weight management and improved glycaemic control, and often facilitates resolution of diabetes. There have been some studies reporting the effect of bariatric surgery on mortality in obesity, and this meta-analysis adds further to that. Although it includes both matched cohort studies and prospective controlled trials, its strength is in the large number of included participants. There is a clear reduction in all-cause premature mortality with bariatric surgery compared with those not undergoing surgery. However, the most interesting finding from this study is the greater benefit observed in those with diabetes, where the increase in life expectancy is almost double that of those without diabetes. This is very useful and compelling evidence for advocating for funding for more public bariatric surgery.

Reference: Lancet 2021;397:1830–41

[Abstract](#)

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## NEW ZEALAND HAS A GROWING DIABETES PROBLEM<sup>1</sup>

**WEIGHT LOSS HAS THE POTENTIAL TO INDUCE REMISSION OF TYPE 2 DIABETES IN PEOPLE WHO ARE OVERWEIGHT OR OBESE.<sup>2</sup>**  
**HELP YOUR PATIENTS MANAGE THEIR WEIGHT AND IMPROVE THEIR HEALTH.**

**References:** 1. A rising tide of type 2 diabetes in younger people: what can primary care do? BPAC. [Online]. Accessed: <https://bpac.org.nz/2018/docs/diabetes.pdf>. 2. Leon M. Primary care-led weight management for remission of type 2 diabetes (DIRECT): an open-label, cluster-randomised trial 2017; [http://dx.doi.org/10.1016/S0140-6736\(17\)33102-1](http://dx.doi.org/10.1016/S0140-6736(17)33102-1). **DUROMINE™** IS A C5 CONTROLLED DRUG. **DUROMINE™** IS AN UNFUNDING MEDICINE - A PRESCRIPTION CHARGE WILL APPLY. PLEASE REVIEW FULL DATA SHEET BEFORE PRESCRIBING AVAILABLE AT [WWW.MEDSAFE.GOV.NZ](http://WWW.MEDSAFE.GOV.NZ) OR PHONE Freephone 0508 375394. Minimum Data Sheet Information (phenentermine). **DUROMINE™ Indications:** For the management of obesity as a short-term adjunct in a medically monitored weight loss programme based on exercise, diet and behaviour modification in obese patients with a body mass index (BMI) of 30 kg/m<sup>2</sup> or greater. **DUROMINE™** may appropriately be initiated in overweight patients with a lower BMI when risk of morbidity from other medical conditions is increased. **Dosage and Administration:** The usual starting dose in adults and children over 12 years is 30 mg once daily at breakfast. Continuous or inter-mittent maintenance dose is 15 mg to 30 mg once daily depending on responsiveness. Patients require medical review after a defined course of treatment, which should not exceed three months. Available in 15 mg and 30 mg capsules. **Contraindications:** Pulmonary artery hypertension, heart valve abnormalities, heart murmurs, moderate to severe hypertension, cerebrovascular disease, severe cardiac disease including arrhythmias, advanced arteriosclerosis, hypersensitivity to sympathomimetic drugs, hyperthyroidism, psychiatric illnesses, glaucoma, drug/alcohol abuse or dependence, concomitant MAOIs or within 14 days of MAOI use. **Precautions:** Short term monotherapy only. Co-administration of drug products for weight loss is not recommended. There have been no reported cases of valvular heart disease occurring with phenentermine alone. Use with caution in mild hypertension, established coronary artery disease, epilepsy, and in those receiving insulin, oral hypoglycaemic agents or psychotropic agents. **Adverse Effects:** The most common are palpitations, tachycardia, elevation of blood pressure and precordial pain. Others included restlessness, insomnia, nausea, and dry mouth. Psychotic episodes, hallucinations and serious cardiovascular or cerebrovascular events are rare. Full Data Sheet and Consumer Medicine Information is available from Medsafe at [www.medsafe.govt.nz](http://www.medsafe.govt.nz). (Inova Pharmaceuticals (Australia) Pty Limited, Level 10, 12 Help Street, Chatswood NSW 2067, Australia. Distributed in New Zealand by Radiant Health Ltd, c/o Supply Chain Solutions, 74 Westney Road, Airport Oaks, Auckland. For all product enquiries: New Zealand Toll Free: 0508 375 394. TAPS NA 12719. NZ-2021-02-0010. February 2021.



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## Temporal variations in maternal treatment requirements and early neonatal outcomes in patients with gestational diabetes

**Authors:** Fox RA et al.

**Summary:** These researchers sought evidence of temporal variation in maternal treatment requirements and early neonatal outcomes for 791 women with gestational diabetes and a singleton infant from a UK tertiary obstetric centre. They found that the likelihood of requiring insulin was significantly highest in November, while the average total daily insulin dose peaked in January compared with the average of 19 U/day ( $p < 0.05$ ). Neonatal hypoglycaemia rates were highest in December at 40% above average ( $p < 0.05$ ), but there was no evidence of temporal variation in NICU admission rates or neonatal capillary blood glucose levels.

**Comment:** I include this one for quirky interest. Women with gestational diabetes are more likely to need insulin and higher doses of it if they are diagnosed during winter than summer. This study from the UK shows the seasonal variation in insulin requirements. The most obvious conclusion as to why relates to lifestyle factors, with women less likely to be active during winter and perhaps preferring different types of food. How this translates to tropical NZ is unknown.

**Reference:** *Diabet Med*; Published online May 8, 2021

[Abstract](#)

## Association of lactation with maternal risk of type 2 diabetes

**Authors:** Pinho-Gomes A-C et al.

**Summary:** This was a systematic review of 17 cohort and five cross-sectional observational studies (mostly of modest quality) reporting on the association between lactation and maternal type 2 diabetes risk, 16 of which were included in a meta-analysis. Conflicting results were seen across studies investigating the relationship between lactation and type 2 diabetes risk in the first months after birth in women with gestational diabetes: those with longer follow-up indicated a graded protective association for lactation on type 2 diabetes risk, with a potentially greater protective effect in women with versus without gestational diabetes. Overall, the type 2 diabetes risk was lower for ever versus never lactation (relative risk 0.73 [95% CI 0.65, 0.83]), with each additional month of lactation lowering the risk (0.99 [0.98, 0.99]).

**Comment:** Breastfeeding has many benefits for women and babies alike. Most women would probably prefer to breastfeed if they are able to (says a man). This systematic review and meta-analysis adds further support to that. Although the overall quality of the studies was modest, the overall message is clear. Breastfeeding is associated with less risk of type 2 diabetes for women who are able to, by almost a third. This effect is further enhanced by duration of lactation. There are many possible reasons for this, including the effect on maternal weight. This message is clear and suggests promoting and facilitating breastfeeding for women with gestational diabetes.

**Reference:** *Diabetes Obes Metab*; Published online April 28, 2021

[Abstract](#)

<sup>†</sup>38% RRR in CV death in patients with established CV disease (CAD, PAD, MI or stroke) and T2D (HR=0.62;  $p < 0.001$ ).<sup>‡</sup> \*JARDIANCE is a funded medicine. Restrictions apply: Pharmaceutical Schedule, Hospital Medicines List. <sup>†</sup>In adult patients with insufficiently controlled type 2 diabetes and CAD, PAD, or a history of MI or stroke. <sup>‡</sup>The absolute risk for CV death was reduced from 5.9% in patients receiving standard of care plus placebo to 3.7% in patients receiving standard of care plus JARDIANCE® ( $p < 0.001$ ).<sup>1,2</sup>

1. JARDIANCE® Data Sheet 2019 2. Zinman B et al. N Engl J Med. 2015;373(22):2117-2128

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**INDICATION:** *Glycaemic control:* Treatment of type 2 diabetes mellitus (T2DM) to improve glycaemic control in adults as: *Monotherapy* - When diet and exercise alone do not provide adequate glycaemic control in patients for whom use of metformin is considered inappropriate due to intolerance; *Add-on combination therapy* - With other glucose-lowering medicinal products including insulin, when these, together with diet and exercise, do not provide adequate glycaemic control. *Prevention of cardiovascular (CV) death:* In patients with T2DM and established CV disease to reduce the risk of CV death. To prevent CV deaths, JARDIANCE® should be used in conjunction with other measures to reduce CV risk in line with the current standard of care. **DOSAGE AND ADMINISTRATION:** Recommended starting dose is 10mg once daily taken with or without food. Dose can be increased to 25mg once daily. No dose adjustment is necessary for patients based on age, patients with eGFR  $\geq 30$  mL/min/1.73m<sup>2</sup> or hepatic impairment. When JARDIANCE® is used in combination with a sulfonylurea (SU) or with insulin, a lower dose of the sulfonylurea or insulin may be considered. **CONTRAINDICATIONS:** Hypersensitivity to empagliflozin or any of the excipients; patients with CKD stage 4 or 5 (severely impaired renal function including patients receiving dialysis; eGFR  $< 30$  mL/min/1.73m<sup>2</sup> or CrCl  $< 30$  mL/min). **WARNINGS AND PRECAUTIONS:** Patients with type 1 diabetes; diabetic ketoacidosis; necrotising fasciitis of the perineum (Fournier's gangrene); discontinue when eGFR is below 30 mL/min/1.73m<sup>2</sup>; assess renal function before treatment and regularly thereafter; patients for whom a drop in BP could pose a risk (e.g. those with known CV disease, on anti-hypertensive therapy with a history of hypotension, or aged  $\geq 75$  years); urinary tract infections (UTIs); rare hereditary conditions of galactose intolerance, e.g. galactosaemia; pregnancy; lactation; children ( $< 18$  years). **INTERACTIONS:** Diuretics; insulin and SU; interference with 1,5-anhydroglucitol assay. **ADVERSE REACTIONS:** *Very common:* hypoglycaemia (when used with combination with SU or insulin). *Common:* hypoglycaemia (combination with metformin; pioglitazone with or without metformin; metformin and linagliptin); vaginal moniliasis, vulvovaginitis, balanitis and other genital infections; UTIs (including pyelonephritis and urosepsis); pruritus; allergic skin reactions (e.g. rash, urticaria); increased urination; thirst; serum lipids increased; volume depletion (patients aged  $\geq 75$  years). For other adverse reactions, see full Data Sheet. **ACTIONS:** Empagliflozin is a reversible, highly potent and selective competitive inhibitor of sodium-glucose co-transporter 2 (SGLT2), which is responsible for glucose absorption in the kidney. It improves glycaemic control in patients with type 2 diabetes by reducing renal glucose reabsorption through SGLT2. Through inhibition of SGLT2, excessive glucose is excreted in urine. **PRESCRIPTION MEDICINE.** JARDIANCE® is a funded medicine - Restrictions apply: Pharmaceutical Schedule, Hospital Medicines List. BOEHRINGER INGELHEIM (NZ) Ltd. Level 3, 2 Osterley Way, Manukau Auckland 2104. TAPS MR7142/PC-NZ-100168 BOE000370



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## Development and validation of a machine learning model using administrative health data to predict onset of type 2 diabetes

**Authors:** Ravaut M et al.

**Summary:** A decision analytical model using linked administrative health data for 1,657,395 patients from Ontario, Canada, was used to develop a population-level machine learning model for predicting type 2 diabetes 5 years prior to onset. The model, which was also validated in 243,442 patients and tested in 236,506, had a test area under the curve value of 80.26, showed good calibration and was robust to sex, immigration status, area-level marginalisation with respect to material deprivation and race/ethnicity, and low contact with the healthcare system.

**Comment:** The relevance of a diagnosis of prediabetes is a controversial topic. I have included papers on this topic previously, highlighting the uncertainty of the rate of progression to type 2 diabetes and the risk of CV disease when prediabetes is defined by HbA<sub>1c</sub> level rather than older definitions based on the glucose tolerance test. When it is estimated that 25% of the adult population may have prediabetes, this is a very relevant question. If it were possible to simply predict who will develop diabetes and more importantly who might develop complications of diabetes, then this would enable a more targeted and cost-effective intervention to prevent this. This paper set in Canada used a machine learning approach to develop an algorithm to do just that, with inputs from a range of domains of readily available patient data. Whilst this couldn't be directly translated to the NZ population, a similar approach could be taken here, particularly since we have a well-connected data infrastructure.

**Reference:** *JAMA Netw Open* 2021;4:e2111315

[Abstract](#)

## Effects of a technology-assisted integrated diabetes care program on cardiometabolic risk factors among patients with type 2 diabetes in the Asia-Pacific region

**Authors:** Lim L-L et al., for the Asia-Pacific JADE Study Group

**Summary:** The 12-month open-label JADE Program trial randomised patients with type 2 diabetes from eight Asia-Pacific countries to an intervention of technology-guided structured evaluation, automated personalised reports to encourage patient empowerment and  $\geq 2$  telephone or face-to-face contacts by nurses to increase patient engagement (phase 1, n=3732; phase 2, n=6645) or a control group of technology-guided structured evaluation with (phase 1, n=3805) or without (phase 2, n=6652) automated personalised reports. Compared with the control groups, similar proportions of the intervention groups experienced a primary outcome (CV disease, chronic kidney disease, visual impairment or eye surgery, lower-extremity amputation or foot ulcers requiring hospitalisation, any-site cancer or death; respective ORs for phases 1 and 2, 0.94 [95% CI 0.74, 1.21] and 1.02 [0.83, 1.25]), but greater proportions of the intervention groups attained  $\geq 2$  diabetes-associated targets (HbA<sub>1c</sub> level  $< 7.0\%$ , BP  $< 130/80$  mm Hg and LDL cholesterol level  $< 100$  mg/dL; 1.34 [1.21, 1.49] and 1.25 [1.14, 1.37]) and  $\geq 2$  key performance indices (reductions in HbA<sub>1c</sub> level of  $\geq 0.5\%$ , systolic BP of  $\geq 5$  mm Hg, LDL cholesterol level of  $\geq 19$  mg/dL and bodyweight of  $\geq 3.0\%$ ; 1.18 [1.04, 1.34] and 1.50 [1.33, 1.68]). For attainment of  $\geq 2$  primary diabetes-associated targets, participants from low- and middle-income countries had greater effects than those from high-income countries (OR 1.50 vs. 1.20 [p=0.04]).

**Comment:** This is a great example of why clinical trials are so important. On the surface of it, it is a no-brainer that a programme set up to empower patients through individualised reports and regular contact with a nurse would improve care and outcomes. Indeed, the intervention did improve care and improved a range of cardiometabolic risk factors. Had this been the primary outcome, as so many studies are, then we would have concluded that this intervention was highly effective. However, the primary outcome was actual clinical events, which of course is far more important. Unfortunately, and somewhat surprisingly, the intervention did not reduce these. Whether this is due to other confounding factors that overwhelmed the benefit of reduction in measured risk factors or some other reason is not clear. However, we must conclude that this intervention is not effective.

**Reference:** *JAMA Netw Open* 2021;4:e217557

[Abstract](#)

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## Effect of behaviorally designed gamification with social incentives on lifestyle modification among adults with uncontrolled diabetes

**Authors:** Patel MS et al.

**Summary:** Adults with type 2 diabetes (HbA<sub>1c</sub> level  $\geq 8\%$ ) and BMI  $\geq 25$  kg/m<sup>2</sup> were equipped with a wearable device and smart weight scale, and were randomised to an additional 1-year game that assigned points and levels for achieving step goals and weight loss targets, with support and intervention (n=92), with collaboration (n=95) or with competition (n=87) or a control group (device feedback only; n=87). Compared with controls, participants assigned to gamification with support and with competition, but not with collaboration, had significant increases from baseline in mean daily steps (respective adjusted differences, 503 steps [p=0.01], 606 steps [p=0.003] and 280 steps [p=0.16]). Significant reductions from baseline were seen for bodyweight and HbA<sub>1c</sub> level in all four trial arms, but no significant differences were seen between any of the intervention arms and the control arm.

**Comment:** Gamification – is that really a word? Anyway, this is sadly another example of a great idea that you could imagine might work, but didn't. Sustained lifestyle change of the magnitude required to influence diabetes parameters is really hard. No kidding Sherlock, I hear you say! That is why ideas like this one of harnessing tools such as wearable devices and remote data collection and feedback to help motivate people, added to an incentive based on healthy competition, all make sense. They should work, so why don't they? That's the real question to come out of this research. We are complex fickle beasts.

**Reference:** JAMA Netw Open 2021;4:e2110255

[Abstract](#)



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## Achieving a useful and person-centred diabetes consultation is a shared responsibility between diabetologists and people with diabetes

**Authors:** Schultz AA et al.

**Summary:** The perceptions regarding the usefulness of routine type 1 diabetes consultations with diabetologists were evaluated in this Danish qualitative study, which acquired data for analysis from semistructured interviews completed by 33 patients with the condition. It was perceived by the respondents that achieving a useful consultation was a shared responsibility between patients with diabetes and diabetologists. However, there was variability expressed regarding what constitutes a useful consultation, and also with respect to expectations for both consultation and diabetologist in relation to: i) the interaction between the patients and the diabetologist (including preparedness, honesty, rapport and preferring a partnership with the diabetologist versus 'keeping it clinical'); and ii) the diabetologist's approach to diabetes care (including the provision of up-to-date knowledge, listening and showing understanding).

**Comment:** Sometimes you know you've got it right and sometimes you know it could have gone better! We can all reflect on our interactions with our patients and reach these conclusions. This qualitative study addresses the question of what factors are important in achieving an effective consultation for people with type 1 diabetes in specialist clinics. There are some interesting themes arising from this work. Apart from what is surely evident to any clinician, that we need to individualise our approach, is the message that it is important to identify and be clear about the expectations of the consultation for both parties. The suggestion to use tools to prepare for a consultation with this in mind is a good one and warrants further exploration.

**Reference:** Diabet Med 2021;38:e14382

[Abstract](#)

### CONGRATULATIONS TO

**Ruth Spearing** (Haematologist at CDHB)  
and **Peter Shapkov** (Breast Surgeon at Waitemata DHB)  
who were winners in our prize draw by taking part in our recent Research Review Annual Subscriber Update.

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<sup>\*</sup>Excluding severe hypoglycaemia



**References:** 1. Melanie J. Davies et al. Diabetes Care 2018; 41:2669-2701. Reference 2. Type 2 diabetes Management Guidance. NZSSD. 2021. 3. Lantus Data Sheet. 31 July 2017. 4. DeVries J H. Eur Endocrinol 2014;10(1):23-30. 5. Gerstein HC, et al. N Engl J Med 2012;367:319-28. 6. Bazzano L A, et al. Diabetic Medicine 2008;25:924-932. 7. Horvath K, et al. Long acting insulin analogues vs NPH insulin (Human isophane insulin) for Type 2 Diabetes Mellitus. Cochrane Review 2009. 8. Home P.D, et al. Diabetes, Obesity and Metabolism. 2010; 12:772-779. 9. Davies M et al. Diabetes Care. 2005; 28:1282-88.

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## Parental expectations before and after 12-month experience with video consultations combined with regular outpatient care for children with type 1 diabetes

Authors: von Sengbusch S et al.

**Summary:** Expectations regarding perceived barriers to and benefits of 1 year of monthly video consultations combined with regular outpatient care of children with type 1 diabetes were explored in this analysis of 54 qualitative interviews with parents. While it was thought that video consultations offered a greater frequency of contact for optimised insulin dosing (including increased confidence) and saving time compared with standard care, difficulties with internet connections were identified as the principle barrier. Other perceived improvements were digital prescriptions and being able to meet with the same diabetologist in both outpatient and telemedical care. Most interviewees indicated that they preferred intervals of 4–6 weeks between video consultations.

**Comment:** The utility of virtual consultations, or telemedicine, has come under the spotlight in the last 12 months with the impact of COVID-19. This study reports on the experiences of parents of children with type 1 diabetes, where regular clinic visits were enhanced with additional monthly virtual appointments. The benefits of the extra video contact was in confidence and optimising insulin therapy, as well as time saving by not needing to attend a clinic. As we have all seen over the last 12 months, a significant barrier was internet connectivity. What is not explored here is the additional time commitment placed on the health professional. I would be surprised if any patient or parent wouldn't prefer more frequent contact, either in person or virtual, but this is not necessarily realistic in a time-pressured and cost-restrained public health system. In our adult clinic, we are seeing less people now preferring a virtual consult than we would have expected 12 months ago. We need more work to establish the optimal use of this tool.

Reference: *Diabet Med* 2021;38:e14410

[Abstract](#)

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## Dose-dependent associations of dietary glycaemic index, glycaemic load, and fiber with 3-year weight loss maintenance and glycaemic status in a high-risk population

Authors: Zhu R et al.

**Summary:** This secondary analysis of data from the PREVIEW diabetes prevention study explored longitudinal and dose-dependent associations of dietary glycaemic index, glycaemic load and fibre intake with bodyweight and glycaemic status over 3 years of weight loss maintenance in 1279 adults at high risk of type 2 diabetes. Each 10-unit increment in glycaemic index and each 20-unit increment in glycaemic load were associated with bodyweight regains of 0.46 and 0.49 kg/year, respectively ( $p < 0.001$  for both) with 10-unit increment in glycaemic index also associated with an increase in HbA<sub>1c</sub> level. Associations of glycaemic index and glycaemic load with HbA<sub>1c</sub> level were independent of weight change. Patients in the highest versus lowest glycaemic index and glycaemic load tertiles had significantly greater weight regain and HbA<sub>1c</sub> level increases. An inverse association was seen between fibre intake and increased waist circumference; associations with weight regain and glycaemic status were not robust across analyses.

**Comment:** This secondary analysis of the PREVIEW study provides an interesting perspective on the difference between a 'dietary prescription' and the actual nutritional composition consumed when prescribed a specific diet. In the PREVIEW study, people with prediabetes were randomised to either a high-protein, low-glycaemic index or a moderate protein, moderate-glycaemic index diet, with additional randomisation to two physical activity interventions. What this secondary analysis has done is to pool all participants regardless of group and then reanalyse the outcomes based on reported food intake. Three important observations come from this. The first is that high glycaemic index or load is associated with worsening HbA<sub>1c</sub> level independent of weight. Second, that high glycaemic index or glycaemic load are also associated with weight regain. Third, that surprisingly, fibre intake was not definitively protective against weight regain or glycaemia, as we might expect from other literature. The evidence supports policies to reduce glycaemic load in our diet, regardless of the specific 'dietary prescription'.

Reference: *Diabetes Care*; Published online May 27, 2021

[Abstract](#)

## Cognitive performance declines in older adults with type 1 diabetes

Authors: Jacobson AM et al., the DCCT/EDIC Research Group

**Summary:** Participants with type 1 diabetes from the DCCT and EDIC study ( $n=1051$ ) were evaluated for independent risk factors for cognitive decline over 32 years of follow-up. Substantive declines in memory and psychomotor and mental efficiency were seen, with declines in psychomotor and mental efficiency five times greater between 18 and 32 years of follow-up when compared with up to 18 years. Significant independent predictors of greater decrements in psychomotor and mental efficiency at year 32 were exposure to higher HbA<sub>1c</sub> levels, more severe hypoglycaemic episodes and elevated systolic BP ( $p < 0.0001$ ), with the effect of all three combined being equivalent to an additional 9.4 years of age.

**Comment:** We tend to think of complications of diabetes as the classical microvascular complications of retinopathy, nephropathy and neuropathy, and the macrovascular complications of ischaemic heart disease, stroke and peripheral vascular disease. However, we have all seen the cognitive issues associated with frequent hypoglycaemia. This study used the DCCT and EDIC study participants with type 1 diabetes and very long-term outcome data over 30 years to determine factors associated with cognitive decline. The factors identified are those we might predict of glycaemic control, hypertension and hypoglycaemia frequency, all of which are modifiable. This evidence gives another angle in discussion with patients over the benefits of attention to tight but safe control of glucose level and BP.

Reference: *Lancet Diabetes Endocrinol* 2021;9:436–45

[Abstract](#)

## SPECIAL REPORT ON THE 2021 NZSSD Type 2 Diabetes Management Guidelines

This Special Report by Dr Ryan Paul, who was the lead on the guidelines working party, provides a summary of and commentary on the Type 2 Diabetes Management Guidance for the busy health care worker.

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### Independent commentary by Professor Jeremy Krebs MBChB, FRACP, MD

Professor Krebs is an Endocrinologist with a particular interest in obesity and diabetes. He is a Professor with the University of Otago, and former Director of the Clinical Research Diploma at Victoria University - which he established. **FOR FULL BIO** [CLICK HERE](#).

