Diabetes: Diet & lifestyle

1. Background information

Dietary interventions have been shown to be effective for:

- Improving glycaemic control by reducing HbA_{1c} by 5.5 to 22 mmol/mol (0.5 to 2.0%) in type 2 diabetes (T2D).[1]
- Supporting weight management with weight losses typically ranging from 3–5%.[2]

The Diabetes Remission Clinical Trial (DiRECT), which employed a low-calorie intensive lifestyle intervention within primary care, has shown the potential for T2D remission in certain individuals and is closely linked to sustained weight loss of at least 10 kg.[3]

2. Evidence

Studies investigating the impact of specific dietary interventions are fraught with difficulty. It is almost impossible to attribute improvements in body weight and glycaemic control to a particular diet or nutrient when so many factors may be contributing to the observed effect.

Currently, there is insufficient evidence to support any specific dietary intervention over another and it is most likely to be the degree of adherence that predicts outcomes rather than the dietary strategy itself.

A successful strategy is most likely to be one that addresses the broader picture – emotional reasons for eating, willingness to change, activity levels, external influences and so on.

Guidelines

The key role diet and lifestyle should play in the management of T2D is highlighted in all of the guidelines. NICE (NG28) makes the following recommendations:[4]

- Provide individualised and ongoing nutritional advice from a healthcare professional (HCP) with specific expertise and competencies in nutrition.
- Dietary advice should be sensitive to the person's needs, culture and beliefs, their willingness to change and the effects on their quality of life.
- Emphasise the healthy balanced eating that is applicable to the general population.
- Encourage high-fibre, low-glycaemic-index sources of carbohydrate in the diet, such as fruit, vegetables, wholegrains and pulses; include low-fat dairy products and oily fish; and control the intake of foods containing saturated and trans fatty acids.
- Dietary advice should be integrated within a personalised diabetes management plan to include other aspects of lifestyle modification, such as increasing physical activity and losing weight.
- Set an initial body weight loss target of 5–10% in those who are overweight.
- Individualise recommendations for carbohydrate and alcohol intake, and meal patterns.
- Limited substitution of sucrose-containing foods for other carbohydrate in the meal plan is allowable, but avoid excess energy intake.
- Discourage the use of foods marketed specifically for people with diabetes.

Diabetes UK guidance
In March 2018 Diabetes UK published their updated nutritional guidelines for people with diabetes[5] with advice to aim for a Mediterranean-style diet or equivalent healthy eating pattern. Key features of this approach include:[6]

- ☐ Decreasing salt intake (<6 g/day)
- ☐ Eating two portions of oily fish each week
- ☐ Eating more wholegrains, fruit and vegetables, fish, nuts and legumes (pulses)
- ☐ Eating less red and processed meat, refined carbohydrates and sugar sweetened beverages
- ☐ Replacing saturated fats with unsaturated fats, and limit intakes of trans fatty acids
- ☐ Limiting alcohol intake to <14 units a week

In addition, people with diabetes should aim for at least 150 minutes per week of moderate to vigorous physical activity, over at least 3 days.

It is important to emphasise that while not advocating low-carbohydrate diets for people with diabetes over other approaches, Diabetes UK do recommend that people with diabetes:[5]

- ☐ Try to identify and quantify dietary carbohydrate intake, aim for foods with a low glycaemic index and consider reducing the total amount of carbohydrates.

Other guidance

National guidance on healthy eating is commonly depicted in the Eatwell Guide.[7] This guide has, however, been widely criticised particularly for encouraging people to base their meals on starchy carbohydrate foods – the very food group that has the greatest impact on blood glucose levels.

The recently published American Diabetes Association Consensus on Nutritional Strategies for Prevention and Management of Diabetes[8] supports the view that "One size does not fit all" and mentions a variety of eating patterns that may work including the Mediterranean diet, DASH (Dietary Approaches to Stop Hypertension), vegetarian and low-carbohydrate. Other key messages include:

- ☐ There is no ideal percentage of calories from carbohydrate, protein and fat for all people with or at risk of diabetes. Therefore, macronutrient distribution should be based on individualised assessment of current eating patterns, preferences, and metabolic goals.
- ☐ To achieve glycaemic targets self-monitor and adjust carbohydrate intake.
- ☐ Emphasise non-starchy vegetables.
- ☐ Minimise added sugars and refined grains.
- ☐ Reducing overall carbohydrate intake with low, or very low-carbohydrate eating plans is a viable approach.

However:

- ☐ Low-carbohydrate eating patterns, especially very low-carbohydrate eating patterns, can cause diuresis and reduction in blood pressure as well as a rapid reduction in blood glucose, therefore consultation with a knowledgeable HCP is emphasised to adjust medication appropriately.[9]
- ☐ Sufficient intake of dietary fibre (minimum of 14 g of fibre per 1,000 kcal) with at least half obtained from whole intact grains with other sources including non-starchy vegetables, avocados, fruit, berries and pulses.[8]
- ☐ Intermittent fasting, is a way of eating that focuses more on when you eat (i.e. consuming all daily calories in set hours during the day) than what you eat and may improve insulin sensitivity.[9]
- ☐ A total fat intake of 20–35% is defined as acceptable, though it is acknowledged that eating patterns that replace certain carbohydrate foods with those higher in total

fat have demonstrated greater improvements in glycaemia and certain cardiovascular disease risk factors (serum HDL cholesterol: [HDL-C] and triglycerides), compared with lower fat diets: this is most likely related to the types or quality of fats rather than the total amount of fat.[9]

- [ ] Foods containing synthetic sources of trans fats should be minimised to the greatest extent possible.[8]

3. Targets

- [ ] For adults with T2D who are overweight, NICE recommend setting an initial body weight loss target of 5–10%[4,10]
- [ ] For T2D remission, aim for weight loss of approximately 15 kg[5]

4. Process

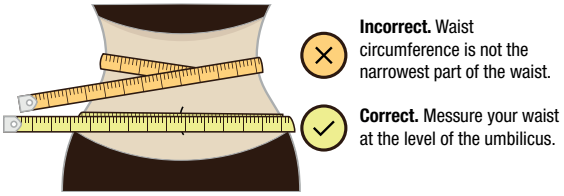
- [ ] **Raise the subject of weight with people who are overweight or obese[11]**
  Refer to The Strategies to Overcome and Prevent (STOP) Obesity Alliance toolkit available at https://stop.publichealth.gwu.edu

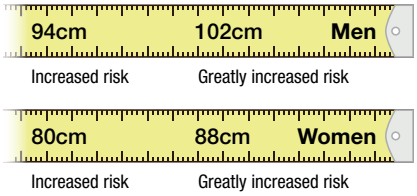
- [ ] **Calculate BMI**
  An annual measure of BMI is one of the nine annual care processes recommended by NICE and measured within the National Diabetes Core Audit (https://www.diabetes.org.uk/Professionals/Resources/National-Diabetes-Audit/NDA-reports)[12] but is NOT a QOF indicator.

Obesity classification criteria[10]

Classification	BMI (kg/m^2)
Healthy weight	18.5–24.9
Overweight	25.0–29.9
Obesity I	30.0–34.9
Obesity II	35.0–39.9
Obesity III	≥40.0

- [ ] **Measure waist circumference**
  BMI does not differentiate between fat and lean body mass whereas waist circumference correlates with visceral/intrabdominal fat and cardiometabolic health risk.[13]





During the consultation:[10]

- [ ] Share BMI and waist measurements.
- [ ] Discuss the health benefits of weight loss.
- [ ] Explore perceived reasons for weight gain.
- [ ] Challenge common beliefs about diets.
- [ ] Help people understand the benefits of physical activity.
- [ ] Assess a person's readiness to make lifestyle changes.
- [ ] Support an individual to make realistic and sustainable lifestyle changes with goal-setting.
- [ ] Signpost to available resources and support.

5. Useful resources

- For a quick reference guide for HCPs on carbohydrate awareness refer to Diggle J (2019) How to improve carbohydrate awareness. *Diabetes & Primary Care* 21: 85–6.
- For a quick reference guide for HCPs on recommending physical activity safely refer to Yates T (2019) How to recommend physical activity to people with diabetes safely. *Diabetes & Primary Care* 21:113–4.
- For a practical guide to adapting diabetes medication for low-carbohydrate management of type 2 diabetes refer to: Murdoch C et al (2019) *Br J Gen Pract*; 69: 360–1.
- Carbs & Cals is a unique way of counting carbs, calories and other nutrients. The carb and calorie counter book and app show thousands of photos of food portions, with the nutritional information shown in colour-coded circles around each photo. www.carbsandcals.com
- NICE-endorsed infographics explaining how carbohydrates in foods may affect blood glucose: www.phcuk.org/nice

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