Long-term lifestyle modification in the Look AHEAD trial

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓

1 In this multicentre, randomised trial (the Look AHEAD [Action for Health in Diabetes] trial) two groups of overweight or obese participants with T2D were randomised to receive intensive lifestyle intervention (ILI) or diabetes support and education (DSE; control).

2 The effects of lifestyle intervention on change in weight, fitness and cardiovascular disease (CVD) risk factors were assessed and the authors present the 4-year results in this article.

3 A total of 5145 participants (59.5% female; mean age 58.7 years) were assessed for the effects of the lifestyle interventions on the incidence of major CVD events.

4 After 4 years of intervention, compared with the DSE participants, ILI participants had achieved more weight loss (−6.15% vs −0.88%; $P<0.001$) and greater improvements in HbA$_{1c}$ level (−0.36% vs −0.09%; $P<0.001$).

5 ILI participants achieved greater improvement in systolic and diastolic blood pressures (−5.33 vs −2.97 mmHg; $P<0.001$; −2.92 vs −2.48 mmHg; $P=0.01$, respectively), and improvement in HDL-cholesterol (0.20 vs 0.12 mmol/L; $P<0.001$) and triglyceride (−1.42 vs −1.10 mmol/L; $P<0.001$) levels, compared with those in the DSE group.

6 It was concluded that intensive lifestyle intervention can produce sustained improvement in body weight, HbA$_{1c}$ and CVD risk factors.

Look AHEAD Research Group, Wing RR, Bahnson JL et al (2010) Long-term effects of a lifestyle intervention on weight and cardiovascular risk factors in individuals with type 2 diabetes mellitus: four-year results of the Look AHEAD trial. *Arch Intern Med* **170**: 1566–75

Look AHEAD trial: The 4-year results

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There is a perception that people with type 2 diabetes have more difficulty in losing weight and increasing physical activity than their counterparts without diabetes. There is also the view that even if people with type 2 diabetes do initially lose weight and increase physical activity, such lifestyle change may not continue and the weight and inactivity return after a year or so. Data to refute this are scarce.

The Look AHEAD (Action for Health in Diabetes) trial (Look AHEAD Research Group, 2010; summarised alongside) provides important data. The investigators have previously published results after 1 year, and this article provides the 4-year results.

A total of 5145 people (aged 45–76 years) with type 2 diabetes living in the USA, were randomised to an intensive lifestyle intervention (ILI) or a control group given a diabetes support and education programme (DSE). The intensive group were seen weekly for the first 6 months and three times per month for the second 6 months with a combination of group and individual sessions. During years 2–4 the ILI group were seen individually at least once per month, had further email or phone contact once per month and were offered a variety of further group sessions. The DSE group were invited to three group sessions per year.

Averaged over 4 years, ILI participants had a greater weight loss than those in the DSE group (−6.15% vs −0.88%) and greater improvements in treadmill fitness. There were differences in HbA$_{1c}$ (−0.36 vs −0.09 percentage points), systolic blood pressure (−5.33 vs −2.97 mmHg) and HDL-cholesterol all favouring the ILI group. Reductions in LDL-cholesterol levels were greater in the DSE than the ILI participants, owing to the greater use of medications to lower lipid levels in the DSE group. The participants will continue to be followed-up to see if these differences translate into reductions in cardiovascular events between the two groups.

These improvements are impressive and should lead to reductions in cardiovascular disease events in the long term. The intensity of the intervention, however, is huge and will be difficult to replicate in routine clinical care. Cost-effectiveness analysis will be reported on and will shed light on whether the intervention is economically viable in the long term.

Effectiveness of supervised walking in people with T2D

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

1 This pilot study looked at the feasibility and effectiveness of an exercise intervention of supervised walking sessions for people with T2D.

2 Participants (age range, 50–75 years; HbA$_{1c}$ range, 6.5–9.9% [48–85 mmol/mol]) were randomised to control ($n=21$) or intervention groups ($n=39$).

3 The control group received standard lifestyle recommendations, while the intervention group received counselling and a 45-minute walking session three times per week.

4 Overall physical activity and functional capacity were higher in the intervention group, but metabolic changes were not different between the groups.

5 Changes in HbA$_{1c}$ and fasting blood glucose levels were greater in participants who attended >50% of walking sessions than those in the control group.

6 The authors concluded that while supervised walking may be beneficial in reducing HbA$_{1c}$ levels in people with T2D, adequate adherence is required.

Negri C, Bacchi E, Morgante S et al (2010) Supervised walking groups to increase physical activity in type 2 diabetic patients. *Diabetes Care* **33**: 2333–5

DIABETES CARE

CVD risk not equivalent for people with T2D versus people with previous MI

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 The authors of this study aimed to determine whether long-term cardiovascular disease (CVD) risk is comparable between people with T2D and people who have had one acute myocardial infarction (MI), considering therapy, diabetes duration and glycaemic control.

2 Participants of this prospective, population-based, cohort study were aged 30–74 years. One cohort comprised 2260 people with T2D without coronary heart disease; the second cohort comprised 2150 people without T2D who had had one acute MI.

3 Coronary heart disease incidence and CVD mortality rates were compared, including in subgroups of diabetes treatment, duration and HbA_{1c}.

4 Adjusted hazard ratios (HRs) for 10-year coronary heart disease incidence and for CVD mortality were significantly lower in men and women in the T2D cohort (HR, 0.54 [95% confidence interval {CI}, 0.45–0.66] and 0.28 [95% CI, 0.21–0.37], respectively) than in the MI cohort (HR, 0.26 [95% CI, 0.19–0.36] and 0.16 [95% CI, 0.10–0.26]).

5 All of the T2D subgroups had significantly fewer CVD events than the MI cohort (CVD mortality HR range, 0.15 [0.09–0.26] to 0.36 [0.24–0.54].

6 Long-term CVD risk was found to be lower in people with T2D compared with those with a previous MI.

Cano JF, Baena-Diez JM, Franch J et al (2010) Long-term cardiovascular risk in type 2 diabetic compared with nondiabetic first acute myocardial infarction patients: a population-based cohort study in southern Europe. *Diabetes Care* **33**: 2004–9

DIABETES CARE

Sitagliptin or exenatide not associated with acute pancreatitis

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

1 An association between acute pancreatitis and exenatide or sitagliptin for the treatment of T2D has been reported.

2 This retrospective cohort analysis of a large medical and pharmacy claims database was performed to clarify whether exenatide or sitagliptin increase the risk of pancreatitis.

3 Cox proportional hazard models were used to compare the risk of acute pancreatitis between people with and without T2D and between exenatide, sitagliptin and control diabetes medication use.

4 Data for 786 656 people were analysed. Participants were included if they were aged between 18 and 63 years and had pharmacy and medical claims data for a period of 12 months between 1 January 2007 and 30 June 2009.

5 Incidence of cases of acute pancreatitis per 1000 person-years was 1.9 for controls, 5.6 for the T2D group, 5.7 for the exenatide group and 5.6 for the sitagliptin group.

6 The risk of acute pancreatitis was similar in the exenatide group compared with the control group (adjusted hazard ratio [HR], 0.9; 95% confidence interval [CI], 0.6–1.5) and sitagliptin compared with the control group (HR, 1.0; 95% CI, 0.7–1.3).

7 No association between exenatide or sitagliptin treatment and acute pancreatitis was identified, although there was an increased incidence of the condition in people with T2D than those without.

Garg R, Chen W, Pendergrass M (2010) Acute pancreatitis in type 2 diabetes treated with exenatide or sitagliptin: a retrospective observational pharmacy claims analysis. *Diabetes Care* **33**: 2349–54

NEJM

Severe hypoglycaemia associated with adverse events

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 The relationship between severe hypoglycaemia and risk of macro- and microvascular events and death was analysed in a cohort of 11 140 people (aged ≥55 years) with T2D.

2 Cox proportional hazard models with adjustment for covariates measured at baseline and after randomisation were used in the analysis.

3 After a median follow-up of 5 years, 231 people had experienced a severe hypoglycaemic event; 150 of those had been receiving intensive glucose control and 81 standard glucose control.

4 Median time from onset of severe hypoglycaemia to first major macrovascular event was 1.56 years (interquartile range [IQR], 0.84–2.41 years); time to the first major microvascular event was 0.99 years (IQR, 0.40–2.17 years); and time to death was 1.05 years (IQR, 0.34–2.41 years).

5 Severe hypoglycaemia was associated with a significant increase in the adjusted risk of major macrovascular events (hazard ratio [HR], 2.88; 95% confidence interval [CI], 2.01–4.12) major microvascular event (HR, 1.81; 95% CI, 1.19–2.74) and death from any cause (HR, 2.69; 95% CI, 1.97–9.67; all $P<0.001$).

6 This study identified a strong association between severe hypoglycaemia and a range of adverse vascular outcomes. The authors concluded that hypoglycaemia may contribute to these adverse outcomes, but that the analysis may also indicate that hypoglycaemia is a marker of vulnerability for these conditions.

Zoungas S, Patel A, Chalmers J et al (2010) Severe hypoglycemia and risks of vascular events and death. *N Engl J Med* **363**: 1410–8

DIABETIC MEDICINE

Intensive telephone interventions improve HbA$_{1c}$

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

1 This meta-analysis included randomised controlled trials looking at the effect of telephone interventions on HbA$_{1c}$ in people with T2D.

2 Data extracted included study design, participant characteristics, exact nature of the telephone intervention and details of comparison.

3 A significant benefit in HbA$_{1c}$ level was found in the group receiving telephone intervention ($P=0.08$) with greater benefit for more intensive intervention ($P=0.05$).

4 It was concluded that telephone follow-up interventions can positively impact HbA$_{1c}$ levels.

Wu L, Forbes A, Griffiths P et al (2010) Telephone follow-up to improve glycaemic control in patients with type 2 diabetes: systematic review and meta-analysis of controlled trials. *Diabet Med* **27**: 1217–25

DIABETES CARE

Finnish National Diabetes Prevention Programme reports 1-year results

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 The authors report the 1-year results of a national diabetes prevention programme in Finland.

2 Participants at high risk for T2D were identified using the Finnish Diabetes Risk Score by looking at the history of impaired fasting glucose (IFG) or impaired glucose tolerance (IGT), cardiovascular disease (CVD) or gestational diabetes across 400 primary healthcare centres.

3 Out of the 10 149 participants identified, 2798 did not have T2D at baseline and were available for follow-up at 1 year (919 men and 1879 women, mean age 56.0±9.9 and 54.0±10.7 years and BMI of 30.9±4.6 and 31.6±5.4 kg/m^2, respectively).

4 Diabetes incidence was 2.0% in men and 1.2% in women with normal glucose tolerance at baseline; 13.5% in men and 7.4% in women with IFG at baseline; and 16.2% in men and 11.3% in women with IGT at baseline.

5 Participants were also analysed by amount of weight loss. In those who lost ≥5% body weight, the relative risk (RR) of developing diabetes was 0.31 (95% confidence interval [CI], 0.16–0.59). For those who lost 2.5–4.9% body weight, the RR was 0.72 (95% CI, 0.46–1.13), and for those who gained ≥2.5% weight the RR was 1.10 (95% CI, 0.77–1.58).

6 The authors concluded that moderate weight loss was effective at reducing the risk of T2D in this very high-risk cohort.

Saaristo T, Moilanen L, Korpi-Hyövälti E et al (2010) Lifestyle intervention for prevention of type 2 diabetes in primary health care: one-year follow-up of the Finnish National Diabetes Prevention Program (FIN-D2D). *Diabetes Care* **33**: 2146–51

"*Moderate weight loss was effective at reducing the risk of T2D.*"