

Diabetes Digest

Diabetes Digest summarises recent key papers published in the area of coexistent diabetes and obesity – diabetes. To compile the digest, a PubMed search was performed for the 3 months ending November 2014 using a range of search terms relating to type 2 diabetes, obesity and diabetes. Articles have been chosen on the basis of their potential interest to healthcare professionals involved in the care of people with diabetes. The articles were rated according to readability, applicability to practice, and originality.



Undaunted by a cruel twist of fate – the Look AHEAD group continue to crunch data

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Look AHEAD (Action for Health in Diabetes) was a large, impressive and ambitious study of over 5000 overweight or obese individuals with type 2 diabetes over 10 years. It aimed to look at the difference in cardiovascular events in response to standard diabetes support and education (DSE) compared to intensive lifestyle intervention (ILI), in addition to whatever medications were already being taken. Any treatment offered outside the realms of the study intervention – hospitalisation, medication changes, and unrelated appointments – was carried out by the participants’ own healthcare practitioner.

Look AHEAD went on to prove the point that the DPP (Diabetes Prevention Program) study had already shown in “pre-diabetic” people: that diet and physical activity are a crucial and effective part of managing diabetes. In 2013, the Look AHEAD Research Group showed ILI produced sustained weight loss of 7.9% and 2.5% at 1 and 10 years respectively, alongside improvements in physical fitness and many measures of health, including diabetes control, blood pressure, plasma lipid profile, sleep quality, physical function and depression. The degree of weight loss is particularly impressive as it is known that individuals with diabetes lose approximately half the amount of weight on any given intervention than people without diabetes.

However, despite these highly impressive accomplishments, the sponsors of the study pulled the plug early for reasons of “statistical futility” as the intervention did not achieve the primary outcome to significantly reduce overall risk of major cardiovascular events, the reason being so few people actually suffered an event.

Critics could point to the fact that the dietary element of the study was based on calorie restriction and a reduced fat intake, hence the failure to meet the primary outcome. It is possible that the same degree of weight loss by carbohydrate reduction might have had more impressive cardiovascular results.

Undaunted by this cruel twist of fate, the Look AHEAD study group are continuing to crunch the data, hence the interest in this latest instalment. Although the obvious improvements in health induced by the intervention could not be shown to reduce cardiovascular events, this recent paper (summarised alongside) demonstrates a significant reduction in global medical costs compared to DSE in drug costs, episodes of hospitalisation and length of stay. Of particular note is a 17% reduction in the per-participant average annual cost of glucose-lowering agents among those on the ILI. Although the actual figures given for money saved – over \$5000 per patient – must be disregarded because of the US setting for the study, much of the health economic data, such as drug costs, remain highly relevant to the UK as far as commissioners are concerned.

A final suggestion emerging from this latest instalment of Look AHEAD is a possible legacy effect, whereby effective weight loss not only improves metabolic syndrome and cardiovascular risk, but also the associated benefits still confer reduced risk for years after the end of the intervention. The moral of the story is that, in this age of impressive, fancy new drugs for diabetes, lifestyle interventions are effective and important and should not be forgotten. ■

Look AHEAD Research Group, Wing RR, Bolin P et al (2013) Cardiovascular effects of intensive lifestyle intervention in type 2 diabetes. *N Engl J Med* 369: 145–54

Diabetes Care

Lifestyle intervention reduces use and cost of medical services

Readability	////
Applicability to practice	///
Originality	///

1. The Look AHEAD (Action for Health in Diabetes) study compared the impact of intensive lifestyle intervention (ILI) with diabetes support and education (DSE) among overweight and obese individuals with T2D. Although the trial was terminated early due to “statistical futility”, collected data are still being analysed.
2. The use and costs of health services for both participant cohorts were compared over an average of 10 years.
3. Follow-up data were available for 99.5% of the original 5121 participants.
4. The ILI showed a 11% reduction in hospitalisations per year compared to the DSE intervention ($P=0.004$). There was also a significant 15% reduction in the average annual days in the hospital among ILI participants ($P=0.01$).
5. Average annual prescriptions were also significantly lower in the ILI group compared to the DSE group (4.65 vs 4.96 prescription medications respectively; $P<0.0001$).
6. The per-participant average annual cost of health services and medications were also lower among the ILI participants; the annual cost was 7% lower (\$8321 for ILI and \$8926 for DSE; $P=0.002$).
7. Cumulatively, these effects resulted in an annual saving of almost \$600 per participant relative to DSE.
8. The authors note the intervention costs were not taken into account in this analysis; a cost-benefit analysis is reserved for future studies.

Espeland MA, Glick HA, Bertoni A et al (2014) Impact of an intensive lifestyle intervention on use and cost of medical services among overweight and obese adults with type 2 diabetes: the action for health in diabetes. *Diabetes Care* 37: 2548–56

Obes Surg

Long-term effect of laparoscopic Roux-en-Y gastric bypass

Readability	✓✓✓
Applicability to practice	✓✓✓
Originality	✓✓✓

1. The long-term effectiveness of laparoscopic Roux-en-Y gastric bypass (LRYGB) on the remission of T2D, hypertension (HT) and dyslipidaemia (DL) was under investigation in this analysis.
2. Out of a total of 89 morbidly obese individuals with T2D who underwent a LRYGB, 52 people were available for long-term follow-up. The mean baseline age was 47.5±9.6 years, BMI was 46.6±6.4 kg/m² and the mean duration of T2D prior to surgery was 6.1±5.4 years.
3. The primary outcome was the complete or partial remission of T2D, and the secondary outcomes were remission of DL, HT and changes in medication use.
4. The mean post-operative follow-up period was 6.9±2.3 years. At the end of follow-up, mean change in weight and BMI were -36.9±15.6 kg and -12.3±5.0 kg/m², respectively.
5. There was a significant reduction in HbA_{1c}, medicines use and the number of insulin users ($P<0.0001$ for all). And by their last follow-up visit, 21 people had T2D remission ($P<0.0001$).
6. Of the secondary outcomes, the number of people with HT significantly reduced from 38 to 24 ($P=0.042$), but there was a non-significant reduction in HT-medication users.
7. There was a decrease in the number of people with DL and DL-medication users, but the reduction was not significant.
8. However, overall lipid profiles did significantly improve after surgery compared with baseline: mean serum total cholesterol and triglycerides decreased, and HDL-cholesterol increased.
9. After the mean follow-up period, there was a reduction in T2D (53%), HT (26%) and DL (24%).

Dogan K, Betzel B, Homan J et al (2014) Long-term effects of laparoscopic Roux-en-Y gastric bypass on diabetes mellitus, hypertension and dyslipidaemia in morbidly obese patients. *Obes Surg* 24: 1835–42

Diabetic Medicine

Ethnicity-specific obesity cut-points for T2D risk

Readability	✓✓✓
Applicability to practice	✓✓✓
Originality	✓✓✓

1. The research group followed 2500 people from European ($n=1356$), South Asian ($n=842$) and African-Caribbean ($n=335$) backgrounds for nearly two decades to identify any differences in obesity cut-off points (BMI and waist circumference [WC]), as predictors of T2D risk.
2. Participants underwent anthropometry, fasting and post-load glucose blood tests at baseline, and incidence of T2D was identified from primary care records, participant recall or follow-up biochemistry.
3. Diabetes incidence rates (per 1000-person years) at a median follow-up of 19 years were 7.4 and 7.2 in European men and women respectively; 20.8 and 12.0 in South Asian men and women respectively; and 16.5 and 17.5 in African-Caribbean men and women respectively.
4. For diabetes incidence rates equivalent to those of European men and women using BMI as a cut-point (30 kg/m²), the age- and sex-adjusted cut-points were 25.2 kg/m² (95% confidence interval [CI], 23.4–26.6 kg/m²) in South Asians, and 27.2 kg/m² (95% CI, 25.2–28.6 kg/m²) in African-Caribbeans.
5. Equivalent WC cut-points were also lower for South Asian and African-Caribbean ethnicities compared to European men and women (102 cm and 88 cm respectively).
6. The equivalent WC cut-points for South Asian men and women were 90.4 cm and 84.0 cm, and the equivalent WC cut-points for African-Caribbean men and women were 90.6 cm and 81.2 cm respectively.
7. It is imperative to remember British South Asians and African-Caribbeans have equivalent diabetes incidence rates at substantially lower obesity levels than the conventional European cut-points.

Tillin T, Sattar N, Godsland IF et al (2015) Ethnicity-specific obesity cut-points in the development of type 2 diabetes. *Diabet Med* 32: 226–34

Diabetes Care

Metabolically healthy overweight and obese young men: What is the diabetes risk?

Readability	✓✓✓
Applicability to practice	✓✓✓
Originality	✓✓✓

1. The diabetes incidence risk was investigated among young obese and overweight men who were metabolically healthy (MH), i.e. the men had no other recognisable diabetes risk factors.
2. The study cohort comprised 33 939 men (mean age 30.9±5.2 years) from the Israel Defence Force, and totalled 210 282 person-years of follow-up.
3. The MH-obese cohort constituted 1.9% of the whole cohort and 14.7% of the obese cohort. They were characterised by younger age, mildly higher degree of physical activity and lower current and past rates of smoking compared with obese people with metabolic abnormalities.
4. There were 734 new cases of T2D during the follow-up. The incidence rates of diabetes among MH men were 1.15, 2.10 and 4.34 cases per 1000 person-years among lean, overweight, and obese participants respectively.
5. In an adjusted multivariable model, a higher diabetes risk was observed among MH-overweight men (hazard ratio [HR] 1.89; 95% confidence interval [CI], 1.25–2.86; $P<0.001$) and MH-obese men (HR 3.88; 95% CI, 1.94–7.77) compared with MH-normal weight participants.
6. One-unit increases of BMI were associated with a 10.6% increase in diabetes risk (95% CI, 1.06–1.12; $P<0.001$) across the entire BMI range.
7. The analysis demonstrates that among young men, an abnormal BMI is a risk factor for diabetes, independent of the presences of metabolic abnormalities.
8. To conclude, a healthy metabolic profile with no diabetes risk factors does not provide protection against incident diabetes associated with overweight and obesity in young men.

Twig G, Afek A, Derazne E et al (2014) Diabetes risk among overweight and obese metabolically healthy young adults. *Diabetes Care* 37: 2989–95

“A healthy metabolic profile with no diabetes risk factors does not provide protection against incident diabetes associated with overweight and obesity in young men.”