Obesity

Strategies for weight loss in prediabetes and diabetes

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Several studies have shown that weight loss and lifestyle change have beneficial effects on progression of prediabetes to diabetes with a 5–10% weight loss significantly reducing diabetes incidence (Knowler et al, 2002; Thomas et al, 2010). Weight loss is important for managing glycaemia, dyslipidaemia and hypertension after diabetes has developed (Look AHEAD Research Group, 2010; 2013; Wadden et al, 2011), and has an impact on other weight-related comorbidities affecting health and performance, such as obstructive sleep apnoea (Araghi et al, 2013).

Using data from the American DPP (Diabetes Prevention Program), Delahanty and colleagues examined the impact of several weight measures on diabetes incidence and cardiometabolic risk factors over 2 years (summarised alongside). They observed that early weight loss in the first 6 months reduced the incidence of diabetes (hazard ratio [HR] 0.94; 95% confidence interval [CI], 0.90–0.98) and protected against cardiometabolic risk factors.

There is now significant evidence that substantial initial weight loss is associated with greater long-term net weight loss (Wadden et al, 2011; Johansson et al, 2014). In a retrospective study of 5965 individuals who undertook a very low calorie diet, the weight lost in the initial weight-loss phase was significantly associated with the percentage weight loss maintenance for up to 3 years (Rolland et al, 2014). In the Look AHEAD study, larger monthly weight loss during the first year independently predicated weight, HbA_{1c}, HDL-cholesterol, and systolic blood pressure at year 4. Thus, greater initial weight loss is a key factor in weight loss maintenance and improved distal metabolic outcomes. In the Look AHEAD study, successful lifestyle participants were observed to use meal replacement products and attend weight management education sessions more frequently, and those who lost most weight and maintained their weight undertook more physical activity (Wadden et al, 2009; 2011). The percentage initial weight reduction at 1 year was 5.9% in those in the lowest quartile for use of meal replacements, but greater (11.2%) in those in the highest quartile for meal replacements (Wadden et al, 2009).

Delahanty et al further observed that weight cycling was associated with greater risk of diabetes (HR 1.33; 95% CI, 1.12–1.58). They defined weight cycling as number of cycles associated with 5 lb (2.25 kg) change in weight. Weight cycling was observed to be more common in men, those aged 45 years and younger and those of African American origin. Weight monitoring is a key strategy for weight loss maintenance. Thus, identifying weight gain early and avoiding weight cycling is likely to be beneficial in prevention of diabetes and ensuring that weight loss is maintained with positive downstream metabolic effects. Ultimately, the strongest weight indicator for a reduction in diabetes incidence from the DPP was weight loss over 2 years (HR 0.90; 95% CI, 0.87–0.93).

In summary, losing weight early, avoiding multiple cycles of weight change, and, most importantly, achieving greater weight loss over 2 years are key strategies for reducing the incidence of diabetes and reducing several cardiometabolic risk factors in those who are at risk. In the face of accumulating evidence, there is a need to debate whether it is still valid to provide the advice that gradual weight loss is healthier or more successful in the long-term than more rapid weight loss. A recent study has shown that there was no difference in subsequent weight regain between rapid and gradual weight loss (Purcell et al, 2014). More rapid weight loss is likely to boost patient self-confidence and ensure adherence to lifestyle interventions. This appears to be best achieved with the help of meal replacement products. While weight cycling was previously believed to hamper long-term weight loss and increase mortality, overall recent evidence, including animal studies, has not supported these observations (Stevens et al, 2012). Nevertheless, identifying those who are likely to regain weight will be helpful for ensuring long-term weight loss and positive metabolic outcomes. This requires frequent regular self and clinical monitoring of body weight, and good patient support. ■

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Diabetes Care

Measures of weight loss: Effect on diabetes incidence

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! Factor	✓✓✓

1 Within the lifestyle intervention arm of the Diabetes Prevention Program study, specific measures of weight loss in relation to incident diabetes and improvement in cardiometabolic risk factors were investigated.

2 A total of 1000 participants were included in the analysis. The lifestyle intervention of the study included two goals: to facilitate ≥7% of body weight loss and to achieve ≥150 minutes/week of moderate-intensity physical activity.

3 Nine weight measures were under investigation, which characterised baseline weight, short- versus long-term weight loss, short- versus long-term weight regain and weight cycling to find predictors of incident diabetes and improvement in cardiometabolic risk factors over 2 years.

4 Weight loss from 0 to 2 years was the strongest predictor of reduced diabetes incidence (hazard ratio [HR] 0.90/kg, 95% confidence interval [CI] 0.87–0.93; $P<0.01$) and cardiometabolic risk factor improvement (e.g. fasting glucose: $P<0.01$).

5 Weight cycling occurred 0–6 times per participant and was positively associated with incident diabetes ($P<0.01$), fasting glucose ($P=0.02$), HOMA-IR ($P=0.04$) and systolic blood pressure ($P=0.01$).

6 After adjusting for baseline weight, the effect of weight cycling remained statistically significant for diabetes risk (HR 1.2; $P=0.03$) but not for cardiometabolic traits.

Delahanty LM, Pan Q, Jablonski KA et al (2014) Effects of weight loss, weight cycling, and weight loss maintenance on diabetes incidence and change in cardiometabolic traits in the Diabetes Prevention Program. *Diabetes Care* **37**: 2738–45

Obes Surg

Long-term surgical results: Randomised trial comparing SG and SAGB

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓

1 A double-blind randomised trial was carried out to compare the effectiveness of laparoscopic sleeve gastrectomy (SG) and single anastomosis (mini-) gastric bypass (SAGB). The study cohort comprised 60 people with T2D and an HbA_{1c} higher than 7.5% (58 mmol/mol) with a BMI between 25–35 kg/m^2.

2 This study analysed and compared post-surgery 5-year results and evaluated the incretin effect of both treatments.

3 The cohort was split in a 50:50 design and after 60 months, 18 participants in the SAGB group and nine participants in the SG group achieved the primary end-point of an HbA_{1c} of 6.5% (≤48 mmol/mol) without glycaemic therapy. The mean reduction in HbA_{1c} was 2.8% (31 mmol/mol) in the SG group and 3.9% (43 mmol/mol) in the SAGB group 5 years after surgery.

4 Participants undergoing the SAGB procedure had a similar weight loss percentage to the SG group, but they achieved a lower HbA_{1c} than the SG group (P<0.05 for both).

5 Five participants had major adverse events possibly related to diabetes during follow-up, and five individuals required revision bariatric surgery.

6 SAGB resulted in better glycaemic control than SG and had a higher incretin effect compared to SG in mildly obese people.

Lee WJ, Chong K, Lin YH et al (2014) Laparoscopic sleeve gastrectomy versus single anastomosis (mini-) gastric bypass for the treatment of type 2 diabetes mellitus: 5-year results of a randomized trial and study of incretin effect. *Obes Surg* **24**: 1552–562

Diabetic Medicine

Pregnancy lifestyle intervention to reduce risk factors of gestational diabetes

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓

1 The feasibility of a prenatal lifestyle intervention to reduce the risk factors of gestational diabetes was tested among overweight and obese Hispanic women in a randomised trial.

2 Bilingual and bicultural health educators encouraged 33 women to increase physical activity, decrease saturated fat intake and increase dietary fibre intake over a 6-month period. The control group comprised another 35 women who received standard care. Participant retention in both groups was high until delivery (97%).

3 Behavioural, physiological, sociodemographic and medical history measures were collected at baseline, mid-pregnancy (24–28 weeks gestation) and after delivery (6 weeks postpartum). Participants received gift cards at each study assessment.

4 Vigorous-intensity activity increased in the lifestyle intervention group and decreased in the standard care group (P=0.004). This may have contributed to the slightly lower gestational weight gain and infant birth weights compared with the standard care group; however, these differences were not statistically significant.

5 Among the biomarkers of insulin resistance, there were no statistically significant differences between the groups.

6 The intervention was deemed feasible by the author, and could be translated into clinical practice.

Hawkins M, Hosker M, Marcus BH et al (2015) A pregnancy lifestyle intervention to prevent gestational diabetes risk factors in overweight Hispanic women. *Diabet Med* **32**: 108–15

Diabetes Res Clin Pract

Low-carb diet versus low-fat diet: Effect on quality of life

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓

1 Sixty-one adults with T2D were included in a prospective, randomised trial to compare the effects of a 2-year intervention of a low-fat diet (LFD) or a low-carbohydrate diet (LCD) on health-related quality of life (HRQoL).

2 The SF-36 questionnaire was used at baseline, 6, 12 and 24 months, and participants were interviewed about their experiences of the intervention following the diet.

3 Following the LFD involved aiming to consume 55–60 energy percent (E%) from carbohydrates and the LCD allowed for 20 E% from carbohydrates.

4 After the intervention, weight loss did not differ between groups and weight loss reached its peak at 6 months (LFD −3.99±4.1 kg and LCD −4.31±3.6 kg [P<0.001 within groups]).

5 In the LCD group, there was an increase in the physical component score of the SF-36 at 12 months (P<0.009), whereas there was no such change in the LFD group (P<0.03 between groups).

6 Physical function, bodily pain and general health scores also improved in the LCD group, but there was no change within the LFD group.

7 Although the changes in weight did not differ between the diet groups, there was an improvement in HRQoL in the LCD group but no change in HRQoL in the LFD group. Interestingly, the improvement in HRQoL in the LCD group only occurred after 1 year, and was not maintained.

Guldbrand H, Lindström T, Dizdar B et al (2014) Randomization to a low-carbohydrate diet advice improves health related quality of life compared with a low-fat diet at similar weight-loss in type 2 diabetes mellitus. *Diabetes Res Clin Pract* **106**: 221–7

"There was an improvement in health-related quality of life (HRQoL) in the low-carbohydrate diet group but there was no change in HRQoL in the low-fat diet group."

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