

Obesity

DIABETES CARE

Energy intake under-reporting is key to insulin-induced weight gain

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

- 1 Weight gain in diabetes has been attributed to decreases in resting energy expenditure (REE) and glucosuria.
- 2 This study investigated the contributing effect of energy intake to weight gain and positive energy balance in people with both type 1 and type 2 diabetes starting insulin therapy.
- 3 The authors studied 46 participants over 6 months, measuring changes in energy intake (by both self-report and weighed food intake), dietary behaviour, REE, physical activity, and glucosuria.
- 4 Changes in REE, physical activity and glucosuria were not associated with weight gain in people with either type 1 diabetes (4.1 ± 0.6 kg, $P=0.0001$) or type 2 diabetes (1.8 ± 0.8 kg, $P=0.02$).
- 5 The researchers concluded that an increase in energy intake is the most likely explanation for weight gain in patients receiving treatment with insulin.
- 6 Failure to identify increased energy intake in these patients is attributed to the significant underestimation of their self-reported food intake; under-reporting is generally associated with increased dietary restraint, which is characteristic of people with diabetes.
- 7 Energy intake under-reporting is widely acknowledged in people without diabetes. In those with diabetes, it might hold the key to understanding and addressing weight gain in these patients.

Ryan M, Livingstone MB, Ducluzeau PH et al (2008) Is a failure to recognize an increase in food intake a key to understanding insulin-induced weight gain? *Diabetes Care* **31**: 448–50

Is insulin-induced weight gain an excuse for overeating?



Jonathan Pinkney, Consultant Physician, Royal Cornwall Hospital, Truro, and Senior Lecturer, Peninsula Medical School

It is widely acknowledged that insulin leads to weight gain for many people with type 2 diabetes. But how well-founded is this belief, and is weight gain really inevitable? Many studies have confirmed modest weight gain; and the magnitude is greater in those who experience greater falls in HbA_{1c} (Davies and Khunti, 2008). This has always made good sense to me, in as much as uncontrolled diabetes is an energy wasting state that leads to weight loss; once diabetes is under control, energy is stored more efficiently and weight returns towards its previous level. Of course, there are no calories in an insulin injection, and so why should insulin lead to weight gain above previous body weight? Maybe it doesn't, and could this be our personal apprehensions about obesity?

Challenging the accepted wisdom, several studies, notably the large PREDICTIVE (Predictable Results and Experience in Diabetes through Intensification and Control to Target: an International Variability Evaluation) study (Dornhorst et al, 2008), showed that weight gain was absent during treatment with a once-daily long-acting analogue insulin. This appears to be in contrast to the experience with basal-bolus and biphasic insulin regimens, that usually lead to weight gain. PREDICTIVE data came from routine clinical practice, so this is not an unrepresentative population. So what is going wrong for people who do gain

significant amounts of weight?

The question considered by Ryan and colleagues (summarised alongside) is whether food intake contributes to weight gain for some individuals. While one could challenge this study on grounds of representativeness of the patient group and accuracy of some of the methodologies for determining energy expenditure, in conjunction with the sample size, the authors are right to identify food intake as the single variable that is hardest to quantify; and it seems fair to conclude that uncontrolled food intake is a risk factor for weight gain. We can learn much from these considerations. Yes, modest weight gain is common, but it is certainly not inevitable, and it is much less likely with long-acting insulins and more likely with short-acting insulins. For most people with diabetes starting on insulin in today's world, weight gain will come from food – especially in conjunction with short-acting insulin. Modern management of type 2 diabetes in obese and insulin-resistant individuals also requires that we call time on old-fashioned recommendations for frequent snacks and ingestion of plentiful carbohydrate. It is good practice, therefore that all insulin starts should be accompanied by a refresher dietary education session with a continued pursuit of healthy body weight.

Davies M, Khunti K (2008) Insulin management in overweight or obese type 2 diabetes patients: the role of insulin glargine. *Diabetes, Obesity and Metabolism* **2**: 42–9

Dornhorst A, Lüddecke HJ, Sreenan S et al (2008) Insulin detemir improves glycaemic control without weight gain in insulin-naïve patients with type 2 diabetes: subgroup analysis from the PREDICTIVE study. *International Journal of Clinical Practice* **62**: 659–65

‘Weight loss is lower in patients with diabetes undergoing gastric bypass surgery, but a high percentage of patients benefit from surgery with regards to disease resolution.’

EUROPEAN JOURNAL OF CLINICAL NUTRITION

Non-adherence to dietary recommendations

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

1 This study evaluated adherence to dietary recommendations for people with type 2 diabetes.

2 A total of 540 patients in six different Italian centres were included in this 3-day dietary analysis; records of overall calorie intake were compared with dietary recommendations.

3 With the exception of fibre, the mean calorie intake for each nutrient was close to the recommended amount; the percentage of patients who adhered to nutrient-specific recommendations, however, was unsatisfactory with regards to intake of saturated fat and fibre.

Rivellese AA, Boemi M, Cavalot F et al (2008) Dietary habits in type II diabetes mellitus: how is adherence to dietary recommendations? *European Journal of Clinical Nutrition* **62**: 660–4

INTERNATIONAL JOURNAL OF OBESITY

Exposure to obesity results in weight misperception

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

1 One of the problems with addressing obesity in children is that often they do not perceive themselves as obese or overweight.

2 This study examined the association of weight misperception in children exposed to obese or overweight parents or schoolmates.

3 The researchers studied 3665 children and adolescents and found that weight misperception was significantly increased in overweight and obese youths compared with non-overweight youths ($P < 0.001$).

4 Results showed that weight underestimation was significantly increased in cases of children and adolescents whose parents or schoolmates had an increased BMI.

5 Addressing the factors that affect weight misperception in children will thus help them adopt a healthier lifestyle behaviour, and is essential for prevention of obesity.

Maximova K, McGrath JJ, Barnett T et al (2008) Do you see what I see? Weight status misperception and exposure to obesity among children and adolescents. *International Journal of Obesity* **32**: 1008–15

PEDIATRICS

Childhood abuse can increase risk of adult obesity and type 2 diabetes

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

1 It is not known how difficult childhood backgrounds, such as having suffered abuse or neglect affects physical health in adult life.

2 In this prospective, longitudinal study, the authors collected data

including body mass index measures, waist circumference and glycosylated haemoglobin in 9310 adults at age 45 years.

3 Adversities during childhood, such as physical or verbal abuse, neglect and low parental interest or participation in education, increased the risk of obesity in adulthood by 20–50% and were also associated with increased glycosylated haemoglobin levels (≥ 6).

Thomas C, Hyponen E, Power C (2008) Obesity and type 2 diabetes risk in midadult life: the role of childhood adversity. *Pediatrics* **121**(Suppl 2): e1240–9

SURGERY FOR OBESITY AND RELATED DISEASES

Weight loss after gastric bypass surgery

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

1 Weight loss is recommended for people with diabetes trying to improve their glycaemic control.

2 The aim of this study was to determine if diabetes affects weight loss after gastric bypass surgery.

3 The study included 3193 participants, of whom 655 (20%) were diagnosed with diabetes; the differences between pre- and post-operative weight was compared between those with and without diabetes undergoing gastric bypass surgery.

4 One year after surgery, people with diabetes showed significantly lower percentages of excess weight loss ($P < 0.001$) and had increased BMIs ($P < 0.001$) compared with people without diabetes.

5 The percentage of excess weight loss in participants without diabetes was 67.6%; comparatively, participants with diet-controlled diabetes lost 63.5% of excess weight, patients treated with hypoglycaemic medication lost 60.5% and patients receiving insulin lost 60.5%.

6 Post-operative resolution of diabetes was similar in the patients with diet-controlled or hypoglycaemic therapy groups (89.9% and 82.7%, respectively), but lower in patients treated with insulin (53.3%).

7 Thus, weight loss is lower in patients with diabetes undergoing gastric bypass surgery, but a high percentage of patients benefit from surgery with regards to disease resolution.

Carbonell AM, Wolfe LG, Meadoer JG et al (2008) Does diabetes affect weight loss after gastric bypass? *Surgery for Obesity and Related Diseases* **4**: 441–4