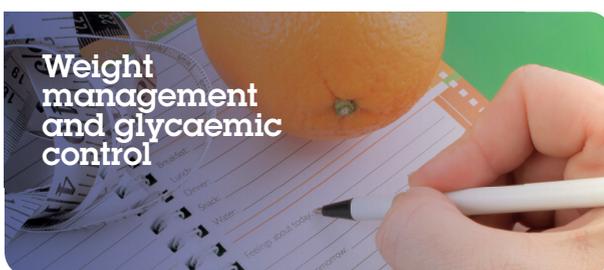


Nutrition and glycaemic control in Type 2 diabetes



This is the second Fact File in our series on Diabetes UK's nutrition guidelines for the prevention and management of diabetes. Here, **Pav Kalsi**, Senior Clinical Advisor at Diabetes UK, and **Gurpreet Kaur Harrid**, student dietitian, London Metropolitan University, take a closer look at the recommendations for glycaemic control and Type 2 diabetes

Glycaemic control is the cornerstone of diabetes management and strong evidence has demonstrated the positive effects of lifestyle changes on glycaemic control. Nutrition, physical activity and sustained weight loss are all important factors in achieving good glycaemic control.



As 80 to 90% of people with Type 2 diabetes are overweight and weight loss can reverse the metabolic abnormalities seen with Type 2 diabetes, weight loss should be the primary management strategy. Strong evidence has shown that weight loss of at least 5% is necessary to significantly improve glycaemic control. People who lose weight are more likely to achieve HbA1c targets than those whose weight is stable or those who gain weight. Therefore, looking at key weight loss strategies (discussed below) can be a great way of helping people manage their Type 2 diabetes.

More intensive weight loss of >15kg has been shown to achieve remission of Type 2 diabetes, where blood glucose levels are healthy without needing to take any diabetes

medication. Remission does not mean Type 2 diabetes has gone for good, just that it is being managed and that people should attend their regular health checks, as evidence is still unclear if remission can protect them from long-term diabetes complications. So far, the strongest evidence suggests that a low-calorie diet could help people lose weight and go into remission. For further information on how remission can be achieved safely through diet, it is advisable to speak to a dietitian or search www.diabetes.org.uk



As current evidence is limited for the advantages of a single dietary approach in the long-term management of hyperglycaemia in Type 2 diabetes, there are potentially a range of diets that may be suitable. The choice of diet should be based on factors such as, overall nutritional quality of diet, preference and acceptability of the diet, and the evidence for potential clinical benefits and any risk of harm. It is important to accept that there is not one diet that is perfect for everyone, so it can be useful to discuss with people the type of diets that are available, as well as

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“...total energy intake, weight loss and overall diet quality are key factors in achieving good glycaemic control and reducing the risk of complications”

considering what would be best suited for their lifestyle, without having to make drastic changes. A brief overview of the diets is given below. However, further information on the benefits and risk of each diet for individuals can be obtained from a dietitian.

One of the most commonly recommended diets for a person with Type 2 diabetes is the Mediterranean diet, which consists of plenty of fruit, vegetables, legumes, nuts, beans and cereals, fish and unsaturated fat being consumed, with relatively low intake of meat and some dairy foods. This diet has proven to lower HbA1c levels by 5mmol/mol in comparison with standard care or a low-fat diet.

There is currently a lot of interest in people wanting to try a low-carbohydrate diet. As yet, there is currently no agreed universal definition among researchers regarding the amount of carbohydrate in low-carb diets. One consistent definition has been <130g per day, but other definitions do exist. Current evidence suggests that this diet can be safe and effective for people with Type 2 diabetes wanting to lose weight and gain better glycaemic control. However, there is currently no consistent evidence to suggest that this approach is beneficial after 12 months. Dietitians can provide further detail on long-term safety of low-carb diets for diabetes, as well as how to plan for a low-carb diet.

Currently, replacing high glycaemic index (GI) foods with low GI foods has been shown to have a small beneficial effect on glycaemic control. Two large randomised controlled trials showed no difference in HbA1c between a low GI diet and a standard diet. However, some studies have shown an improvement in HbA1c by 4 to 6mmol/mol. This improvement could also be due to a simultaneous increase in fibre intake or a reduction in weight, so it's important to encourage these changes, too.

The efficacy of carbohydrate counting in people with Type 2 diabetes treated with insulin is largely unknown. Carbohydrate counting based on insulin to carbohydrate ratio has been shown to be as effective in reducing HbA1c as a simple algorithm based on self-monitored blood glucose. However, it is important to encourage people to manage their carbohydrate intake by use of exchanges and portion sizes, as this remains a key strategy in achieving glycaemic control.

Overall, it is important for people with Type 2 diabetes to understand that total energy intake, weight loss and overall diet quality are important factors in achieving good glycaemic control and can have a significant impact on reducing diabetes complications.



There are clear benefits of physical activity and exercise on glycaemic control, as well as on cardiovascular risk reduction, with systematic reviews showing improvements in HbA1c of between 5 to 8 mmol/mol. Discuss these benefits with your patients and motivate them to aim for at least 150 minutes of moderate to vigorous activity over at least three days a week. Both aerobic and resistance exercise have been shown to improve glycaemic control. They should be encouraged to participate in both forms of activity to provide greater benefit.

Additional reduction in HbA1c levels can be seen from high-intensity forms of exercise over lower-intensity exercise. Even though the difference in reductions is small, this may reduce HbA1c levels in fewer exercise sessions, which, for some people, may allow greater flexibility.

Many people with Type 2 diabetes may ask whether it is safe for them to exercise, and the answer is 'yes'. For people treated with sulphonylureas or insulin, exercising is safe. However, care should be taken to minimise the impact of hypoglycaemia, which can occur up to 24 hours after physical activity. If people are concerned, they should be referred to their nurse or GP for advice on avoiding hypos.

To conclude, current evidence has shown people with Type 2 diabetes can improve glycaemic control in the following ways. Healthcare professionals should support people with Type 2 diabetes to make appropriate changes.

- **Lose and maintain at least 5% of body weight in people who are overweight. This can be achieved by reducing energy intake and increasing energy expenditure.**
- **Aim for at least 150 minutes of moderate to vigorous physical activity, over at least three days.**
- **Aim for a weight loss of 15kg soon after diagnosis, for Type 2 diabetes remission.**
- **Adopt a Mediterranean-style diet or equivalent healthy eating pattern.**
- **Offer individualised education to support people to identify and quantify their dietary carbohydrate intake, encourage low glycaemic index (GI) foods and consider reducing the total amount of carbohydrates.**

i **Dyson PA, Twenefour D, Breen, C et al (2018). Diabetes UK evidence-based nutrition guidelines for the prevention and management of diabetes. *Diabetic Medicine*, 35(5), 541-547. doi: 10.1111/dme.13603**

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