

# Preventing excess weight gain

NICE guideline

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## Your responsibility

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.

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This guideline partially replaces CG43.

## Overview

This guideline covers behaviours such as diet and physical activity to help children (after weaning), young people and adults maintain a healthy weight or help prevent excess weight gain. The aim is to prevent a range of diseases and conditions including cardiovascular disease and type 2 diabetes and improve mental wellbeing.

The recommendations support those made in other NICE guidelines about how to prevent people becoming overweight or obese. This includes interventions and activities in which weight is not the primary outcome, such as those aimed at preventing cardiovascular disease or type 2 diabetes, improving mental wellbeing or increasing active travel.

### *Who is it for?*

- Commissioners and practitioners
- Members of the public

## What is this guideline about?

This guideline makes recommendations on behaviours that may help people maintain a healthy weight or prevent excess weight gain. These recommendations support those made in other NICE guidelines about effective interventions and activities to prevent people becoming overweight or obese. This includes interventions and activities in which weight is not the primary outcome, such as those aimed at preventing cardiovascular disease or type 2 diabetes, improving mental wellbeing or increasing active travel.

Excess weight may increase the risk of coronary heart disease, hypertension, liver disease, osteoarthritis, stroke, type 2 diabetes, and some cancers such as breast, colon, endometrial and kidney cancer. People who are overweight or obese may also experience mental health problems, stigmatisation and discrimination because of their weight.

The guideline covers children (after weaning) and adults. It does not cover the particular needs of women during pregnancy or people who have conditions that increase their risk of being overweight or obese.

The guideline is for practitioners who use related NICE guidance and need advice on behaviours that may help people maintain a healthy weight and prevent excess weight gain. This includes practitioners who provide information on maintaining a healthy weight or preventing excess weight gain and people who commission, design, implement or evaluate interventions that directly or indirectly help different population groups maintain a healthy weight or prevent excess weight gain. (For further details, see [related NICE guidance](#)). In addition, it may be of interest to members of the public.

Note that the guideline recommendations are based on the best available evidence. Practical examples are based on wider population recommendations or extrapolation of the available evidence.

See [about this guideline](#) for details of how the guideline was developed and its current status.

## 1 Recommendations

This guideline replaces section 1.1.1 of [Obesity](#), NICE guideline CG43 (2006).

### *Who should take action*

All those who provide information to help different population groups maintain a healthy weight or prevent excess weight gain. This includes practitioners providing information or advice to children and adults in primary care, community based settings, early years settings, schools and workplaces. The guideline is also aimed at everyone who commissions, designs, implements or evaluates activities and interventions that directly or indirectly help these population groups.

Read this guideline in conjunction with other NICE guidance (see [related NICE guidance](#)) for recommendations on effective activities and interventions. This includes how to tailor activities and information for specific groups, such as for people with disabilities or from different age, gender, socioeconomic, or ethnic groups.

### *1 Encourage people to make changes in line with existing advice*

Encourage everyone to:

- Establish and maintain a combination of increased physical activity and healthier [dietary habits](#) to achieve and maintain [energy balance](#) (see recommendations 2 and 3).
- Follow existing advice on the [recommended level of physical activity](#) because it is likely to help increase energy expenditure and reduce the risk of diseases associated with excess weight. (For existing advice on physical activity see [NHS Choices](#).)
- Follow existing advice on healthy eating because it will make it easier to have an appropriate [energy intake](#). (For existing advice on healthy eating see [NHS Choices](#).)
- Avoid extreme physical activity or dietary behaviours (such as obsessively exercising or aiming to avoid all carbohydrates) because they are difficult to sustain and may not be accompanied by wider improvements in health.
- Identify perceptions, habits or situations that may undermine efforts to maintain a healthy weight or prevent excess weight gain in the long term, and offer practical examples of helpful alternatives. These may include:
  - drinking water instead of drinks containing [free sugars](#) (including sports drinks) while



- – being physically active
- not overestimating how much physical activity is being done
- avoiding overeating after being physically active
- maintaining healthier physical activity and dietary habits most days (including at weekends) and during holidays (for example, the school summer holiday)
- avoiding giving 'sweet treats' as a reward or giving them regularly as gifts
- checking food and drink labels as a guide to appropriate portion sizes
- being aware that even food and drinks perceived as 'healthy' (such as olive oil, fruit juice, nuts) can contribute to weight gain if large amounts are consumed.

## *2 Encourage physical activity habits to avoid low energy expenditure*

Encourage people to be more physically active and to reduce sedentary behaviour. Encourage people to build activity into daily life, developing routines and habits that gradually increase the amount and intensity of activity they do. This may include:

- Increasing regular walking, particularly brisk walking, or cycling as a form of active travel (to school, work or other local destinations). (See NICE's guideline on [walking and cycling](#).)
- Increasing activities during leisure time and breaks at work or school (including some periods of [moderate-to-vigorous physical activity](#)). This could include any form of physical activity, sport or exercise such as walking, cycling, swimming, dancing or gardening.
- Increasing activity as part of daily routines (such as taking regular breaks from sitting at home or work, and taking the stairs instead of the lift).
- Reducing TV viewing and other screen time. Advise people that any strategy that reduces TV viewing and other leisure screen time may be helpful (such as TV-free days or setting a limit to watch TV for no more than 2 hours a day).

## *3 Encourage dietary habits that reduce the risk of excess energy intake*

Encourage everyone to follow a dietary pattern that is mainly based on vegetables, fruits, beans and pulses, [wholegrains](#) and fish. In addition, everyone should be encouraged to:

- Reduce the overall [energy density](#) of the diet. Practical ways to achieve this may include:

- - reducing how often energy dense foods and drinks (such as fried foods, biscuits, savoury snacks, confectionery and drinks made with full fat milk or cream) are eaten
  - substituting energy dense items with foods and drinks with a lower energy density (such as fruit and vegetables or water)
  - using food and drink labels to choose options lower in fat and sugar
  - choosing smaller portions or avoiding additional servings of energy dense foods.
- Limit consumption of energy dense food and drinks prepared outside the home, particularly 'fast' or 'takeaway' foods.
- Avoid sugary drinks (including carbonated drinks, sports drinks, squashes and any other drinks that contain free sugars). Everyone should be encouraged to choose water or other drinks that do not contain free sugars. Other suitable drinks may include coffee, tea or drinks containing non-nutritive sweeteners, such as 'diet' versions of carbonated drinks or squashes.
- Reduce total fat intake. Practical ways of doing this may include choosing lower fat options of the main sources of fat in the diet, reducing portion size or frequency of consumption of foods high in fat (such as meat and meat products, milk and dairy products, fats and oils, and baked foods such as pizza, biscuits and cakes).
- Eat breakfast but do not increase overall daily energy intake. Breakfast choices should reflect existing healthy eating advice (see recommendation 1). Practical ways to achieve this may include opting for unsweetened wholegrain cereals or bread, lower fat milk and a portion of fruit.
- Increase the proportion of high fibre or wholegrain foods eaten. Practical ways to do this may include:
  - choosing wholemeal bread and pasta and wholegrain rice instead of 'white' versions
  - opting for higher-fibre foods (such as oats, fruit and vegetables, beans, peas and lentils) in place of food and drinks high in fat or sugar.
- Limit intake of meat and meat products. Follow existing advice from NHS Choices to eat no more than 70 g of red and processed meat a day on average. Practical ways to do this may include reducing the portion size of meat or how often meals including meat are eaten.

## 4 Further advice for parents and carers of children and young people

In addition to the advice in recommendations 1, 2 and 3, encourage parents, carers and everyone in regular contact with children and young people to:

- Encourage and support them to be active at every opportunity (such as active play, travel, sport or leisure activities). (See [NHS Choices](#) and NICE's guideline on [promoting physical activity for children and young people](#)).
- Eat meals with children and young people.
- Help children and encourage young people to get enough sleep. Explain to parents and carers that this is because lack of sleep may increase the risk of excess weight gain in children and young people. Provide parents and carers with information on age-specific recommendations on sleep (for more information, see [NHS Choices](#)).

## 5 Encourage adults to limit the amount of alcohol they drink

- Adults should not exceed recommended levels of [alcohol consumption](#).
- Advise adults that all alcoholic drinks are a source of additional energy. For example, a man drinking the upper daily limit of 3–4 units will be consuming around 200–325 extra calories a day and a woman drinking the upper daily limit of 2–3 units will be consuming around 140–260 extra calories a day. Practical ways to limit alcohol consumption may include replacing alcoholic drinks with non-alcoholic drinks that do not contain [free sugars](#) (see recommendation 3) and increasing the number of alcohol-free days. For more information see advice on drinking alcohol on the [NHS Choices](#) website.

## 6 Encourage self-monitoring

- Encourage habits that may help people to monitor their weight or associated behaviours. Practical examples for adults to do this may include:
  - Checking their weight regularly, for example weighing themselves once a week. (See recommendation 7 in [behaviour change: individual approaches](#)).
  - Checking their physical activity level (for example, by noting down activities, or using a pedometer or an app to track physical activity). (See recommendation 7 in NICE's guideline on [walking and cycling](#)).
  - Checking their food and drink intake (for example, by noting down meals and snacks,

- – using an app to track intake, or checking food and drink labels). For apps that may be helpful, see [NHS Choices](#).
- Provide sources of accurate information (such as [NHS Choices](#)) and details of local services to people who have any concerns about their – or their family's – diet, activity levels or weight. For more information about raising awareness of local services see NICE's guidelines on [managing overweight and obesity in adults – lifestyle weight management](#) and [managing overweight in children and young people – lifestyle weight management services](#).

## *7 Clearly communicate the benefits of maintaining a healthy weight*

- Clearly communicate the broad range of benefits of maintaining a healthy weight through being more physically active and improving dietary habits. These should include 'non health' benefits as well as improvements to health. For example:
  - The enjoyment gained from shared, social physical activities.
  - The reduced risk of developing diseases associated with excess weight such as coronary heart disease, hypertension, liver disease, osteoarthritis, stroke, type 2 diabetes and some cancers.
  - Improved mental wellbeing.
  - Reduced breathless, improved fitness and other benefits from increased [physical activity](#) that are independent of weight.
  - Lower blood cholesterol, improved oral health and other benefits from improved dietary habits that are independent of weight.

## *8 Clearly communicate the benefits of gradual improvements to physical activity and dietary habits*

- Clearly communicate that even small, gradual improvements to [physical activity](#) and [dietary habits](#) are likely to be helpful. Emphasise that:
  - Improving dietary habits and being physically active are as important for people who are currently a healthy weight as for people who are already overweight.
  - Weight gain in adulthood is not inevitable. It is possible to avoid gaining weight with age by being physically active and eating a diet based on foods and drinks with a lower [energy density](#).

- – No single physical activity, food or drink will maintain a healthy weight – a combination of actions is needed.

## 9 Tailor messages for specific groups

- Tailor messages (for example, for different age, socioeconomic or ethnic groups or for people with disabilities). Ensure all messages are clear, consistent, specific and non-judgemental. For more information see recommendation 5 in NICE's guideline on [obesity: working with local communities](#) and recommendation 6 in NICE's guideline on [preventing type 2 diabetes: population and community-level interventions](#).

## 10 Ensure activities are integrated with the local strategic approach to obesity

- Ensure that any activities promoting behaviours that may help people maintain a [healthy weight](#) or prevent excess weight gain are integrated with the local strategic approach to obesity (see recommendation 1 in NICE's guideline on [obesity: working with local communities](#)). Activities should:
  - address both [physical activity](#) and diet (see recommendation 1)
  - use effective methods for encouraging and enabling behaviour change (see NICE's guideline on [behaviour change: individual approaches](#))
  - target and tailor activities, using local knowledge (such as the Joint Strategic Needs Assessment or local surveys), to meet the needs of the population, recognising that some groups may need more support than others (for example, see recommendation 3 in NICE's guideline on [walking and cycling](#) and recommendation 2 in NICE's guideline on [preventing type 2 diabetes](#)).

## 2 Context

In 2012, the mean BMI of adults in England was approximately 27 kg/m<sup>2</sup>. Adults with a [healthy weight](#) (BMI 18.5 to 24.9 kg/m<sup>2</sup>) were in the minority (32% of men and 41% of women). Most people were either overweight (BMI 25 to 30) or obese (BMI over 30). (See the glossary for a more detailed definition of [adults who are overweight or obese](#).) Around 28% of children aged 2 to 15 were classified as either overweight or obese ([Statistics on obesity, physical activity and diet: England 2014](#) The Health and Social Care Information Centre). (See the glossary for a more detailed definition of [children who are overweight or obese](#)).

Mean BMI among adults has increased by about 1.3 kg/m<sup>2</sup> since 1993 and the proportion of adults classified as a healthy weight has decreased by about 9 percentage points between 1993 and 2012. ('[Statistics on obesity, physical activity and diet: England 2014](#)').

Population studies suggest that people's average weight increases gradually through life, for example, 1 UK-based cohort study found adults gained about 0.2 kg per year ([Rate of weight gain predicts change in physical activity levels: a longitudinal analysis of the EPIC-Norfolk cohort](#) Golubic et al. 2013).

Although overweight and obesity are common among all social groups, the prevalence increases with social disadvantage ([Fair society, healthy lives: a strategic review of health inequalities in England post-2010](#) The Marmot Review). For example, among children, data from the National Child Measurement Programme suggests that obesity prevalence of the most deprived 10% of children is approximately twice that of the least deprived 10% ([Health inequalities](#) Public Health England). Obesity is also linked to ethnicity: it is most prevalent among black African women (38%) and least prevalent among Chinese and Bangladeshi men (6%) ([Health Survey for England 2004: the health of minority ethnic groups – headline tables](#) The NHS Information Centre). Children and adults with disabilities are more likely to be overweight or obese ('[Obesity and disability – children and young people](#)' and '[Obesity and disability – adults](#)' [Public Health England](#)).

Being overweight or obese increases the risk of chronic and severe medical conditions ([Tackling obesities: future choices – project report](#) Foresight). Life expectancy is reduced by an estimated average of 2 to 4 years for people with a BMI of 30 to 35 kg/m<sup>2</sup>, and 8 to 10 years for people with a BMI of 40 to 50 kg/m<sup>2</sup> ([Body-mass index and cause-specific mortality in 900 000 adults: collaborative analyses of 57 prospective studies](#) Prospective Studies Collaboration).

Black African, African–Caribbean and Asian (South Asian and Chinese) groups are at risk at a lower BMI than white Europeans. Lower BMI thresholds (23 kg/m<sup>2</sup> to indicate increased risk and 27.5 kg/

m<sup>2</sup> to indicate high risk) to trigger action to reduce the risk of conditions such as type 2 diabetes have been recommended for these groups. See NICE's guideline on [BMI and waist circumference – black, Asian and minority ethnic groups](#). Lower BMI thresholds are also used trigger action in people with comorbidities such as type 2 diabetes.

Around 85% of people with hypertension have a BMI above 25 kg/m<sup>2</sup>, and 90% of those with type 2 diabetes have a BMI above 23 kg/m<sup>2</sup> ('Tackling obesities: future choices – project report'). People who are obese may also experience mental health problems, stigmatisation and discrimination because of their weight. The cost to society and the economy of people being overweight or obese was estimated at almost £16 billion in 2007 (more than 1% of gross domestic product). It could rise to just under £50 billion in 2050, if obesity rates continue to increase unchecked ('Tackling obesities: future choices – project report'). Concerns have been raised that the increasing costs of treating people who are overweight or obese are unsustainable for the NHS and more action should be taken to prevent obesity ([Get serious about obesity or bankrupt the NHS](#) NHS England).

[Healthy lives: a call to action on obesity in England](#) (Department of Health) aimed to reduce 'the level of excess weight average across all adults by 2020'. It advocated a 'life course' approach (that is, an approach for different key stages of life). It also stressed the importance of striking a balance between treating people who are already obese, and sustained, local action to prevent people becoming overweight or obese in the first place. Public Health England has also identified preventing obesity as a key priority for action (see [From evidence into action: opportunities to protect and improve the nation's health](#)).

NICE published a guideline on [obesity: guidance on the prevention of overweight and obesity in adults and children](#) in 2006. Since then, NICE has published a range of guidelines that draw on these recommendations or provide more specific advice (see [related NICE guidance](#)). However, NICE has not made any further recommendations on how people can maintain a healthy weight or prevent excess weight gain.

A review of NICE's 2006 guideline on obesity in 2011 noted that new evidence may be available on how children and adults can maintain a healthy weight or prevent excess weight gain.

In addition, NICE's guideline on [obesity: working with local communities](#), raised issues about the way messages and advice about weight are communicated, particularly the tone and language used.

### 3 Considerations

This section describes the factors and issues the Public Health Advisory Committee (PHAC) considered when developing the recommendations. Please note: this section does not contain recommendations. (See [recommendations](#).)

#### *Approach*

- 3.1 The Committee's main aim for the update of section 1.1.1 of NICE's guideline on [obesity](#) was to provide more up-to-date, nuanced information on factors that might help people maintain a [healthy weight](#) or prevent excess weight gain, as requested by stakeholders during the review of the guideline in 2011.

#### *Healthy weight*

- 3.2 The majority of evidence in the reviews considered by the Committee tended to define a healthy weight as a [BMI](#) of 18.5 kg/m<sup>2</sup> to 24.9 kg/m<sup>2</sup>, in line with existing NICE guidelines (see NICE's guideline on [obesity](#)). However, the Committee recognised that, given that mean BMI is around 27 kg/m<sup>2</sup> for adults, the aim for many people may be to prevent further weight gain. The Committee also recognised that what is considered a 'healthy weight' may differ by ethnic group and age because of differences in body composition and fat distribution. See NICE's guideline on [BMI and waist circumference – black, Asian and minority ethnic groups](#) and Prentice and Jebb's 2001 paper [Beyond body mass](#). Despite this, the Committee was able to make recommendations that apply to all population groups.
- 3.3 The Committee did not consider maintenance of weight among people who had previously lost weight. The Committee recognised that although the recommendations may help this group prevent regaining weight, additional action may be needed. People who are finding it difficult to maintain a healthy weight through the types of habits outlined in this guideline may benefit from effective lifestyle weight management programmes (see NICE's guideline on [managing overweight and obesity in adults – lifestyle weight management services](#)).



## *Energy balance*

- 3.4 The Committee recognised that weight is gained when energy intake ('calories in') exceeds energy expenditure ('calories out'). This concept of energy balance provided the basis for developing recommendations in areas for which the evidence was lacking.
- 3.5 Activities that are known to increase energy expenditure or decrease energy intake were assumed to contribute to maintaining a healthy weight. The energy balance concept also implies that addressing a range of both dietary habits and physical activity behaviours is more likely to be effective than changing a single factor in isolation. In addition, evidence considered when developing related NICE guidelines – for example school based interventions to prevent obesity or lifestyle management services for managing overweight and obesity among children and young people and managing overweight and obesity in adults – suggests that a multicomponent approach, addressing both dietary habits and physical activity, is likely to be effective.
- 3.6 The evidence base on energy balance was often unclear, because many studies adjusted for energy intake, obscuring any association and tending to bias towards no association. The Committee was of the view that adjusting for energy intake when associations between dietary habits and weight outcomes are being considered is unhelpful.
- 3.7 In relation to energy intake, the Committee considered that energy density was an important concept. However, the Committee recognised that there was not a consistent definition of high, medium or low energy density. Although limited evidence is available on energy density and weight outcomes, the concept of reducing energy density was particularly helpful in identifying practical dietary change that may help support a healthy weight. Similarly, limited review-level evidence was available on portion size, but the Committee considered that practical information on appropriate portion sizes of foods and drinks may be important to reduce the risk of over consumption.
- 3.8 In relation to energy expenditure, the Committee recognised that any physical activity would contribute to energy expenditure. The total volume of activity is the critical issue in relation to energy balance (rather than any specific combination of intensity and duration of activity). The Committee was mindful

that existing population recommendations include all forms of physical activity, from short bursts of incidental activities such as walking to periods of moderate-to-vigorous activity.

## *Evidence*

- 3.9 The Committee supported a pragmatic approach to reviewing the evidence for this work, given the span of the topic and the need to develop best practice recommendations. Members recognised that focusing only on high-quality systematic reviews may mean that evidence for specific factors, particularly newer areas of research, may have been overlooked. However, the Committee agreed that the focused approach made the task manageable in the time available.
- 3.10 The recommendations in this guideline are based on the best available evidence considered by the Committee. However, members recognised that practical examples may help people using the guideline better understand the sorts of changes that might be necessary. The practical examples given are based either on available evidence or are extrapolated from the available evidence. For example, evidence considered by the Committee identified that consumption of sugar-sweetened drinks is associated with excess weight gain. The practical examples of alternatives to sugar sweetened drinks were identified by the Committee members from extrapolation of the evidence and from their own knowledge and expertise.
- 3.11 The Committee was mindful that lifestyle choices are not static. For example, in recent years, 'coffee culture', the increased consumption of high protein 'sports' drinks and use of handheld screens may have undermined people's efforts to maintain a healthy weight. Therefore, it will be important for practitioners to tailor recommendations in this guideline to address changes in lifestyle choices.
- 3.12 The majority of studies included in the systematic reviews were observational cohort studies. Although this type of evidence is appropriate for identifying associations between individually modifiable factors and weight outcomes, it cannot determine causality. In particular, the Committee was not able to determine why there is such a strong association between inadequate sleep and increased risk of weight gain in children. The Committee recognised that sleep may merely be a marker for other aspects of children's lives, such as increased

time spent watching TV. However, members of the Committee were also aware of some evidence that sleep may be influenced by children's physical activity level or that sleep may influence appetite. Whatever the reason, the Committee was of the view that a recommendation on adequate sleep was justified, given the strength of the evidence considered and the wider health benefits.

- 3.13 The Committee assumed that the observed associations between meals eaten out of the home (particularly 'fast' and 'takeaway' foods and drinks) and weight outcomes was because of the high energy density of these foods and drinks. The Committee also assumed that observed associations between TV viewing and weight outcomes may be caused by several factors. These include increased time being sedentary and a reduction in physical activity, snacking while watching TV, being prompted to eat by TV programmes or adverts, and eating more while being distracted by TV.
- 3.14 The Committee was aware that some factors may cluster. For example, people who are healthier may follow a range of dietary or physical activity behaviours that will help them maintain their weight. This makes it difficult to identify associations with individual factors. The nature of the evidence prevented detailed consideration of the context within which people may be more or less likely to adopt a particular behaviour or identify any interactions between behaviours (for example, appetite and physical activity).
- 3.15 The Committee was aware that eating breakfast has been part of population advice on healthy eating for many years. Observational evidence supports this advice, suggesting that people who eat breakfast tend to have lower weight or less weight gain. However, evidence from interventions to encourage people to eat breakfast is not always consistent. The Committee recognised that advice should be clear that breakfast may support a healthy weight if it is eaten as an alternative to energy dense snacks and overall daily energy intake is not increased.
- 3.16 The randomised controlled trials included in the systematic reviews tended to be short term. The reviews provided limited information on the strength of associations or wider applicability. Very little evidence was identified on particular population groups, such as those from different social or ethnic groups, and it was unclear whether any inequalities had been investigated or identified. Therefore, although the recommendations in this guideline apply to

all population groups, the Committee considered this an important gap in the evidence and has made recommendations for further research. The Committee also recognised that recommendations on tailoring advice and support for specific population groups in related NICE guidance will be important in this light. The Committee was mindful that some of the practical examples, such as using food and drink labels to identify products that are lower in fat, using apps to monitor physical activity level or reducing consumption of foods prepared outside of the home may be harder to implement for some groups than others. However, the Committee recognised that related NICE guidelines (such as the one on [obesity: working with local communities](#)) stress the importance of identifying and managing the needs of different population groups to address any inequalities in health.

- 3.17 In instances where the evidence was inconclusive, the 'direction of travel' of the findings was often consistent across studies. The Committee members were also able to draw on their wider knowledge of the topic to develop recommendations. For example, the evidence on active travel and weight outcomes was limited. However, the Committee was aware of wider evidence that active travel is an important contributor to incidental activity, for which weight outcomes were available. Similarly, although the evidence on sedentary behaviour was limited, the Committee recognised that sedentary activity would be reflected in the evidence considered on TV viewing or other screen time, or total leisure time activity. (Total leisure time activity is any physical activity outside of school or work, including play but excluding active travel.)
- 3.18 The Committee was of the view that some unexpected associations may have been the result of 'reverse causality'. This is likely to have been the reason for the observed association between higher consumption of [non-nutritive sweeteners](#) and higher weight or weight gain. The Committee discussed that people who have a higher BMI may be more likely to consume products with non nutritive sweeteners.
- 3.19 The search strategy for the evidence reviews took an iterative approach. The search focused on systematic reviews with weight outcomes. An additional, limited search for primary studies was undertaken for several factors for which no systematic review evidence was identified. However, because of the limited nature of the search for primary studies, the Committee agreed that this evidence should not be considered alongside the systematic review evidence.

- 3.20 The consideration of interventions in specific settings (such as schools or workplaces) was outside the remit of this guideline but is covered by related NICE guidelines. The Committee recognised that these settings are important in facilitating improvements in physical activity and dietary habits. For children and young people, the support and encouragement of parents, carers and staff working in schools and clubs is vital in helping them to make good choices.
- 3.21 The approach taken to the evidence – focusing on systematic reviews – means that the Committee was unable to make research recommendations on specific behaviours if the evidence appeared to be lacking. Furthermore, the Committee was of the view that recommendations for research on individual behaviours would be warranted only if it was likely that the factor would have an important effect on weight and was easily modifiable by individuals. The Committee considered that the most helpful new research to enhance the maintenance of a healthy weight would be on the impact and feasibility of making a 'package' of changes, in line with the broad range of recommendations in the guideline.

### *Specific thresholds*

- 3.22 The Committee was aware that many practitioners would like specific quantitative information on behaviours associated with weight gain – for example, an upper daily limit for TV viewing or amount of sugar-sweetened drinks consumed. The Committee recognised that providing upper or lower thresholds for behaviour (such as limiting TV viewing to no more than 2 hours) can be helpful for some people. However, the Committee noted that in most instances, the outcome (such as weight, weight gain or prevalence of obesity) tended to increase or decrease (as appropriate) in line with the amount of the factor. This means that, for example, any reduction in TV viewing or increase in physical activity is likely to be helpful. Commonly reported thresholds may be driven by data analysis decisions rather than being true biological thresholds. The Committee was also concerned that people who most need to change their behaviour could be put off by goals that seem out of their reach. Therefore, any thresholds included in the recommendations are practical examples rather than absolute thresholds.

### *Screen time*

- 3.23 Evidence of a positive association between TV viewing and weight outcomes in

children is strong. The Committee recognised that many of the studies included in systematic reviews had been undertaken before other forms of screen – such as tablets or smart phones – were in common use. However, these other forms of screen viewing are also likely to reduce overall physical activity level. There is little systematic review-level evidence available on the effectiveness of 'active viewing' games consoles on weight. The Committee was concerned that parents may purchase these items under the premise that they can increase physical activity levels to maintain a healthy weight, when in fact their effect is unclear. The Committee's focused on leisure screen time rather than total screen time, because they recognised that screen time at school or work is unlikely to be within a person's control.

### *Scientific Advisory Committee on Nutrition*

3.24 The draft report of the Scientific Advisory Committee on Nutrition (SACN) on carbohydrates and health was published during the development of this guideline. The PHAC considered the draft findings of the report, noting that the SACN review was the result of a robust process and that the draft recommendations were largely in line with this guidance. The PHAC noted in particular SACN's decision to use the term 'free sugars', which includes the sugars within fruit juice. SACN's identification of a relationship between consumption of free sugars and energy intake may have implications for including fruit juice in population recommendations for '5 a day'. The PHAC noted that although evidence of an association between fruit juice consumption and weight gain was not identified, many people, particularly some children, may consume large quantities of juice in the belief that is a healthier option, undermining their efforts to maintain a healthy weight. As a result, fruit juice is not listed as an alternative to sugar-sweetened drinks in recommendation 3.

### *Patterns of behaviours*

3.25 The Committee was aware that patterns of behaviours have been an area of interest for researchers in recent years. Members had hoped that they might be able to make stronger recommendations about, for example, time spent standing up, eating speed, meal planning or patterns in eating and physical activity across a week. However, no systematic reviews were available on these topics.

## *Self-monitoring*

- 3.26 No systematic reviews were identified that considered the effectiveness of self-monitoring of weight among a general population. The Committee was aware that self-monitoring has previously been identified as an important tool for adults maintaining weight after weight loss. Because of the lack of systematic review-level evidence, the Committee drew on existing NICE recommendations on proven behaviour change techniques (see recommendation 7 in NICE's guideline on [behaviour change: individual approaches](#)). However, the Committee was not able to indicate the optimal frequency or method of monitoring. The Committee was aware that a range of free or low-cost apps are now available that may support monitoring. However, the effectiveness of these products is unclear. The Committee has therefore made research recommendations.

## *Communication*

- 3.27 The recommendations on behaviours that can help people maintain a healthy weight reflect the evidence considered by the Committee. However, members recognised that the habits recommended may be very different from many people's usual choices. The Committee therefore emphasised the importance of communicating the benefits of even gradual changes, and the fact that any improvements in dietary habits and physical activity level are likely to help.
- 3.28 The evidence considered by the Committee suggests that the acceptability of messages about weight differs across the population. The Committee noted that the way in which messages are framed or worded may make them less acceptable to some people, for example, people with disabilities, from different age or ethnic groups, or with different BMI or waist circumferences.
- 3.29 The Committee recognised that some of the messages for maintaining a healthy weight are complex. The Committee also recognised that although the range of potentially modifiable factors covered in the recommendations may be daunting for some people, emphasising a range of physical activity and dietary habits is vital.
- 3.30 The recommendations therefore emphasise the importance of tailoring messages according to local knowledge and the information needs of different

groups.

## *Economic evaluation*

- 3.31 The economic assessment for this guideline was based on existing economic modelling that NICE has undertaken for other guidelines. New modelling was not attempted because no new data were available on the sustainability of [weight maintenance](#) or loss over long periods of time. Furthermore, evidence of cost effectiveness for weight loss can be applied to the prevention of weight gain.
- 3.32 For adults, the Committee considered analyses based on previous cost effectiveness modelling for NICE's guidelines on overweight and obesity in adults: [lifestyle weight management](#) (see [overweight and obese adults – lifestyle weight management: economic modelling report](#)) and preventing type 2 diabetes: [population and community interventions](#) (see [preventing type 2 diabetes – population and community interventions: report on cost-effectiveness evidence and methods for economic modelling](#)). Previous modelling shows that at least a 1 kg per head weight loss among overweight or obese adults, if maintained for life, is likely to be cost effective, provided that the cost per person of intervening is less than £100. This suggests that preventing at least a 1 kg weight gain for the same cost will also be cost effective. The Committee noted that the effect size for many of the observed associations in the evidence reviews was higher than 1 kg per person, or is likely to be so if a collection of factors is undertaken as part of a 'multicomponent approach'. Previous modelling has also shown that very low-cost public health interventions (costing less than £10 per head) are likely to be cost effective for an average weight loss of less than 1 kg per head. Based on this previous work, the Committee concluded that the types of approaches suggested in this guideline are likely to be cost effective, particularly because the recommendations may replace ineffective or incorrect advice.
- 3.33 The Committee noted that the concept of 'maintaining a healthy weight' used for adults needs to be modified for children and young people because of growth in height and because a healthy BMI increases from age 6 to age 18. The concept for most children is instead about 'maintaining a healthy BMI for one's age'. (For more information see NICE's guideline on [managing overweight and obesity among children and young people: lifestyle weight management](#)



services.)

- 3.34 For children and young people, information was obtained from modelling for the cost effectiveness of lifestyle weight management in children. The evaluation is more complicated, because to achieve a healthy weight, overweight and obese children do not necessarily have to lose weight but may be able to maintain weight while growing taller ('growing into a healthy weight'). In some cases, they may put on weight at a slow rate and still achieve a healthy weight in future by growing sufficiently quickly in compensation. However, if they are overweight or obese when they have finished growing in height they will need to lose weight to achieve a healthy weight.
- 3.35 Previous economic modelling estimated that interventions for overweight children costing £100 per head would usually be cost effective from a public sector perspective. This would be the case if a group of overweight children moved to a lower average weight trajectory and this was maintained for life. (This is true for a weight loss of as little as 0.5%). Therefore, by inference, interventions that prevent a child moving onto a 0.5% higher average weight trajectory (or greater) for life would also be cost effective.
- 3.36 Brief advice interventions were inferred to be cost effective when their low cost was considered against the cost of weight management interventions. The Committee noted that activities and interventions to help people maintain a healthy weight and prevent overweight and obesity are already ongoing in many local areas. The recommendations in this guideline are likely to make interventions more effective and there is virtually no cost attached to improved, more specific advice.
- 3.37 Based on this previous work, the Committee concluded that the types of approaches suggested in this guideline are likely to be cost effective.

## 4 Recommendations for research

The Public Health Advisory Committee (PHAC) recommends that the following research questions should be addressed. It notes that 'effectiveness' in this context relates not only to the size of the effect, but also to cost effectiveness and duration of effect. It also takes into account any harmful or negative side effects.

All the research should aim to identify differences in effectiveness among groups, based on characteristics such as socioeconomic status, age, gender and ethnicity to address inequalities in health.

- 4.1 What is the effect on weight outcomes of a collection of individually modifiable dietary habits, physical activity and other lifestyle behaviours? Mixed methods research is needed that considers the acceptability and adherence to changes for different population groups, potential interactions between behaviours that may make changes to behaviour easier or harder to sustain, and any effect on health inequalities. Information is needed on processes for change, for example, effective practical strategies for reducing dietary energy density and increasing leisure time physical activity.
- 4.2 What are effective and acceptable messages, routes and sources of communicating information about individually modifiable behaviours and weight outcomes for a range of population groups? Data are also needed on the effect on health inequalities.
- 4.3 What are the optimal frequency and tools for self-monitoring body weight and associated behaviours in populations with a healthy weight? Mixed methods research is needed, including research on newer and innovative technologies (including apps) and the transferability of data on weight management for the prevention of excess weight gain.

More detail identified during development of this guideline is provided in [gaps in the evidence](#).

## 5 Related NICE guidance

- [Obesity: identification, assessment and management of overweight and obesity in children, young people and adults](#) (2014) NICE guideline CG189
- [Exercise referral schemes to promote physical activity](#) (2014) NICE guideline PH54
- [Overweight and obesity in adults: lifestyle weight management](#) (2014) NICE guideline PH53
- [Behaviour change – individual approaches](#) (2014) NICE guideline PH49
- [Overweight and obese children and young people: lifestyle weight management services](#) (2013) NICE guideline PH47
- [BMI and waist circumference – black, Asian and minority ethnic groups](#) (2013) NICE guideline PH46
- [Physical activity: brief advice for adults in primary care](#) (2013) NICE guideline PH44
- [Obesity: working with local communities](#) (2012) NICE guideline PH42
- [Walking and cycling](#) (2012) NICE guideline PH41
- [Preventing type 2 diabetes: risk identification and interventions for individuals at high risk](#) (2012) NICE guideline PH38
- [Preventing type 2 diabetes: population and community interventions](#) (2011) NICE guideline PH35
- [Looked after children and young people](#) (2010) NICE guideline PH28
- [Weight management before, during and after pregnancy](#) (2010) NICE guideline PH27
- [Prevention of cardiovascular disease](#) (2010) NICE guideline PH25
- [Promoting physical activity for children and young people](#) (2009) NICE guideline PH17
- [Occupational therapy and physical activity interventions to promote the mental wellbeing of older people in primary care and residential care](#) (2008) NICE guideline PH16
- [Promoting physical activity in the workplace](#) (2008) NICE guideline PH13
- [Maternal and child nutrition](#) (2008) NICE guideline PH11

- [Physical activity and the environment](#) (2008) NICE guideline PH8
- [Behaviour change: the principles for effective interventions](#) (2007) NICE guideline PH6
- [Obesity](#) (2006) NICE guideline CG43
- [Eating disorders](#) (2004) NICE guideline CG9

## 6 Glossary

### *Adults who are overweight or obese*

The body mass index (BMI) of an adult is used to assess if they are overweight or obese. The following table shows the cut-off points for a healthy weight or of being overweight or obese:

Classification	BMI (kg/m <sup>2</sup> )
Healthy weight	18.5–24.9
Overweight	25–29.9
Obesity I	30–34.9
Obesity II	35–39.9
Obesity III	40 or more

BMI is a less accurate indicator of adiposity (whether someone is overweight or obese) in adults who are highly muscular, so it should be interpreted with caution in this group.

Waist circumference can also be used to assess whether someone is at risk of health problems because they are overweight or obese. For men, a waist circumference of less than 94 cm is low risk, 94–102 cm is high and more than 102 cm is very high risk. For women, a waist circumference of less than 80 cm is low risk, 80–88 cm is high and more than 88 cm is very high risk.

The use of lower BMI thresholds (23 kg/m<sup>2</sup> to indicate increased risk and 27.5 kg/m<sup>2</sup> to indicate high risk) to trigger action to reduce the risk of conditions such as type 2 diabetes, has been recommended for black African, African–Caribbean and Asian (South Asian and Chinese) groups.

### *Alcohol consumption*

One unit is 10 ml or 8 g of pure alcohol. This equals one 5 ml single measure of whisky (alcohol by volume [ABV] 40%) or a third of a pint of beer (ABV 5–6%) or half a standard (175 ml) glass of wine (ABV 12%).

It is recommended that men do not regularly consume more than 3–4 units a day. It is recommended that women do not regularly consume more than 2–3 units per day. 'Regularly' means drinking this amount every day or most days of the week. 'Increasing-risk drinking' is defined as regularly consuming between 22 and 50 units per week (adult men) or between 15 and

35 units per week (adult women). 'Higher-risk drinking' is defined as consuming over 50 alcohol units per week (adult men) or over 35 units per week (adult women).

## *BMI*

BMI is commonly used to measure whether adults are a healthy weight, underweight, overweight or obese. It is defined as the weight in kilograms divided by the square of the height in metres (kg/m<sup>2</sup>).

## *Children who are overweight or obese*

More than 1 classification system is used in the UK to define whether children are overweight or obese. The National Child Measurement Programme for primary care states that BMI should be plotted onto a gender-specific BMI chart for children (UK 1990 chart for children older than 4 years). Children over the 85th centile, and on or below the 95th centile, are categorised as overweight. Children over the 95th centile are classified as obese. Other surveys, such as the Health Survey for England also use this system. However, in clinical practice the 91st and 98th centiles may be used to define 'overweight' and 'obesity' respectively. Children on or above the 98th centile may also be described as very overweight. See Public Health England's 'A simple guide to classifying body mass index in children'.

## *Dietary habits*

This includes the food and drink (including alcoholic drinks) consumed, energy and nutrient intake, portion size and the pattern and timing of eating.

## *Energy balance*

Energy balance is when energy intake from all food and drink (measured as calories or kilojoules) matches energy used for all bodily functions and physical activity. If energy intake is higher than energy used, a person will gain weight. If energy intake is less than energy used, a person will lose weight.

## *Energy density*

Total energy content (kJ) divided by total weight (grams). Energy density can be calculated for individual foods, drink or for dietary intake as a whole. Lower energy dense foods, drinks or meals provide fewer calories per gram than higher energy dense foods, drinks or meals. High energy

dense foods tend to be higher in fat or sugar and include crisps, nuts, confectionery, biscuits, cakes, full fat cheese and meat products. Low energy dense foods tend to be higher in water and lower in fat or sugar and include fruit and vegetables, soups and stews.

## *Energy intake*

Daily energy intake is the total amount of energy consumed from foods and drinks. Estimated average requirements (EAR) for energy per day are recommended by the Scientific Advisory Committee on Nutrition (2011) as 10.9 MJ per day (2605 kcal per day) for adult men and 8.7 MJ per day (2079 kcal per day) for adult women. Daily EAR for children varies by age and gender.

## *Free sugars*

Free sugars are sugars (monosaccharides and disaccharides) added to foods by the manufacturer, cook or consumer, and sugars naturally present in honey, syrups, fruit juices and fruit concentrates. Free sugars do not include lactose when it is naturally present in milk and milk products.

## *Healthy weight*

For adults, a healthy weight is a BMI between 18.5 kg/m<sup>2</sup> to 24.9 kg/m<sup>2</sup>. A healthy weight for children is dependent on their age and height (see 'Children who are overweight or obese' above).

## *Lifestyle weight management*

Lifestyle weight management programmes for people who are overweight or obese are multi-component programmes that aim to reduce a person's energy intake and help them to be more physically active by changing their behaviour. They may include weight management programmes, courses or clubs that:

- accept people through self-referral or referral from a health or social care practitioner
- are provided by the public, private or voluntary sector
- are based in the community, workplaces, primary care or online.

Although local definitions vary, these are usually called tier 2 services and are just part of a comprehensive approach to preventing and treating obesity.

## *Moderate-to-vigorous physical activity*

Moderate-to-vigorous physical activity needs a large amount of effort, causes rapid breathing and a substantial increase in heart rate. Examples include: jogging; energetic dancing; heavy gardening; playing badminton, tennis or football; fast cycling; or walking briskly up a hill.

## *Non-nutritive sweetener*

Non-nutritive sweeteners give food and drinks a sweet taste but include no (or virtually no) energy and no other nutrients. Non-nutritive sweeteners are sometimes called low calorie, artificial or non-caloric sweeteners.

## *Physical activity*

The full range of human movement, from active hobbies, walking, cycling and the other physical activities involved in daily living, such as walking up stairs, gardening and housework to competitive sport and exercise.

## *Recommended level of physical activity*

The 2011 report from the Chief Medical Officers for England, Wales, Scotland and Northern Ireland sets out physical activity recommendations for different groups. For adults: 'over a week, activity should add up to at least 150 minutes (2 ½ hours) of moderate-intensity activity, in bouts of 10 minutes or more'. One way to approach this is to do 30 minutes on at least 5 days a week.

Children and young people should take part in moderate- to vigorous-intensity physical activity for at least 60 minutes and up to several hours every day.

## *Weight maintenance*

The maintenance of a specific weight (whether or not weight has been lost).

## *Weight trajectory*

A weight trajectory refers to a general pattern of weight gain or weight loss over many years.



## *Wholegrains*

Definitions of wholegrains vary but include whole wheat, whole wheat flour, wheat flakes, bulgur wheat, whole and rolled oats, oatmeal, oat flakes, brown rice, whole rye and rye flour and whole barley.

## 7 Summary of the methods used to develop this guideline

### *Introduction*

The reviews, primary research, commissioned reports and economic modelling report include full details of the methods used to select the evidence (including search strategies), assess its quality and summarise it.

The minutes of the Public Health Advisory Committee (PHAC) meetings provide further detail about the Committee's interpretation of the evidence and development of the recommendations.

### *Guideline development*

The stages involved in developing public health guidelines are outlined in the box below.

1. Draft scope released for consultation
2. Stakeholder comments used to revise the scope
3. Final scope and responses to comments published on website
4. Evidence reviews and economic modelling undertaken and submitted to PHAC
5. PHAC produces draft recommendations
6. Draft guideline (and evidence) released for consultation
7. PHAC amends recommendations
8. Final guideline published on website
9. Responses to comments published on website

### *Key questions*

The key questions were established as part of the [scope](#). They formed the starting point for the reviews of evidence and were used by the PHAC to help develop the recommendations. The overarching questions were:

**Question 1:** What individually modifiable behaviours may help children and young people to maintain a [healthy weight](#) or prevent excess weight gain?

**Question 2:** What individually modifiable behaviours may help adults to maintain a healthy weight or prevent excess weight gain?

**Question 3:** What are the most effective ways to communicate information to children, young people and adults about individually modifiable behaviours to help maintain a healthy weight or prevent excess weight gain?

These questions were made more specific for each review.

## *Reviewing the evidence*

### **Effectiveness review**

One review of effectiveness was conducted: review 1 [An evidence review of modifiable diet and physical activity components and associated behaviours](#).

### *Identifying the evidence*

Several databases were searched in November 2013 for systematic reviews from 2005. See review 1.

Key websites were also searched for reports produced by governments, academics and industry. In addition, several databases were searched for primary studies where gaps in the evidence had been identified by systematic reviews.

### *Selection criteria*

Studies were included in the effectiveness review if:

- they were high quality systematic reviews
- they were undertaken among a general population
- they considered the association between an individually modifiable behaviour and the maintenance of a healthy weight or the prevention of weight gain
- they were published in English
- they were primary studies that considered the association between a particular factor (meal planning, holiday weight gain and standing) and the maintenance of a healthy weight or the prevention of weight gain.

Because of the number of reviews meeting the inclusion criteria, reviews were prioritised for full consideration in the final evidence review based on the quality of the review, the publication date,

the ability to address the factors being considered and the ability to add nuance to existing recommendations.

Studies were excluded if:

- the interventions were undertaken in a particular setting
- they focused only on people who were overweight or obese with an associated medical condition
- they were non-systematic reviews.

See each review for details of the inclusion and exclusion criteria.

## Other reviews

One review of qualitative evidence was conducted: review 2 [Qualitative evidence review of the most acceptable ways to communicate information about individually modifiable behaviours to help maintain a healthy weight or prevent excess weight gain.](#)

## *Identifying the evidence*

Several databases were searched in February 2014 for qualitative evidence published after 2000. See review 2.

## Selection criteria

Studies were included in the review if:

- they were primary UK-based qualitative studies
- they were systematic reviews of qualitative studies (UK or non UK)
- they were full text articles published in English after the year 2000.

Studies were excluded if:

- they did not address the questions outlined in the scope
- they addressed the treatment of obesity or management of medical conditions related to weight status.

## Quality appraisal

Included systematic reviews were assessed for methodological rigour and quality using the NICE systematic review checklist and the Critical Appraisal Skills Programme (CASP) [systematic review quality checklist](#). Primary studies were assessed using the appropriate NICE checklist, as set out in [Methods for the development of NICE public health guidance](#). Each study was graded (++, +, -) to reflect the risk of potential bias arising from its design and execution.

### *Study quality*

++ All or most of the checklist criteria have been fulfilled. Where they have not been fulfilled, the conclusions are very unlikely to alter.

+ Some of the checklist criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are unlikely to alter the conclusions.

- Few or no checklist criteria have been fulfilled. The conclusions of the study are likely or very likely to alter.

The evidence was also assessed for its applicability to the areas (populations, settings, interventions) covered by the scope of the guideline. Each evidence statement concludes with a statement of applicability (directly applicable, partially applicable, not applicable).

## Summarising the evidence and making evidence statements

The review data were summarised in evidence tables (see the [reviews](#)).

The findings from the evidence review were synthesised and used as the basis for a number of evidence statements relating to each key question. The evidence statements were prepared by the external contractors (see the [evidence statements](#)). The statements reflect their judgement of the strength (quality, quantity and consistency) of evidence and its applicability to the populations and settings in the scope.

### *Cost effectiveness*

NICE prepared a document on [maintenance of a healthy weight and prevention of weight gain in children and adults. Cost effectiveness considerations from a population modelling viewpoint](#) instead of a review of economic evaluations and a modelling report. A modelling report was not considered necessary because the cost effectiveness of brief advice can be inferred from the

estimates of cost effectiveness from previous modelling exercises on healthy weight, weight gain, overweight and obesity carried out for NICE in recent years.

### *How the PHAC formulated the recommendations*

At its meetings in April and June 2014, the Public Health Advisory Committee (PHAC) considered the evidence, expert reports and cost effectiveness to determine:

- whether there was sufficient evidence (in terms of strength and applicability) to form a judgement
- if relevant, whether (on balance) the evidence demonstrates that the intervention, programme or activity can be effective or is inconclusive
- if relevant, the typical size of effect
- whether the evidence is applicable to the target groups and context covered by the guideline.

The PHAC developed recommendations through informal consensus, based on the following criteria:

- Strength (type, quality, quantity and consistency) of the evidence.
- The applicability of the evidence to the populations/settings referred to in the scope.
- Effect size and potential impact on the target population's health.
- Impact on inequalities in health between different groups of the population.
- Equality and diversity legislation.
- Ethical issues and social value judgements.
- Cost effectiveness (for the NHS and other public sector organisations).
- Balance of harms and benefits.
- Ease of implementation and any anticipated changes in practice.

If evidence was lacking, the PHAC also considered whether a recommendation should only be implemented as part of a research programme.

If possible, recommendations were linked to evidence statements (see [the evidence](#) for details).

Where a recommendation was inferred from the evidence, this was indicated by the reference 'IDE' (inference derived from the evidence).

## 8 The evidence

### *Introduction*

The evidence statements from 2 reviews are provided by external contractors.

This section lists how the evidence statements link to the recommendations and sets out a brief summary of findings from the economic analysis.

### *How the evidence links to the recommendations*

The evidence statements are short summaries of evidence, in a review, report or paper (provided by an expert in the topic area). Each statement has a short code indicating which document the evidence has come from.

**Evidence statement number 1.1** indicates that the linked statement is numbered 1 in the review 1.

**Evidence statement number 2.1** indicates that the linked statement 1 in the review 2. Where a recommendation is not directly taken from the evidence statements, but is inferred from the evidence, this is indicated by IDE (inference derived from the evidence).

Where the Public Health Advisory Committee (PHAC) has considered other evidence, it is linked to the appropriate recommendation below. It is also listed in the additional evidence section below.

**Recommendation 1:** evidence statements 1.17, 1.31, 1.32, 1.33, 1.37, 1.40, 1.50, 2.7, 2.8, 2.10; IDE

**Recommendation 2:** evidence statements 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.11, 1.12, 1.15

**Recommendation 3:** evidence statements 1.17, 1.18, 1.19, 1.20, 1.22, 1.23, 1.24, 1.25, 1.26, 1.27, 1.28, 1.29, 1.30, 1.33, 1.34, 1.35, 1.36, 1.37, 1.38, 1.39, 1.40, 1.41, 1.42, 1.43, 1.44, 1.45, 1.48, 1.49, 1.50; IDE

**Recommendation 4:** evidence statements 1.3, 1.5, 1.11, 1.13, 1.15, 1.48, 1.51; IDE

**Recommendation 5:** evidence statements 1.21; IDE

**Recommendation 6:** evidence statements 1.52, 2.8; IDE

**Recommendation 7:** evidence statements 2.2, 2.3, 2.4, 2.5, 2.9, 2.10; IDE



**Recommendation 8:** evidence statements 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10; IDE

**Recommendation 9:** evidence statements 2.2, 2.3, 2.4, 2.5, 2.8, 2.10, 2.11; IDE

**Recommendation 10:** evidence statements 2.6, 2.7, 2.10, 2.11; IDE

## *Economic modelling*

Maintenance of a healthy weight and prevention of weight gain in children and adults. Cost effectiveness considerations from a population modelling viewpoint was prepared by NICE instead of a review of economic evaluations and a modelling report.

The paper was based on a conceptual model relating to the weight changes of age and sex cohorts of the population over time, a format developed for modelling exercises in 3 previous NICE guidelines:

- Overweight and obesity in adults: lifestyle weight management (see [Overweight and obese adults – lifestyle weight management: economic modelling report](#))
- Lifestyle weight management in children and young people (see [Overweight and obese children and young people – lifestyle weight management services: economic modelling report](#))
- Preventing type 2 diabetes: population and community interventions (see [Preventing type 2 diabetes – population and community interventions: report on cost-effectiveness evidence and methods for economic modelling](#)).

From the modelling undertaken in these reports, and given the absence of any substantive new data, brief advice interventions were inferred to be cost effective when their low cost was considered against the cost of weight management interventions.

## 9 Gaps in the evidence

The Public Health Advisory Committee (PHAC) identified a number of gaps in the evidence related to the programmes under examination based on an assessment of the evidence. These gaps are set out below.

1. There is a lack of systematic reviews of cohort or trial data considering the complexity of a combination of dietary, physical activity and other lifestyle behaviours on weight outcomes.

(Source: Evidence review 1)

2. There is a lack of systematic reviews of cohort or trial data considering the complexity of a combination of dietary, physical activity and other lifestyle behaviours on weight outcomes for different population groups.

(Source: Evidence review 1)

3. There is a lack of systematic reviews of trial data on modifiable behaviours and weight outcomes for which cohort evidence is available (such as sleep or breakfast consumption).

(Source: Evidence review 1)

4. There is a lack of systematic reviews of cohort or trial data considering the effect of inequalities (such as socioeconomic status or ethnicity) on associations between modifiable behaviours and weight outcomes for different population groups.

(Source: Evidence review 1)

5. There is a lack of systematic reviews of cohort or trial data considering the tracking of modifiable behaviours and weight outcomes through the lifecourse for different population groups.

(Source: Evidence review 1)

6. There is a lack of systematic reviews of cohort or trial data considering associations between dietary patterns (such as eating frequency, speed, settings, meal planning) and weight outcomes.

(Source: Evidence review 1)

7. There is a lack of systematic reviews of cohort or trial data considering associations between sedentary behaviours and incidental activities (such as time spent standing) and weight outcomes.

(Source: Evidence review 1)

8. There is a lack of systematic reviews on the optimal method and frequency of self-monitoring of behaviours among non-obese, general population groups.

(Source: Evidence review 1)

9. There is a lack of UK-based qualitative data considering the acceptability of messages for different population groups on specific modifiable behaviours that may help individuals maintain a healthy weight or prevent excess weight gain.

(Source: Evidence review 2)

## 10 Membership of the Public Health Advisory Committee and the NICE project team

### *Public Health Advisory Committee A*

NICE has set up several Public Health Advisory Committees (PHACs). These standing committees consider the evidence and develop public health guidelines. Membership is multidisciplinary, comprising academics, public health practitioners, topic experts and members of the public. They may come from the NHS, education, social care, environmental health, local government or the voluntary sector. The following are members of PHAC A:

#### **Chair**

**Susan Jebb**

Professor of Diet and Population Health, University of Oxford

#### **Core members**

**Mireia Jofre Bonet**

Professor in Economics, City University London

**Alison Lloyd**

Community member

**Chris Packham**

Associate Medical Director, Nottinghamshire Healthcare NHS Trust

**Toby Prevost**

Professor of Medical Statistics, King's College London

**Joyce Rothschild**

Independent Education Consultant

**Amanda Sowden**

Deputy Director, Centre for Reviews and Dissemination, University of York

**Lucy Yardley**

Professor of Health Psychology, University of Southampton

## Topic members

### **Peymane Adab**

Professor of Public Health and Epidemiology, University of Birmingham

### **Louisa Ells**

Reader in Public Health and Obesity, Teesside University

### **Nick Finer**

Professor, Consultant Endocrinologist and Bariatric Physician, University College London Hospitals

### **Laura McGowan**

Research Fellow, Institute for Global Food Security, Queen's University, Belfast

### **Bimpe Oki**

Consultant in Public Health, Lambeth and Southwark

### **Sarah West-Sadler**

Community member

## Expert co-optees to PHAC

### **Nick Cavill**

Specialist Advisor, Public Health England Obesity Team

## *NICE project team*

### **Mike Kelly**

CPH Director

### **Kay Nolan**

Associate Director

### **Adrienne Cullum**

Lead Analyst

### **Rachel Kettle**

Analyst

**Patti White** (until July 2014)

Analyst

**Lakshmi Murthy** (from November 2014)

Analyst

**Alastair Fischer**

Technical Adviser Health Economics

**Victoria Axe** (until May 2014)

Project Manager

**Rupert Franklin** (from June 2014)

Project Manager

**Denise Jarrett**

Coordinator

**Sue Jelley** (March 2014)

Senior Editor

**Jaimella Espley** (May 2014 onwards)

Senior Editor

**Susie Burlace**

Editor

### *Declarations of interests*

The following members of the Public Health Advisory Committee made declarations of interest. All other members of the Committee stated that they had no interests to declare.

Committee Member	Interest declared	Type of interest	Decision taken
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Peymane Adab	Grant holder for a study to develop a childhood weight management programme in urban China funded by Guangzhou Public Health Bureau and Centre for Disease Control	Non-personal specific financial interest	No further action required
Peymane Adab	Principal investigator for Health Technology Assessment Programme (HTA) funded WAVES trial: a cluster randomised controlled trial of the effectiveness and cost-effectiveness of an obesity prevention intervention in primary school age children	Non-personal specific financial interest	No further action required
Peymane Adab	Co-investigator for HTA funded study: development of a culturally adapted weight management programme for children of Pakistani and Bangladeshi origin	Non-personal specific financial interest	No further action required
Peymane Adab	Co-investigator for a National Prevention Research Initiative (NPRI) funded trial: randomised control trial to test the effectiveness of a brief intervention for weight management for obese adults in primary care	Non-personal specific financial interest	No further action required
Peymane Adab	Occasional media (radio, TV, newspaper) related comments on above funded trials (including comments on extent of childhood obesity, why it is a problem, and what the trial is about)	Personal non-pecuniary interest	No further action required
Nick Cavill	Own company works for multiple clients promoting physical activity and also sells pedometers	Personal, specific financial interest	Withdrew from any discussion on pedometers

Louisa Ells	Employee, The Health and Social Care Institute at Teesside University – Institute has received grants from NICE in the past and would consider tendering for NICE funding should a suitable call arise in the future	Non-personal non-specific financial interest	No further action required
Louisa Ells	Specialist Advisor, Public Health England Obesity Knowledge and Intelligence Team	Personal non-specific financial interest	No further action required
Louisa Ells	Co-applicant on NPRI grant titled 'How can we help parents recognise unhealthy body weight in children'	Non personal specific financial interest	No further action required
Nick Finer	Employee, University College London Hospitals NHS Trust – provider of obesity services	Personal non-specific financial interest	No further action required
Nick Finer	Consultancy (within past 2 years) to pharmaceutical industry on anti-obesity and diabetes medications (Vivus Inc – Qsymia; Novo Nordisk – liraglutide; Arena – Belviq; Janssen Cilag – canaglifozin)	Personal non-specific financial interest	No further action required
Nick Finer	Speakers fees (within past 2 years) from Novo Nordisk	Personal non-specific financial interest	No further action required
Nick Finer	Shareholder, Counterweight plc (current value £0)	Personal non-specific financial interest	No further action required
Nick Finer	Symposium organiser and speaker at numerous national and international meetings supported by sponsors from commercial sector	Personal non-specific non-financial interest	No further action required



Nick Finer	Chair, International Association for the Study of Obesity (IASO) Education and Management Task Force	Personal, specific, non-financial interest	No further action required
Nick Finer	Chair, Experts in Severe and Complex Obesity (registered charity)	Personal, specific, non-financial interest	No further action required
Nick Finer	Medical Adviser, Weight Concern (registered charity)	Personal, specific, non-financial interest	No further action required
Nick Finer	Medical Adviser, Prader-Willi Syndrome Association UK (Registered charity)	Personal, specific, non-financial interest	No further action required
Susan Jebb	Salary from Medical Research Council (ended September 2013)	Personal non-specific pecuniary interest	No further action required
Susan Jebb	Member of Tanita Ltd Medical Advisory Board	Personal non-specific pecuniary interest	Susan stepped down as chair during discussion of draft recommendations on monitoring weight gain
Susan Jebb	Writing and lecture fees from Rosemary Conley Diet and Fitness magazine (ended December 2013)	Personal non-specific pecuniary interest	No further action required
Susan Jebb	Supervision fees from University of Cambridge (ended summer 2013)	Personal non-specific pecuniary interest	No further action required

Susan Jebb	Science Adviser on Obesity, Department of Health (ended April 2013)	Non-personal pecuniary interest	No further action required
Susan Jebb	Chair, Public Health Responsibility Deal Food Network	Personal non-pecuniary interest	No further action required
Susan Jebb	Trustee, Association for the Study of Obesity (ended September 2013)	Personal non-pecuniary interest	No further action required
Susan Jebb	Member, European and International Associations for the Study of Obesity	Personal non-pecuniary interest	No further action required
Susan Jebb	Member, UK Health Forum	Personal non-pecuniary interest	No further action required
Mireia Jofre Bonet	None	N/A	No further action required
Alison Lloyd	Trustee, Manchester Action on Street Health	Personal, non-specific, non-financial interest	No further action required
Laura McGowan	Received a one-off honorarium from Merck Serono for presenting weight-related research at a nurse educational meeting (February 2014)	Personal, non-specific financial interest	No further action required
Laura McGowan	Employee, Weight Concern (registered charity) (until April 2014)	Personal, non-specific, financial interest	No further action required
Laura McGowan	Consultancy work for Weight Concern (registered charity)	Personal, non-specific, financial interest	No further action required

Laura McGowan	Consultant, Weight Concern –charity, could benefit financially as a consequence of the commissioning of weight-management services	Non-personal, specific financial interest	No further action required
Laura McGowan	Employee, Queen's University, Belfast – university receives funding from Safe-Food	Non-personal, non-specific, financial interest	No further action required
Laura McGowan	Regularly involved in publishing articles on obesity and contributing to media enquiries on the subject of weight and eating habits broadly, in relation to the work of Weight Concern and the Health Behaviour Research Centre at University College London	Personal, specific, non-financial interest	No further action required
Bimpe Oki	None	N/A	No further action required
Chris Packham	Practicing GP Associate, St Lukes Surgery, Nottingham	Personal, non-specific, non-financial interest	No further action required
Chris Packham	GP and Section 12 MHA approved doctor, Nottingham Emergency Medical Services	Personal, non-specific, non-financial interest	No further action required
Chris Packham	Associate Medical Director and Consultant Public Health Physician, Nottinghamshire Healthcare NHS Trust	Personal, non-specific, non-financial interest	No further action required
Chris Packham	UK Chair of Examiners (final professional examination), Faculty of Public Health, Royal College of Physicians.	Personal, non-specific, non-financial interest	No further action required

Chris Packham	Honorary Professor of Public Health Practice, Faculty of Medicine, University of Nottingham	Personal, non-specific, non-financial interest	No further action required
Chris Packham	Partner is the Named Nurse for Child Safeguarding, Nottingham University Hospitals NHS Trust, Nottingham	Personal, non-specific, non-financial interest	No further action required
Chris Packham	Clinical Commissioning Champion, Centre for Commissioning, Royal College of General Practitioners	Personal, non-specific, non-financial interest	No further action required
Toby Prevost	Wife owned shares in AstraZeneca (until March 2014)	Personal, non-specific, financial interest	No further action required
Toby Prevost	Co-investigator on health research grants, principally from the National Institute for Health Research (NIHR)	Non-personal, non-specific financial interest	No further action required
Joyce Rothschild	Husband is a governor at the Heart of England Foundation Trust	Personal, non-specific, non-financial interest	No further action required
Sarah West-Sadler	Employee, Consensus Action on Salt and Health (August 2013 to March 2014) providing data for their 'food switch' app	Non-personal, specific financial interest	No further action required
Sarah West-Sadler	MSc student in Nutritional Therapy at Worcester. Sees clients as part of her assessments. No funding received for this. Part of the assessment includes providing advice on weight management	Personal, specific, non-financial interest	No further action required

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Amanda Sowden	None	N/A	No further action required
Lucy Yardley	Co-investigator on proposal submitted to the HTA for trial of an exercise referral scheme	Non-personal, specific, financial interest	No further action required

## About this guideline

### *What does this guideline cover?*

This guideline is a partial update of NICE's guideline on [obesity](#) (2006). It will replace recommendations 1.1.1.1 to 1.1.1.6 in section 1.1.1 (see the [scope](#)).

It does not cover weaning, the particular needs of women during pregnancy or people who have conditions that increase their risk of becoming overweight or obese. It also does not cover interventions to:

- prevent children or adults becoming overweight or obese
- identify or assess people who are overweight or obese
- manage the weight of people who are overweight or obese.

(See [related NICE guidance](#) for other recommendations that may be relevant to identifying, preventing and managing overweight and obesity.)

The absence of any recommendations on interventions that fall within the scope of this guideline is a result of lack of evidence. It should not be taken as a judgement on whether they are cost effective.

### *How was this guideline developed?*

The recommendations are based on the best available evidence. They were developed by the Public Health Advisory Committee (PHAC).

Members of the PHAC are listed in [membership of the Public Health Advisory Committee and the NICE project team](#).

For information on how NICE public health guidelines are developed, see the NICE [public health guideline process and methods guides](#).

### *What evidence is the guideline based on?*

The [evidence](#) that the PHAC considered included:

- Evidence reviews:
  - Review 1 'An evidence review of modifiable diet and physical activity components, and associated behaviours', was carried out by Bazian. The principal authors were: Alicia White, Sarah Caton, Rob Davies, Alex Bhatti, Laura Johnson, Simon Sebire.
  - Review 2 'Qualitative evidence review of the most acceptable ways to communicate information about individually modifiable behaviours to help maintain a healthy weight or prevent excess weight gain' was carried out by Bazian. The principal authors were: Rob Davies, Alicia White, Sarah Caton, Alex Bhatti, Laura Johnson, Simon Sebire.
- 'Maintenance of a healthy weight and prevention of weight gain in children and adults. Cost effectiveness considerations from a population modelling viewpoint' was produced by NICE. The principal author was Alastair Fischer.

In some cases the evidence was insufficient and the PHAC has made recommendations for future research. For the research recommendations and gaps in research, see [recommendations for research and gaps in the evidence](#).

### *Status of this guideline*

The draft guideline, including the recommendations, was released for consultation in September 2014. At its meeting in November 2014, the PHAC amended the guideline in light of comments from stakeholders and experts and the fieldwork. The guideline was signed off by the NICE Guidance Executive in February 2015.

The guideline replaces section 1.1.1 of NICE's guideline on [obesity](#). (For further details, see [related NICE guidance](#)).

The recommendations should be read in conjunction with existing NICE guidance unless explicitly stated otherwise. They should be implemented in light of duties set out in the [Equality Act 2010](#).

The guideline is available on NICE's website. The recommendations are also available in a [pathway on obesity](#) for professionals whose remit includes public health and for interested members of the public.

NICE produces guidance, standards and information on commissioning and providing high-quality healthcare, social care, and public health services. We have agreements to provide certain NICE services to Wales, Scotland and Northern Ireland. Decisions on how NICE guidance and other products apply in those countries are made by ministers in the Welsh government, Scottish

government, and Northern Ireland Executive. NICE guidance or other products may include references to organisations or people responsible for commissioning or providing care that may be relevant only to England.

## *Implementation*

NICE guidelines can help:

- Commissioners and providers of NHS services to meet the requirements of the [NHS outcomes framework 2013–14](#). This includes helping them to deliver against domain 1: preventing people from dying prematurely.
- Local health and wellbeing boards to meet the requirements of the [Health and Social Care Act \(2012\)](#) and the [Public health outcomes framework for England 2013–16](#).
- Local authorities, NHS services and local organisations determine how to improve health outcomes and reduce health inequalities during the joint strategic needs assessment process.

NICE has developed [tools](#) to help organisations put this guideline into practice

## *Updating the recommendations*

This guideline will be reviewed 3 years after publication to determine whether all or part of it should be updated. Information on the progress of any update will be posted on the NICE website.

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## *Accreditation*

