

## Preventing type 2 diabetes overview

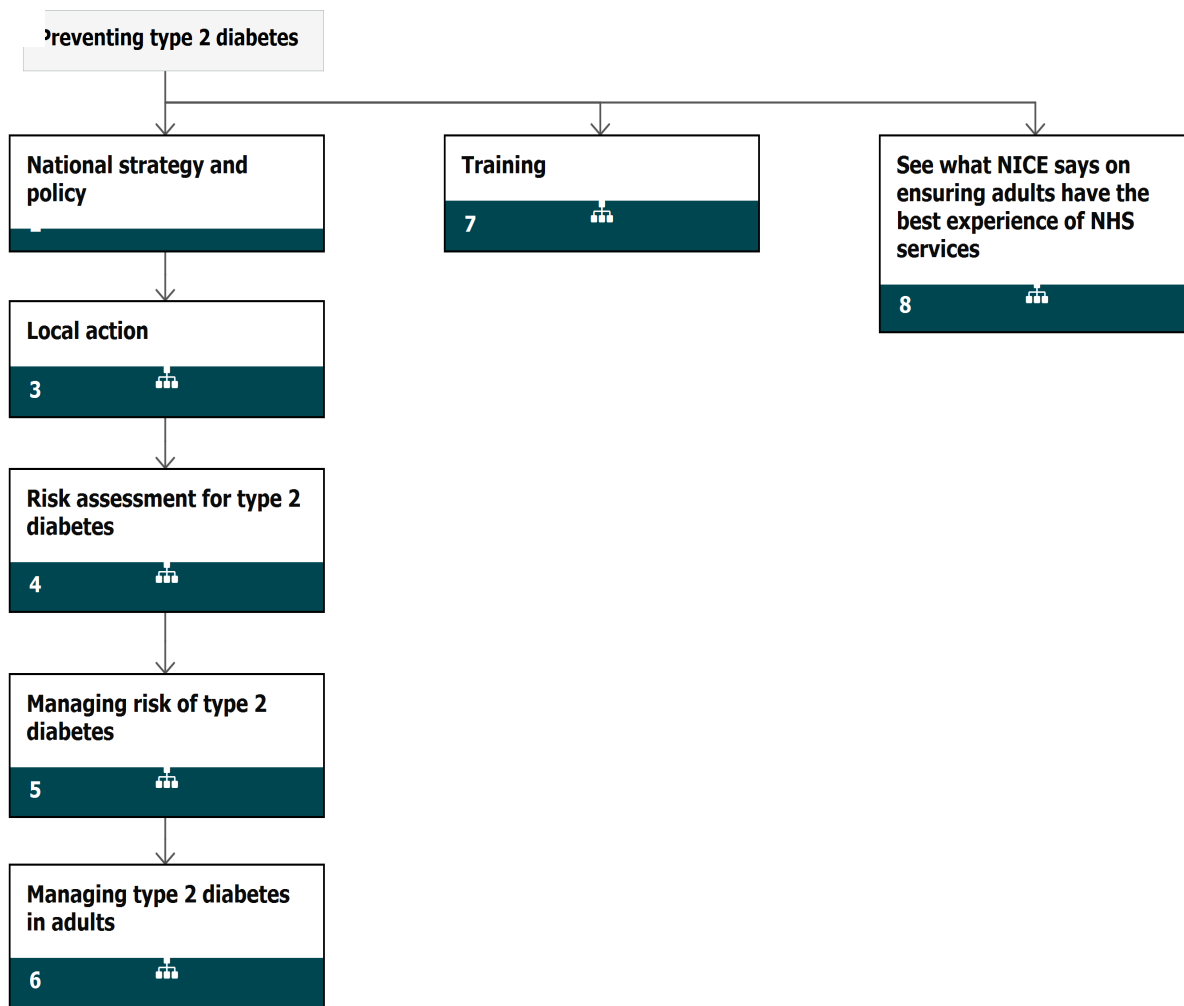
NICE Pathways bring together everything NICE says on a topic in an interactive flowchart. NICE Pathways are interactive and designed to be used online.

They are updated regularly as new NICE guidance is published. To view the latest version of this NICE Pathway see:

<http://pathways.nice.org.uk/pathways/preventing-type-2-diabetes>

NICE Pathway last updated: 08 November 2018

This document contains a single flowchart and uses numbering to link the boxes to the associated recommendations.



**1 Preventing type 2 diabetes**

No additional information

**2 National strategy and policy**

[See Preventing type 2 diabetes / National strategy and policy to prevent type 2 diabetes](#)

**3 Local action**

[See Preventing type 2 diabetes / Local action to prevent type 2 diabetes](#)

**4 Risk assessment for type 2 diabetes**

[See Preventing type 2 diabetes / Risk assessment for type 2 diabetes](#)

**5 Managing risk of type 2 diabetes**

[See Preventing type 2 diabetes / Managing risk of type 2 diabetes](#)

**6 Managing type 2 diabetes in adults**

[See Type 2 diabetes in adults](#)

**7 Training**

[See Preventing type 2 diabetes / Training to prevent type 2 diabetes](#)

**8 See what NICE says on ensuring adults have the best experience of NHS services**

[See Patient experience in adult NHS services](#)

## **Brief advice**

Typically, for diabetes prevention, brief advice might consist of a 5–15 minute consultation. The aim is to help someone make an informed choice about whether to make lifestyle changes to reduce their risk of diabetes. The discussion covers what that might involve and why it would be beneficial. Practitioners may provide written information in a range of formats and languages about the benefits and, if the person is interested in making changes, may discuss how these can be achieved and sustained in the long term.

## **Brief intervention**

Brief interventions for diabetes prevention can be delivered by GPs, nurses, healthcare assistants and professionals in primary healthcare and the community. They may be delivered in groups or on a one-to-one basis. They aim to improve someone's diet and help them to be more physically active. A patient-centred or 'shared decision-making' communication style is adopted to encourage people to make choices and have a sense of 'ownership' of their lifestyle goals and individual action plans. Providers of brief interventions should be trained in the use of evidence-based behaviour-change techniques for supporting weight loss through lifestyle change.

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## **Community**

A group of people who have common characteristics. Communities can be defined by location, race, ethnicity, age, occupation, a shared interest (such as using the same service), a shared belief (such as religion or faith) or other common bonds. A community can also be defined as a group of individuals living within the same geographical location (such as a hostel, a street, a ward, town or region).

## Community champions

Community champions are inspirational figures, community entrepreneurs, mentors or leaders who 'champion' the priorities and needs of their communities and help them build on their existing skills. They drive forward community activities and pass on their expertise to others. They also provide support, for example, through mentoring, helping people to get appropriate training and by helping to manage small projects.

## Computer-based risk-assessment tool

These tools identify a set of risk characteristics in patient health records. They can be used to interrogate GP patient databases and provide a summary score to indicate someone's level of risk. Examples include the Cambridge diabetes risk score and the Leicester practice score.

## Diabetes prevention programme

Diabetes prevention programmes comprise two integrated components: first, risk identification services and second, intensive lifestyle-change programmes. Participants are acknowledged as the decision-makers throughout the process. Also see 'Intensive lifestyle-change programmes'.

## Glucose

Glucose comes from digesting carbohydrate and is also produced by the liver. Carbohydrate comes from many different kinds of food and drink, including starchy foods such as bread, potatoes and chapatis; fruit; some dairy products; sugar and other sweet foods<sup>1</sup>.

## HbA<sub>1c</sub>

Glycated haemoglobin (HbA<sub>1c</sub>) forms when red cells are exposed to glucose in the plasma. The HbA<sub>1c</sub> test reflects average plasma glucose over the previous 8–12 weeks. Unlike the oral glucose tolerance test, an HbA<sub>1c</sub> test can be performed at any time of the day and does not require any special preparation such as fasting. HbA<sub>1c</sub> is a continuous risk factor for type 2 diabetes. This means there is no fixed point when people are (or are not) at risk. The World Health Organization recommends a level of 48 mmol/mol (6.5%) for HbA<sub>1c</sub> as the cut-off point for diagnosing type 2 diabetes in non-pregnant adults. For the purposes of this guidance, the range 42–47 mmol/mol (6.0–6.4%) is considered to be 'high risk'.

<sup>1</sup> Diabetes UK (2010) [Guide to diabetes: what is diabetes?](#).

## Insulin

Insulin is the hormone produced by the pancreas that allows glucose to enter the body's cells, where it is used as fuel for energy. It is vital for life<sup>1</sup>.

## Intensive lifestyle-change programme

A structured and coordinated range of interventions provided in different venues for people identified as being at high risk of developing type 2 diabetes (following a risk assessment and a blood test). The aim is to help people become more physically active and to improve their diet. If the person is overweight or obese, the programme should result in weight loss. Programmes may be delivered to individuals or groups (or involve a mix of both) depending on the resources available. They can be provided by primary care teams and public, private or community organisations with expertise in dietary advice, weight management and physical activity.

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## Lay workers

People recruited from the local community or subgroup of the population to assist in the delivery of an intervention to a group of people who they identify with and are knowledgeable about. They might be peers or from the wider community but they are not professional health or public health workers.

## Level of risk

The terms 'high', 'intermediate' and 'low' risk are used to refer to the results from a risk assessment tool. These terms are used instead of specific numerical scores because the tools have different scoring systems. The term 'moderate risk' is used to denote a high risk assessment score where a blood test did not confirm that risk (FPG less than 5.5 mmol/l or HbA<sub>1c</sub> less than 42 mmol/mol [6.0%]). A fasting plasma glucose of 5.5–6.9 mmol/l or an HbA<sub>1c</sub>

<sup>1</sup> Diabetes UK (2010) [Guide to diabetes: what is diabetes?](#).

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level of 42–47 mmol/mol [6.0–6.4%] indicates high risk.

### **Moderate-intensity physical activity**

Moderate-intensity physical activity requires an amount of effort and noticeably accelerates the heart rate. Examples include brisk walking, housework and domestic chores. On an absolute scale, moderate-intensity is defined as physical activity that is between 3 and 6 metabolic equivalents.

### **OGTT**

An oral glucose tolerance test involves measuring the blood glucose level after fasting, and then 2 hours after drinking a standard 75 g glucose drink. Fasting is defined as no calorie intake for at least 8 hours. More than one test on separate days is required for diagnosis in the absence of hyperglycaemic symptoms.

### **Local authority departments**

includes adult social care, education, environmental health, planning and public transport

### **Overweight and obesity**

A BMI of between 18.5–24.9 is classified as a healthy weight. A BMI of 25–29.9 is classified as overweight. A BMI of 30 or above is classified as obese. For further details, refer to NICE's guidance on [obesity prevention](#).

### **Physical activity**

full range of human movement, from competitive sport and exercise to active hobbies, walking, cycling and the other physical activities involved in daily living

### **Pre-diabetes**

Pre-diabetes refers to raised (but not in the diabetic range) blood glucose levels (also known as non-diabetic hyperglycaemia, impaired glucose regulation). It indicates the presence of impaired fasting glucose and/or impaired glucose tolerance. People with pre-diabetes are at increased risk of getting type 2 diabetes. They are also at increased risk of a range of other conditions including cardiovascular disease.



## **Providers of intensive lifestyle-change programmes**

includes primary healthcare teams and specialists who provide advice and support on physical activity, weight management and diet in the NHS and other public, private, voluntary and community organisations

## **Risk of type 2 diabetes**

Particular conditions can increase the risk of type 2 diabetes. These include: cardiovascular disease, hypertension, obesity, stroke, polycystic ovary syndrome, a history of gestational diabetes and mental health problems. In addition, people with learning disabilities and those attending accident and emergency, emergency medical admissions units, vascular and renal surgery units and ophthalmology departments may be at high risk. NICE's guidance on non-alcoholic fatty liver disease (NAFLD) notes that NAFLD increases the risk of type 2 diabetes.

## **Socioeconomic groups**

A person's socioeconomic group is defined by a combination of their occupation, income level and education level. There is a strong relationship between socioeconomic group and health, with people from lower socioeconomic groups generally experiencing poorer health than those from higher socioeconomic groups.

## **Type 2 diabetes**

previously termed non-insulin dependent diabetes, results from reduced tissue sensitivity to insulin (insulin resistance) and/or reduced insulin production

## **Vigorous-intensity physical activity**

Vigorous-intensity physical activity requires a large amount of effort, causes rapid breathing and a substantial increase in heart rate. Examples include running and climbing briskly up a hill. On an absolute scale, vigorous intensity is defined as physical activity that is above 6 metabolic equivalents.

## **Vulnerable groups**

Adults from vulnerable groups whose risk of type 2 diabetes may be increased by a medical condition, or who may not realise they are at risk or who are less likely to access healthcare services. This includes people with severe mental health problems, learning disabilities,

physical disabilities or sensory disabilities; people who live in hostels, nursing or residential homes, residential mental health or psychiatric care units, secure hospitals, prisons or remand centres; and people who are part of a mobile population such as travellers, asylum seekers and refugees.

## Weight management

In these recommendations, the term weight management includes: assessing and monitoring body weight; preventing someone from becoming overweight (BMI of 25–29.9 kg/m<sup>2</sup>, or 23–27.4 kg/m<sup>2</sup> if they are of South Asian or Chinese descent); preventing someone from becoming obese (BMI greater than or equal to 30 kg/m<sup>2</sup>, or 27.5 kg/m<sup>2</sup> or above if they are of South Asian or Chinese descent); helping someone who is overweight or obese to achieve and maintain a 5–10% weight loss and progress to a healthy weight (BMI of 18.5–24.9 kg/m<sup>2</sup>, or 18.5–22.9 kg/m<sup>2</sup> if they are of South Asian or Chinese descent) by adopting a healthy diet and being physically active.

## WHO

World Health Organization

## Your responsibility

### Guidelines

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services,

and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

### **Technology appraisals**

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health professionals are expected to take these recommendations fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this interactive flowchart is at the discretion of health professionals and their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Commissioners and/or providers have a responsibility to provide the funding required to enable the recommendations to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

### **Medical technologies guidance, diagnostics guidance and interventional procedures guidance**

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take these recommendations fully into account. However, the interactive flowchart does not override the individual responsibility of healthcare professionals to

make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the recommendations, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this interactive flowchart should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.