

# Global Guideline for Type 2 Diabetes

## Chapter 5: Lifestyle management

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## Recommendations

### ■ Standard care

- LS1 Advise people with Type 2 diabetes that lifestyle modification, by changing patterns of eating and physical activity, can be effective in controlling many of the adverse risk factors found in the condition.
- LS2 Provide access to a dietitian (nutritionist) or other health-care professional trained in the principles of nutrition, at or around the time of diagnosis, offering one initial consultation with two or three follow-up sessions, individually or in groups.
- LS3 Provide ongoing counselling and assessment yearly as a routine, or more often as required or requested, and when changes in medication are made.
- LS4 Individualize advice on food/meals to match needs, preferences, and culture.
- LS5 Advise control of foods with high amounts of sugars, fats or alcohol.
- LS6 Integrate drug therapy, where needed, into the individual's chosen lifestyle.
- LS7 For people choosing to use fixed insulin regimens, advise consistent carbohydrate intake at meals. For these people, as well as those on flexible meal-time + basal insulin regimens, offer education on assessment of carbohydrate content of different types of foods.
- LS8 Provide advice on the use of foods in the prevention and management of hypoglycaemia where appropriate.
- LS9 Introduce physical activity gradually, based on the individual's willingness and ability, and setting individualized and specific goals.
- LS10 Encourage increased duration and frequency of physical activity (where needed), up to 30-45 minutes on 3-5 days per week, or an accumulation of 150 minutes of physical activity per week.
- LS11 Provide guidelines for adjusting medications (insulin) and/or adding carbohydrate for physical activity.

- LS12 Both nutrition therapy and physical activity training should be incorporated into more broadly based diabetes self-management training programmes (see *Education*).
- LS13 For weight reduction in people with Type 2 diabetes who are obese, it may sometimes be appropriate to consider weight loss medications as adjunct therapy.

### ■ Comprehensive care

- LS<sub>c</sub>1 Advice on lifestyle management will in general be as for *Standard care*.
- LS<sub>c</sub>2 Education might also be provided as a routine for special topics such as label reading, restaurant eating, special occasions.
- LS<sub>c</sub>3 Intensive personal counselling might be offered on a regular basis with a health-care professional specifically trained in the principles of nutrition, to facilitate maintenance of lifestyle modifications and support weight loss or weight maintenance.
- LS<sub>c</sub>4 Exercise testing could be available for those considering programmes of physical activity.
- LS<sub>c</sub>5 Aerobic and resistance training sessions might be available, with individualized testing and education by exercise specialists, and continued support from them.

### ■ Minimal care

- LS<sub>M</sub>1 The principles of lifestyle management are as for *Standard care*.
- LS<sub>M</sub>2 Offer basic nutrition guidelines (healthy food choices) for improved glycaemic control.
- LS<sub>M</sub>3 Advise on ways to reduce energy intake (carbohydrate, fat, alcohol as appropriate).
- LS<sub>M</sub>4 Provide nutritional counselling from someone with training in nutrition therapy, around the time of diagnosis, then as assessed as being necessary, or more often as required or requested.
- LS<sub>M</sub>5 Advise and encourage participation in regular physical activity.

## Rationale

People with Type 2 diabetes often have lifestyles (eating and physical activity) which contribute to their problem. It is essential they receive help soon after diagnosis to consider how they may modify lifestyle in ways which enable them to take control of their blood glucose, blood lipid and blood pressure abnormalities, even if they also require drug therapy in the short or longer term (see *Glucose control: therapy*).

## Evidence-base

Evidence supports the effectiveness of nutrition therapy and physical activity in the prevention and management of Type 2 diabetes [1-4]. This is reflected in the current ADA standards of medical care [5] (which draw on a detailed evidence-based technical review on nutrition [6] and a more recent review on physical activity [2]) and in the Canadian guideline [7]. An earlier UK guideline [8] pointed out that

involvement in a lifestyle study, even in the control group, can be beneficial, but that lifestyle modification can be difficult to achieve and maintain. That guideline expressed some concern over methodological problems in trials of complex and multifactorial interventions. Most studies have been short-term (a problem currently being addressed in a US trial), and we do not yet know the ongoing contribution of lifestyle measures once medication has been introduced, or what kind of support is required on a continuing basis. It may be noted that in the UKPDS initial dietary education was very effective in lowering blood glucose after diagnosis, and that some people were then able to maintain target glucose control for many years by diet modification alone [9,10].

Randomized controlled trials and outcome studies of medical nutrition therapy (MNT) in the management of Type 2 diabetes have reported improved glycaemic outcomes (HbA<sub>1c</sub> decreases of 1.0-2.0 %, depending on the duration of diabetes). MNT in these studies was provided by dietitians (nutritionists) as MNT only or as MNT in combination with diabetes self-management training. Interventions included reduced energy intake and/or reduced carbohydrate/fat intake, and basic nutrition and healthy food choices for improved glycaemic control. Outcomes of the interventions were measurable by 3 months [6,7,11-15].

In a meta-analysis of non-diabetic people, MNT restricting saturated fats to 7-10 % of daily energy and dietary cholesterol to 200-300 mg daily resulted in a 10-13 % decrease in total cholesterol, 12-16 % decrease in LDL cholesterol and 8 % decrease in triglycerides [16]. An expert committee of the American Heart Association documented that MNT typically reduced LDL cholesterol 0.40-0.65 mmol/l (15-25 mg/dl) [17]. Pharmacological therapy should be considered if goals are not achieved between 3 and 6 months after initiating MNT.

A meta-analysis of studies of non-diabetic people reported that reductions in sodium intake to  $\leq 2.4$  g/day decreased blood pressure by 5/2 mmHg in hypertensive subjects. Meta-analyses, clinical trials and expert committees support the role of reduced sodium intake, modest weight loss (4.5 kg), increased physical activity, a low-fat diet that includes fruits, vegetables and low-fat dairy products, and moderate alcohol intake, in reducing blood pressure [18].

A meta-analysis of exercise (aerobic and resistance training) reported an HbA<sub>1c</sub> reduction of 0.66 %, independent of changes in body weight, in people with Type 2 diabetes [19]. In long-term prospective cohort studies of people with Type 2 diabetes, higher physical activity levels predicted lower long-term morbidity and mortality and increases in insulin sensitivity. Interventions included both aerobic exercise (such as walking) and resistance exercise (such as weight-lifting) [2,20,21].

The Canadian guideline has a section on the management of obesity in Type 2 diabetes, which addresses lifestyle measures and also drug and surgical options [7].

## Consideration

It is noted that in general costs of educational initiatives to change lifestyle are low, because unlike drug therapy they are provided on an intermittent rather than continuing basis. From a health-provider perspective many of the costs fall outside their budget, healthier foods and exercise programmes and equipment generally being a cost met directly by the person with diabetes. For these reasons, and because, for glucose control, the gain from lifestyle modification is greater than that from any individual therapy, lifestyle measures are heavily promoted. Lifestyle modification is, however, sometimes difficult for the individual to maintain in the long term, or to develop further after early changes have been made. Where professional nutritionists are unavailable, it was noted that other health-care professionals should be trained in basic nutritional and other lifestyle education.

## Implementation

Recognition of the importance and cost-effectiveness of lifestyle interventions should drive allocation of resources required for care and self-management training. Implementation demands knowledgeable and competent personnel, and dietitians/nutritionists and other health-care professionals may require training to be effective providers of lifestyle interventions. Consistency of approach to lifestyle issues across the diabetes care team is an important principle here. A process is needed to enable people to gain access to services as required.

Self-management counselling in nutrition (for individuals or groups) has four components: 1. assessment; 2. identification of the nutrition problem; 3. intervention that integrates nutrition therapy into overall diabetes management and implementation of self-management training; and 4. nutrition monitoring and evaluation of outcomes. A similar approach needs to be taken for physical activity. Development of educational materials, or adaptation of them from elsewhere, is needed.

## Evaluation

Services should be able to show the availability of appropriately trained personnel, and records that individuals with diabetes have contact with them around the time of diagnosis and at regular intervals thereafter. Educational

support materials should also be demonstrable. Outcomes can be assessed in terms of improvement in appropriate food choices and amounts, and responses to questioning about physical activity levels and, where appropriate, alcohol consumption. Metabolic measures are, however, likely to be confounded by changes in drug therapies.

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