

# Obesity: identification, assessment and management

Clinical guideline

Published: 27 November 2014

[www.nice.org.uk/guidance/cg189](http://www.nice.org.uk/guidance/cg189)

## 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.

This guideline is the basis of QS127.

## Introduction

Different weight classes are defined based on a person's body mass index (BMI) as follows:

- healthy weight: 18.5 kg/m<sup>2</sup> to 24.9 kg/m<sup>2</sup>
- overweight: 25 kg/m<sup>2</sup> to 29.9 kg/m<sup>2</sup>
- obesity I: 30 kg/m<sup>2</sup> to 34.9 kg/m<sup>2</sup>
- obesity II: 35 kg/m<sup>2</sup> to 39.9 kg/m<sup>2</sup>
- obesity III: 40 kg/m<sup>2</sup> or more.

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.

Overweight and obesity is a global problem. The World Health Organization predicts that by 2015 approximately 2.3 billion adults worldwide will be overweight, and more than 700 million will be obese. ([World Health Organization obesity and overweight: fact sheet 311](#)).

Obesity is directly linked to a number of different illnesses including type 2 diabetes, fatty liver disease, hypertension, gallstones and gastro-oesophageal reflux disease (see [NICE's guidelines on gallstones](#) and [gastro-oesophageal reflux disease](#)), as well as psychological and psychiatric morbidities. In 2011/12 there were 11,740 inpatient admissions to hospitals in England with a primary diagnosis of obesity: 3 times as many as in 2006/07 ([Health and Social Care Information Centre's statistics on obesity, physical activity and diet – England, 2013](#)). There were 3 times as many women admitted as men.

In the UK obesity rates nearly doubled between 1993 and 2011, from 13% to 24% in men and from 16% to 26% in women. In 2011, about 3 in 10 children aged 2 to 15 years were overweight or obese.

Ethnic differences exist in the prevalence of obesity and the related risk of ill health. For example, compared with the general population, the prevalence of obesity is lower in men of Bangladeshi and Chinese family origin, whereas it is higher for women of African, Caribbean and Pakistani family origin.

The cost of being overweight and obese to society and the economy was estimated to be almost £16 billion in 2007 (over 1% of gross domestic product). The cost could increase to just under £50 billion in 2050 if obesity rates continue to rise, according to the [Department of Health's obesity projections](#). A simulated model reported in the Lancet predicted that there would be 11 million more obese adults in the UK by 2030, with combined medical costs for treatment of associated diseases estimated to increase by up to £2 billion per year ([Wang et al. Health and economic burden of the projected obesity trends in the USA and the UK](#)).

NICE's previous guideline on obesity (NICE guideline CG43) made recommendations for providing care on preventing and managing overweight and obesity. The guideline aimed to ensure that obesity became a priority at both strategic and delivery levels. In 2013, however, the [Royal College of Physicians' action on obesity: comprehensive care for all](#) identified that care provision remained varied around the UK and that the models used to manage weight differed. It also reported that access to surgery for obesity in some areas of the UK did not reflect the recommendations in NICE's obesity guideline.

The evidence base for very-low-calorie diets has expanded since the publication of NICE's obesity guideline in 2006, and their use has increased. However, these interventions are not clearly defined, and there are concerns about safety, adherence and the sustainability of weight loss.

[NHS England and Public Health England's joined up clinical pathways for obesity working group report](#) was published in March 2014. Comments from national and local stakeholder organisations were invited, mainly concerning implementation at a local level and implications for delivery.

Obesity surgery (also known as bariatric surgery) includes gastric banding, gastric bypass, sleeve gastrectomy and duodenal switch. It is usually undertaken laparoscopically. NICE guideline CG43 recommended that surgery should be an option in certain circumstances. In 'Bariatric surgery for obesity' the former National Obesity Observatory reported a rise in bariatric surgery from around 470 in 2003/04 to over 6,500 in 2009/10. The First Annual Report (March 2010) of the National Bariatric Surgery Register reported that more than 7,000 of these operations were carried out between April 2008 and March 2010.

The National Confidential Enquiry into Patient Outcome and Death review of the care of people

who underwent bariatric surgery identified in 2012 that there should be a greater emphasis on support and follow up for people having bariatric surgery. The report also noted that clear postoperative dietary advice should be provided to people because of the potential for significant metabolic change (such as vitamin B12 and iron deficiency) after surgery.

It has been suggested that resolution of type 2 diabetes may be an additional outcome of surgical treatment of morbid obesity. It is estimated that about 60% of patients with type 2 diabetes achieve remission after Roux-en-Y gastric bypass surgery. It has also been suggested that diabetes-related morbidity and mortality is significantly lower after bariatric surgery and that the improvement in diabetes control is long-lasting ([Keidar, Bariatric surgery for type 2 diabetes reversal: the risks](#)).

NICE's guideline on obesity was reviewed in 2011, leading to this update. This guideline addresses 3 main areas: follow-up care packages after bariatric surgery; the role of bariatric surgery in the management of recent-onset type 2 diabetes; and very-low-calorie diets including their effectiveness, and safety and effective management strategies for maintaining weight loss after such diets.

## Safeguarding children

Remember that child maltreatment:

- is common
- can present anywhere, such as emergency departments and primary care or on home visits.

Be aware of or suspect abuse as a contributory factor to or cause of obesity in children. Abuse may also coexist with obesity. See [NICE's guideline on child maltreatment](#) for clinical features that may be associated with maltreatment.

This section has been agreed with the Royal College of Paediatrics and Child Health.

# 1 Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in [making decisions about your care](#).

[Making decisions using NICE guidelines](#) explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

The following guidance is based on the best available evidence. The [full guideline](#) gives details of the methods and the evidence used to develop the guidance.

## 1.1 Generic principles of care

### Adults

- 1.1.1 Equip specialist settings for treating people who are severely obese with, for example, special seating and adequate weighing and monitoring equipment. Ensure hospitals have access to specialist equipment – such as larger scanners and beds – when providing general care for people who are severely obese. [2006, amended 2014]
- 1.1.2 Discuss the choice of interventions for weight management with the person. The choice of intervention should be agreed with the person. [2006, amended 2014]
- 1.1.3 Tailor the components of the planned weight management programme to the person's preferences, initial fitness, health status and lifestyle. [2006]

### Children

- 1.1.4 Coordinate the care of children and young people around their individual and family needs. Comply with the approaches outlined in the [Department of Health's A call to action on obesity in England](#).

See also [NICE's guideline on weight management: lifestyle services for overweight or obese children and young people](#). [2006, amended 2014]

- 1.1.5 Aim to create a supportive environment that helps a child who is overweight or who has obesity, and their family, make lifestyle changes. (The GDG noted that 'environment' could include settings other than the home, for example, schools.) [2006, amended 2014]
- 1.1.6 Make decisions about the care of a child who is overweight or has obesity (including assessment and agreeing goals and actions) together with the child and family. Tailor interventions to the needs and preferences of the child and the family. [2006]
- 1.1.7 Ensure that interventions for children who are overweight or have obesity address lifestyle within the family and in social settings. [2006, amended 2014]
- 1.1.8 Encourage parents (or carers) to take main responsibility for lifestyle changes in children who are overweight or obese, especially if they are younger than 12 years. Take into account the age and maturity of the child, and the preferences of the child and the parents. [2006]

## Adults and children

- 1.1.9 Offer regular, non-discriminatory long-term follow-up by a trained professional. Ensure continuity of care in the multidisciplinary team through good record keeping. [2006]

## 1.2 Identification and classification of overweight and obesity

- 1.2.1 Use clinical judgement to decide when to measure a person's height and weight. Opportunities include registration with a general practice, consultation for related conditions (such as type 2 diabetes and cardiovascular disease) and other routine health checks. [2006]

## Measures of overweight and obesity

- 1.2.2 Use BMI as a practical estimate of adiposity in adults. Interpret BMI with

caution because it is not a direct measure of adiposity. [2006, amended 2014]

- 1.2.3 Think about using waist circumference, in addition to BMI, in people with a BMI less than 35 kg/m<sup>2</sup>.

See also [NICE's guideline on BMI: preventing ill health and premature death in black, Asian and other minority ethnic groups](#). [2006, amended 2014]

## Children

- 1.2.4 Use BMI (adjusted for age and gender) as a practical estimate of adiposity in children and young people. Interpret BMI with caution because it is not a direct measure of adiposity.

Where available, BMI z-scores or the [Royal College of Paediatrics and Child Health UK-WHO growth charts](#) may be used to calculate BMI in children and young people. The childhood and puberty close monitoring (CPCM) form may be used for longitudinal BMI monitoring in children over 4. [2006, amended 2014]

- 1.2.5 Waist circumference is not recommended as a routine measure. Use it to give additional information on the risk of developing other long-term health problems. [2006, amended 2014]

## Adults and children

- 1.2.6 Do not use bioimpedance as a substitute for BMI as a measure of general adiposity. [2006, amended 2014]

## Classification of overweight and obesity

### Adults

- 1.2.7 Define the degree of overweight or obesity in adults using the following classifications:

- Healthy weight – BMI 18.5 kg/m<sup>2</sup> to 24.9 kg/m<sup>2</sup>
- Overweight – BMI 25 kg/m<sup>2</sup> to 29.9 kg/m<sup>2</sup>
- Obesity I – BMI 30 kg/m<sup>2</sup> to 34.9 kg/m<sup>2</sup>

- Obesity II – BMI 35 kg/m<sup>2</sup> to 39.9 kg/m<sup>2</sup>
- Obesity III – BMI 40 kg/m<sup>2</sup> or more. [2006]

1.2.8 Interpret BMI with caution in highly muscular adults as it may be a less accurate measure of adiposity in this group. Some other population groups, such as people of Asian family origin and older people, have comorbidity risk factors that are of concern at different BMIs (lower for adults of an Asian family origin and higher for older people). Use clinical judgement when considering risk factors in these groups, even in people not classified as overweight or obese, using the classification in recommendation 1.2.7.

Further information on the use of BMI and waist circumference can be found in [NICE's guideline on BMI: preventing ill health and premature death in black, Asian and other minority ethnic groups](#). [2006]

1.2.9 Base assessment of the health risks associated with being overweight or obese in adults on BMI and waist circumference as follows: [2006]

#### Health risks by BMI and waist circumference

| BMI classification | Waist circumference: low | Waist circumference: high | Waist circumference: very high |
|--------------------|--------------------------|---------------------------|--------------------------------|
| Overweight         | No increased risk        | Increased risk            | High risk                      |
| Obesity 1          | Increased risk           | High risk                 | Very high risk                 |

For men, waist circumference of less than 94 cm is low, 94 cm to 102 cm is high and more than 102 cm is very high.

For women, waist circumference of less than 80 cm is low, 80 cm to 88 cm is high and more than 88 cm is very high.

1.2.10 Give adults information about their classification of clinical obesity and the impact this has on risk factors for developing other long-term health problems. [2006]

1.2.11 Base the level of intervention to discuss with the patient initially as follows:

### Level of intervention to discuss with the patient

| BMI classification | Waist circumference: low | Waist circumference: high | Waist circumference: very high | Comorbidities present |
|--------------------|--------------------------|---------------------------|--------------------------------|-----------------------|
| Overweight         | 1                        | 2                         | 2                              | 3                     |
| Obesity I          | 2                        | 2                         | 2                              | 3                     |
| Obesity II         | 3                        | 3                         | 3                              | 4                     |
| Obesity III        | 4                        | 4                         | 4                              | 4                     |

### Levels of intervention

|   |  |
|---|--|
| 1 | General advice on healthy weight and lifestyle               |
| 2 | Diet and physical activity                                   |
| 3 | Diet and physical activity; consider drugs                   |
| 4 | Diet and physical activity; consider drugs; consider surgery |

The level of intervention should be higher for patients with comorbidities (see section 1.3 for details), regardless of their waist circumference. Adjust the approach as needed, depending on the person's clinical need and potential to benefit from losing weight. [2006]

## Children

- 1.2.12 Relate BMI measurement in children and young people to the UK 1990 BMI charts to give age- and gender-specific information.

Where available, BMI z-scores or the [Royal College of Paediatrics and Child Health UK-WHO growth charts](#) may be used to calculate BMI in children and young people. The childhood and puberty close monitoring (CPCM) form may be used for longitudinal BMI monitoring in children over 4. [2006, amended 2014]

- 1.2.13 Tailored clinical intervention should be considered for children with a BMI at or above the 91<sup>st</sup> centile, depending on the needs of the individual child and family. [2006]

## 1.3 Assessment

### Adults and children

- 1.3.1 Make an initial assessment (see recommendations 1.3.6 and 1.3.8), then use clinical judgement to investigate comorbidities and other factors to an appropriate level of detail, depending on the person, the timing of the assessment, the degree of overweight or obesity, and the results of previous assessments. [2006]
- 1.3.2 Manage comorbidities when they are identified; do not wait until the person has lost weight. [2006]
- 1.3.3 Offer people who are not yet ready to change the chance to return for further consultations when they are ready to discuss their weight again and willing or able to make lifestyle changes. Give them information on the benefits of losing weight, healthy eating and increased physical activity. [2006]
- 1.3.4 Recognise that surprise, anger, denial or disbelief about their health situation may diminish people's ability or willingness to change. Stress that obesity is a clinical term with specific health implications, rather than a question of how people look; this may reduce any negative feelings.

#### During the consultation:

- Assess the person's view of their weight and the diagnosis, and possible reasons for weight gain.
- Explore eating patterns and physical activity levels.
- Explore any beliefs about eating, physical activity and weight gain that are unhelpful if the person wants to lose weight.
- Be aware that people from certain ethnic and socioeconomic backgrounds may be at greater risk of obesity, and may have different beliefs about what is a healthy weight and different attitudes towards weight management.
- Find out what the person has already tried and how successful this has been, and what they learned from the experience.

- Assess the person's readiness to adopt changes.
- Assess the person's confidence in making changes. [2006, amended 2014]

1.3.5 Give people and their families and/or carers information on the reasons for tests, how the tests are done, and their results and meaning. If necessary, offer another consultation to fully explore the options for treatment or discuss test results. [2006, amended 2014]

## Adults

1.3.6 Take measurements (see recommendations in section 1.2) to determine degree of overweight or obesity and discuss the implications of the person's weight. Then, assess:

- any presenting symptoms
- any underlying causes of being overweight or obese
- eating behaviours
- any comorbidities (for example type 2 diabetes, hypertension, cardiovascular disease, osteoarthritis, dyslipidaemia and sleep apnoea)
- any risk factors assessed using lipid profile (preferably done when fasting), blood pressure measurement and HbA<sub>1c</sub> measurement
- the person's lifestyle (diet and physical activity)
- any psychosocial distress
- any environmental, social and family factors, including family history of overweight and obesity and comorbidities
- the person's willingness and motivation to change lifestyle
- the potential of weight loss to improve health
- any psychological problems
- any medical problems and medication

- the role of family and care workers in supporting individuals with learning disabilities to make lifestyle changes.

See also [NICE's guideline on weight management: lifestyle services for overweight or obese children and young people](#). [2006, amended 2014]

1.3.7 Consider referral to tier 3 services if:

- the underlying causes of being overweight or obese need to be assessed
- the person has complex disease states or needs that cannot be managed adequately in tier 2 (for example, the additional support needs of people with learning disabilities)
- conventional treatment has been unsuccessful
- drug treatment is being considered for a person with a BMI of more than 50 kg/m<sup>2</sup>
- specialist interventions (such as a very-low-calorie diet) may be needed
- surgery is being considered.

For more information on tier 3 services, see [NHS England's report on joined up clinical pathways for obesity](#). [2006, amended 2014]

## Children

1.3.8 Assessment of comorbidity should be considered for children with a BMI at or above the 98<sup>th</sup> centile. [2006]

1.3.9 Take measurements to determine degree of overweight or obesity and raise the issue of weight with the child and family, then assess:

- presenting symptoms and underlying causes of being overweight or obese
- willingness and motivation to change
- comorbidities (such as hypertension, hyperinsulinaemia, dyslipidaemia, type 2 diabetes, psychosocial dysfunction and exacerbation of conditions such as asthma)
- any risk factors assessed using lipid profile (preferably done when fasting) blood pressure measurement and HbA<sub>1c</sub> measurement

- psychosocial distress, such as low self-esteem, teasing and bullying (See also [NICE's guideline on weight management: lifestyle services for overweight or obese children and young people](#))
  - family history of being overweight or obese and comorbidities
  - the child and family's willingness and motivation to change lifestyle
  - lifestyle (diet and physical activity)
  - environmental, social and family factors that may contribute to being overweight or obese, and the success of treatment
  - growth and pubertal status
  - any medical problems and medication
  - the role of family and care workers in supporting individuals with learning disabilities to make lifestyle changes. [2006, amended 2014]
- 1.3.10 Consider referral to an appropriate specialist for children who are overweight or obese and have significant comorbidities or complex needs (for example, learning disabilities or other additional support needs). [2006, amended 2014]
- 1.3.11 In tier 3 services, assess associated comorbidities and possible causes for children and young people who are overweight or who have obesity. Use investigations such as:
- blood pressure measurement
  - lipid profile, preferably while fasting
  - fasting insulin
  - fasting glucose levels and oral glucose tolerance test
  - liver function

- endocrine function.

Interpret the results of any tests used in the context of how overweight or obese the child is, the child's age, history of comorbidities, possible genetic causes and any family history of metabolic disease related to being overweight or obese. [2006, amended 2014]

- 1.3.12 Make arrangements for transitional care for children and young people who are moving from paediatric to adult services. [2006]

## 1.4 Lifestyle interventions

### Adults and children

- 1.4.1 Multicomponent interventions are the treatment of choice. Ensure weight management programmes include behaviour change strategies (see recommendations 1.5.1 to 1.5.3) to increase people's physical activity levels or decrease inactivity, improve eating behaviour and the quality of the person's diet, and reduce energy intake. [2006, amended 2014]
- 1.4.2 When choosing treatments, take into account:
- the person's individual preference and social circumstance and the experience and outcome of previous treatments (including whether there were any barriers)
  - the person's level of risk, based on BMI and, where appropriate, waist circumference (see recommendations 1.2.9 and 1.2.11)
  - any comorbidities. [2006, amended 2014]
- 1.4.3 Document the results of any discussion. Keep a copy of the agreed goals and actions (ensure the person also does this), or put this in the person's notes. [2006, amended 2014]
- 1.4.4 Offer support depending on the person's needs, and be responsive to changes over time. [2006]
- 1.4.5 Ensure any healthcare professionals who deliver interventions for weight management have relevant competencies and have had specific training. [2006, amended 2014]

- 1.4.6 Provide information in formats and languages that are suited to the person. Use everyday, jargon-free language and explain any technical terms when talking to the person and their family or carers. Take into account the person's:
- age and stage of life
  - gender
  - cultural needs and sensitivities
  - ethnicity
  - social and economic circumstances
  - specific communication needs (for example because of learning disabilities, physical disabilities or cognitive impairments due to neurological conditions). [2006, amended 2014]
- 1.4.7 Praise successes – however small – at every opportunity to encourage the person through the difficult process of changing established behaviour. [2006]
- 1.4.8 Give people who are overweight or obese, and their families and/or carers, relevant information on:
- being overweight and obesity in general, including related health risks
  - realistic targets for weight loss; for adults, please see [NICE's guideline on managing overweight and obesity in adults](#)
  - the distinction between losing weight and maintaining weight loss, and the importance of developing skills for both; advise them that the change from losing weight to maintenance typically happens after 6 to 9 months of treatment
  - realistic targets for outcomes other than weight loss, such as increased physical activity and healthier eating
  - diagnosis and treatment options
  - healthy eating in general ([more information on healthy eating can be found on the NHS website](#))
  - medication and side effects

- surgical treatments
- self-care
- voluntary organisations and support groups and how to contact them.

Ensure there is adequate time in the consultation to provide information and answer questions. [2006, amended 2014]

- 1.4.9 If a person (or their family or carers) does not feel this is the right time for them to take action, explain that advice and support will be available in the future whenever they need it. Provide contact details so that the person can get in touch when they are ready. [2006, amended 2014]

## Adults

- 1.4.10 Encourage the person's partner or spouse to support any weight management programme. [2006]
- 1.4.11 Base the level of intensity of the intervention on the level of risk and the potential to gain health benefits (see recommendation 1.2.11). [2006]

## Children

- 1.4.12 Be aware that the aim of weight management programmes for children and young people can vary. The focus may be on either weight maintenance or weight loss, depending on the person's age and stage of growth. [2006, amended 2014]
- 1.4.13 Encourage parents of children and young people who are overweight or obese to lose weight if they are also overweight or obese. [2006]

# 1.5 Behavioural interventions

## Adults and children

- 1.5.1 Deliver any behavioural intervention with the support of an appropriately trained professional. [2006]

## Adults

1.5.2 Include the following strategies in behavioural interventions for adults, as appropriate:

- self-monitoring of behaviour and progress
- stimulus control
- goal setting
- slowing rate of eating
- ensuring social support
- problem solving
- assertiveness
- cognitive restructuring (modifying thoughts)
- reinforcement of changes
- relapse prevention
- strategies for dealing with weight regain. [2006]

## Children

1.5.3 Include the following strategies in behavioural interventions for children, as appropriate:

- stimulus control
- self-monitoring
- goal setting
- rewards for reaching goals
- problem solving.

Give praise to successes and encourage parents to role-model desired behaviours.  
[2006, amended 2014]

## 1.6 Physical activity

### Adults

- 1.6.1 Encourage adults to increase their level of physical activity even if they do not lose weight as a result, because of the other health benefits it can bring (for example, reduced risk of type 2 diabetes and cardiovascular disease). Encourage adults to meet the recommendations in the [UK Chief Medical Officers' physical activity guidelines](#) for weekly activity. [2006]
- 1.6.2 Advise that to prevent obesity, most people may need to do 45 to 60 minutes of moderate-intensity activity a day, particularly if they do not reduce their energy intake. Advise people who have been obese and have lost weight that they may need to do 60 to 90 minutes of activity a day to avoid regaining weight. [2006]
- 1.6.3 Encourage adults to build up to the recommended activity levels for weight maintenance, using a managed approach with agreed goals.

Recommend types of physical activity, including:

- activities that can be incorporated into everyday life, such as brisk walking, gardening or cycling (see also [NICE's guideline on walking and cycling](#))
- supervised exercise programmes
- other activities, such as swimming, aiming to walk a certain number of steps each day, or stair climbing.

Take into account the person's current physical fitness and ability for all activities. Encourage people to also reduce the amount of time they spend inactive, such as watching television, using a computer or playing video games. [2006]

### Children

- 1.6.4 Encourage children and young people to increase their level of physical activity, even if they do not lose weight as a result, because of the other health benefits exercise can bring (for example, reduced risk of type 2 diabetes and cardiovascular disease). Encourage children to meet the recommendations in the [UK Chief Medical Officers' physical activity guidelines](#) for daily activity. [2006]

- 1.6.5 Be aware that children who are already overweight may need to do more than 60 minutes' activity. [2006, amended 2014]
- 1.6.6 Encourage children to reduce inactive behaviours, such as sitting and watching television, using a computer or playing video games. [2006]
- 1.6.7 Give children the opportunity and support to do more exercise in their daily lives (for example, walking, cycling, using the stairs and active play; see also [NICE's guideline on walking and cycling](#)). Make the choice of activity with the child, and ensure it is appropriate to the child's ability and confidence. [2006]
- 1.6.8 Give children the opportunity and support to do more regular, structured physical activity (for example football, swimming or dancing). Make the choice of activity with the child, and ensure it is appropriate to the child's ability and confidence. [2006]

## 1.7 Dietary

### Adults and children

- 1.7.1 Tailor dietary changes to food preferences and allow for a flexible and individual approach to reducing calorie intake. [2006]
- 1.7.2 Do not use unduly restrictive and nutritionally unbalanced diets, because they are ineffective in the long term and can be harmful. [2006, amended 2014]
- 1.7.3 Encourage people to improve their diet even if they do not lose weight, because there can be other health benefits. [2006]

### Adults

- 1.7.4 The main requirement of a dietary approach to weight loss is that total energy intake should be less than energy expenditure. [2006]
- 1.7.5 Diets that have a 600 kcal/day deficit (that is, they contain 600 kcal less than the person needs to stay the same weight) or that reduce calories by lowering the fat content (low-fat diets), in combination with expert support and intensive follow-up, are recommended for sustainable weight loss. [2006]

- 1.7.6 Consider low-calorie diets (800–1600 kcal/day), but be aware these are less likely to be nutritionally complete. [2006, amended 2014]
- 1.7.7 Do not routinely use very-low-calorie diets (800 kcal/day or less) to manage obesity (defined as BMI over 30). [new 2014]
- 1.7.8 Only consider very-low-calorie diets, as part of a multicomponent weight management strategy, for people who are obese and who have a clinically-assessed need to rapidly lose weight (for example, people who need joint replacement surgery or who are seeking fertility services). Ensure that:
- the diet is nutritionally complete
  - the diet is followed for a maximum of 12 weeks (continuously or intermittently)
  - the person following the diet is given ongoing clinical support. [new 2014]
- 1.7.9 Before starting someone on a very-low-calorie diet as part of a multicomponent weight management strategy:
- Consider counselling and assess for eating disorders or other psychopathology to make sure the diet is appropriate for them.
  - Discuss the risks and benefits with them.
  - Tell them that this is not a long-term weight management strategy, and that regaining weight may happen and is not because of their own or their clinician's failure.
  - Discuss the reintroduction of food following a liquid diet with them. [new 2014]
- 1.7.10 Provide a long-term multicomponent strategy to help the person maintain their weight after the use of a very-low-calorie diet. (See recommendation 1.4.1.) [new 2014]
- 1.7.11 Encourage people to eat a balanced diet in the long term, consistent with other healthy eating advice.

[More information on healthy eating can be found on the eat well pages of the NHS website.](#) [2006, amended 2014]

## Children

- 1.7.12 A dietary approach alone is not recommended. It is essential that any dietary recommendations are part of a multicomponent intervention. [2006]
- 1.7.13 Any dietary changes should be age appropriate and consistent with healthy eating advice. [2006]
- 1.7.14 For overweight and obese children and young people, total energy intake should be below their energy expenditure. Changes should be sustainable. [2006, amended 2014]

## 1.8 Pharmacological interventions

### Adults

- 1.8.1 Consider pharmacological treatment only after dietary, exercise and behavioural approaches have been started and evaluated. [2006]
- 1.8.2 Consider drug treatment for people who have not reached their target weight loss or have reached a plateau on dietary, activity and behavioural changes. [2006]
- 1.8.3 Make the decision to start drug treatments after discussing the potential benefits and limitations with the person, including the mode of action, adverse effects and monitoring requirements, and the potential impact on the person's motivation. Make arrangements for appropriate healthcare professionals to offer information, support and counselling on additional diet, physical activity and behavioural strategies when drug treatment is prescribed. Provide information on patient support programmes. [2006, amended 2014]

### Children

- 1.8.4 Drug treatment is not generally recommended for children younger than 12 years. [2006]
- 1.8.5 In children younger than 12 years, drug treatment may be used only in exceptional circumstances, if severe comorbidities are present. Prescribing should be started and monitored only in specialist paediatric settings. [2006,

amended 2014]

- 1.8.6 In children aged 12 years and older, treatment with orlistat is recommended only if physical comorbidities (such as orthopaedic problems or sleep apnoea) or severe psychological comorbidities are present. Treatment should be started in a specialist paediatric setting, by multidisciplinary teams with experience of prescribing in this age group.

In October 2014, this was an off label use of orlistat. See [NICE's information on prescribing medicines](#). [2006, amended 2014]

- 1.8.7 Do not give orlistat to children for obesity unless prescribed by a multidisciplinary team with expertise in:

- drug monitoring
- psychological support
- behavioural interventions
- interventions to increase physical activity
- interventions to improve diet. [2006, amended 2014]

- 1.8.8 Drug treatment may be continued in primary care for example with a shared care protocol if local circumstances and/or licensing allow. [2006, amended 2014]

## 1.9 Continued prescribing and withdrawal

### Adults and children

- 1.9.1 Pharmacological treatment may be used to maintain weight loss rather than to continue to lose weight. [2006]
- 1.9.2 If there is concern about micronutrient intake adequacy, a supplement providing the reference nutrient intake for all vitamins and minerals should be considered, particularly for vulnerable groups such as older people (who may be at risk of malnutrition) and young people (who need vitamins and minerals for growth and development). [2006]

- 1.9.3 Offer support to help maintain weight loss to people whose drug treatment is being withdrawn; if they did not reach their target weight, their self-confidence and belief in their ability to make changes may be low. [2006]

## Adults

- 1.9.4 Monitor the effect of drug treatment and reinforce lifestyle advice and adherence through regular review. [2006, amended 2014]
- 1.9.5 Consider withdrawing drug treatment in people who have not reached weight loss targets (see recommendation 1.9.8 for details). [2006]
- 1.9.6 Rates of weight loss may be slower in people with type 2 diabetes, so less strict goals than those for people without diabetes may be appropriate. Agree the goals with the person and review them regularly. [2006]
- 1.9.7 Only prescribe orlistat as part of an overall plan for managing obesity in adults who meet one of the following criteria:
- a BMI of 28 kg/m<sup>2</sup> or more with associated risk factors
  - a BMI of 30 kg/m<sup>2</sup> or more. [2006]
- 1.9.8 Continue orlistat therapy beyond 3 months only if the person has lost at least 5% of their initial body weight since starting drug treatment. (See also recommendation 1.9.6 for advice on targets for people with type 2 diabetes.) [2006]
- 1.9.9 Make the decision to use drug treatment for longer than 12 months (usually for weight maintenance) after discussing potential benefits and limitations with the person. [2006]
- 1.9.10 The co-prescribing of orlistat with other drugs aimed at weight reduction is not recommended. [2006]

## Children

- 1.9.11 If orlistat is prescribed for children, a 6 to 12-month trial is recommended, with regular review to assess effectiveness, adverse effects and adherence.

In October 2014, this was an off label use of orlistat. See [NICE's information on prescribing medicines](#). [2006, amended 2014]

## 1.10 Surgical interventions

1.10.1 Bariatric surgery is a treatment option for people with obesity if all of the following criteria are fulfilled:

- They have a BMI of 40 kg/m<sup>2</sup> or more, or between 35 kg/m<sup>2</sup> and 40 kg/m<sup>2</sup> and other significant disease (for example, type 2 diabetes or high blood pressure) that could be improved if they lost weight.
- All appropriate non-surgical measures have been tried but the person has not achieved or maintained adequate, clinically beneficial weight loss.
- The person has been receiving or will receive intensive management in a tier 3 service (for more information on tier 3 services, see [NHS England's report on joined up clinical pathways for obesity](#)).
- The person is generally fit for anaesthesia and surgery.
- The person commits to the need for long-term follow-up.

See recommendations 1.10.12 and 1.10.13 for additional criteria to use when assessing children, and recommendation 1.10.7 for additional criteria for adults. See also recommendations 1.11.1 to 1.11.3 for additional criteria for people with type 2 diabetes. [2006, amended 2014]

1.10.2 The hospital specialist and/or bariatric surgeon should discuss the following with people who are severely obese if they are considering surgery to aid weight reduction:

- the potential benefits
- the longer-term implications of surgery
- associated risks
- complications

- perioperative mortality.

The discussion should also include the person's family, as appropriate. [2006, amended 2014]

1.10.3 Choose the surgical intervention jointly with the person, taking into account:

- the degree of obesity
- comorbidities
- the best available evidence on effectiveness and long-term effects
- the facilities and equipment available
- the experience of the surgeon who would perform the operation. [2006]

1.10.4 Provide regular, specialist postoperative dietetic monitoring, including:

- information on the appropriate diet for the bariatric procedure
- monitoring of the person's micronutrient status
- information on patient support groups
- individualised nutritional supplementation, support and guidance to achieve long-term weight loss and weight maintenance. [2006]

1.10.5 Arrange prospective audit so that the outcomes and complications of different procedures, the impact on quality of life and nutritional status, and the effect on comorbidities can be monitored in both the short and the long term. (The [National Bariatric Surgery Registry](#) is now available to conduct national audit for a number of agreed outcomes.) [2006, amended 2014]

1.10.6 The surgeon in the multidisciplinary team should:

- have had a relevant supervised training programme
- have specialist experience in bariatric surgery
- submit data for a national clinical audit scheme (the National Bariatric Surgery Registry is now available to conduct national audit for a number of agreed outcomes). [2006, amended 2014]

## Adults

- 1.10.7 In addition to the criteria listed in 1.10.1, bariatric surgery is the option of choice (instead of lifestyle interventions or drug treatment) for adults with a BMI of more than 50 kg/m<sup>2</sup> when other interventions have not been effective. [2006, amended 2014]
- 1.10.8 Orlistat may be used to maintain or reduce weight before surgery for people who have been recommended surgery as a first-line option, if it is considered that the waiting time for surgery is excessive. [2006, amended 2014]
- 1.10.9 Surgery for obesity should be undertaken only by a multidisciplinary team that can provide:
- preoperative assessment, including a risk-benefit analysis that includes preventing complications of obesity, and specialist assessment for eating disorders
  - information on the different procedures, including potential weight loss and associated risks
  - regular postoperative assessment, including specialist dietetic and surgical follow up (see recommendation 1.12.1)
  - management of comorbidities
  - psychological support before and after surgery
  - information on, or access to, plastic surgery (such as apronectomy) when appropriate
  - access to suitable equipment, including scales, theatre tables, Zimmer frames, commodes, hoists, bed frames, pressure-relieving mattresses and seating suitable for people undergoing bariatric surgery, and staff trained to use them. [2006]
- 1.10.10 Carry out a comprehensive preoperative assessment of any psychological or clinical factors that may affect adherence to postoperative care requirements (such as changes to diet) before performing surgery. [2006, amended 2014]
- 1.10.11 Revisional surgery (if the original operation has failed) should be undertaken only in specialist centres by surgeons with extensive experience because of the high rate of complications and increased mortality. [2006]

## Children

- 1.10.12 Surgical intervention is not generally recommended in children or young people. [2006]
- 1.10.13 Bariatric surgery may be considered for young people only in exceptional circumstances, and if they have achieved or nearly achieved physiological maturity. [2006]
- 1.10.14 Surgery for obesity should be undertaken only by a multidisciplinary team that can provide paediatric expertise in:
- preoperative assessment, including a risk-benefit analysis that includes preventing complications of obesity, and specialist assessment for eating disorders
  - information on the different procedures, including potential weight loss and associated risks
  - regular postoperative assessment, including specialist dietetic and surgical follow up
  - management of comorbidities
  - psychological support before and after surgery
  - information on or access to plastic surgery (such as apronectomy) when appropriate
  - access to suitable equipment, including scales, theatre tables, Zimmer frames, commodes, hoists, bed frames, pressure-relieving mattresses and seating suitable for children and young people undergoing bariatric surgery, and staff trained to use them. [2006]
- 1.10.15 Coordinate surgical care and follow-up around the child or young person and their family's needs. Comply with the approaches outlined in the [Department of Health's a call to action on obesity in England](#). [2006, amended 2014]
- 1.10.16 Ensure all young people have had a comprehensive psychological, educational, family and social assessment before undergoing bariatric surgery. [2006, amended 2014]
- 1.10.17 Perform a full medical evaluation, including genetic screening or assessment before surgery to exclude rare, treatable causes of obesity. [2006]

## 1.11 Bariatric surgery for people with recent-onset type 2 diabetes

For the recommendations in this section, the GDG considered that recent-onset type 2 diabetes would include those people whose diagnosis has been made within a 10-year time frame.

- 1.11.1 Offer an expedited assessment for bariatric surgery to people with a BMI of 35 or over who have recent-onset type 2 diabetes as long as they are also receiving or will receive assessment in a tier 3 service (or equivalent). [new 2014]
- 1.11.2 Consider an assessment for bariatric surgery for people with a BMI of 30 to 34.9 who have recent-onset type 2 diabetes as long as they are also receiving or will receive assessment in a tier 3 service (or equivalent). [new 2014]
- 1.11.3 Consider an assessment for bariatric surgery for people of Asian family origin who have recent-onset type 2 diabetes at a lower BMI than other populations (see recommendation 1.2.8) as long as they are also receiving or will receive assessment in a tier 3 service (or equivalent). [new 2014]

## 1.12 Follow-up care

- 1.12.1 Offer people who have had bariatric surgery a follow-up care package for a minimum of 2 years within the bariatric service. This should include:
  - monitoring nutritional intake (including protein and vitamins) and mineral deficiencies
  - monitoring for comorbidities
  - medication review
  - dietary and nutritional assessment, advice and support
  - physical activity advice and support
  - psychological support tailored to the individual
  - information about professionally-led or peer-support groups. [new 2014]
- 1.12.2 After discharge from bariatric surgery service follow-up, ensure that all people are offered at least annual monitoring of nutritional status and appropriate

supplementation according to need following bariatric surgery, as part of a shared care model of chronic disease management. [new 2014]

## 2 Research recommendations

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future.

### 2.1 Follow-up care after bariatric surgery

Do post-operative lifestyle intervention programmes (exercise, behavioural or dietary) improve weight loss and weight-loss maintenance following bariatric surgery?

#### Why this is important

Lifestyle interventions are targeted pre-operatively with formalised recommendations to prepare patients for surgery. In contrast, post-surgery there are no lifestyle intervention programmes to help patients adapt. Limited evidence suggests that exercise and behavioural input improve weight loss outcomes, but high quality research is needed to assess the impact of these interventions.

### 2.2 Long-term outcomes of bariatric surgery on people with type 2 diabetes

What is the long-term effect of bariatric surgery on diabetes-related complications and quality of life in people with type 2 diabetes compared with optimal medical treatment?

#### Why this is important

Short-term studies (1 to 2 years) show that patients with type 2 diabetes who undergo bariatric surgery lose more weight and have better blood glucose control than those treated with conventional diabetes management. There are no long-term data (that is, over 3 years) to show whether this results in reduced development of diabetes complications and improved quality of life compared with standard care.

### 2.3 Bariatric surgery in children and young people

What are the long-term outcomes of bariatric surgery in children and young people with obesity?

## Why this is important

Monitoring of obesity comorbidities (respiratory problems, atherosclerosis, insulin resistance, type 2 diabetes, dyslipidaemia, fatty liver disease, psychological sequelae) in children and young people with obesity is limited because of the lack of dedicated tier 3 or 4 paediatric obesity services in the UK. Centralised collection of cohort data is lacking in the UK when compared with elsewhere in Europe (Flechtner-Mors 2013) and the USA (Must 2012). Current data on longer-term outcomes (more than 5 years) in young people undergoing bariatric surgery are also sparse (Lennerz 2014, Black 2013), demonstrating a need for research in this area.

## 2.4 Obesity management for people with a condition associated with an increased risk of obesity

What is the best way to deliver obesity management interventions to people with particular conditions associated with increased risk of obesity (such as people with a physical disability that limits mobility, a learning disability or enduring mental health difficulties)?

### Why this is important

People living with learning disabilities or mental health problems or a physical disability that limits mobility have been found to experience higher rates of obesity compared with people who do not have these conditions.

It is estimated that around 23% of children with learning disabilities are obese ([Emerson and Robertson 2010](#)). Other studies report rates of obesity in adults with learning disabilities of around 50% ([Melville et al. 2007](#)).

Among adults with severe mental illness, the prevalence of obesity has been reported to be as high as 55%. Physical inactivity, unhealthy diets and weight gain from psychotropic medication are all factors that contribute to this. People with serious mental illness have mortality rates up to 3 times as high as the general population. The primary cause of death in these people is cardiovascular disease, which is strongly associated with the incidence of obesity.

There is minimal evidence from controlled studies as to which obesity interventions are effective for people with learning disabilities or mental health difficulties. This lack of evidence contributes to the inequalities around outcomes and access to services as experienced by these people.

## 2.5 Long-term effect of very-low-calorie diets on

## people with a BMI of 40 kg/m<sup>2</sup> or more

What are the long-term effects of using very-low-calorie diets (VLCDs) versus low-calorie diets (LCDs) on weight and quality of life in patients with a BMI of 40 kg/m<sup>2</sup> or more, including the impact on weight cycling?

### Why this is important

There was little information found in the literature search on the use of VLCDs in patients with a BMI above 40 kg/m<sup>2</sup>, although they are increasingly used in this group of patients. There was also a lack of data on quality of life. The Guideline Development Group was concerned about VLCDs potential encouraging disordered eating or weight cycling, which is detrimental to both physical and psychological health. It would also be useful to differentiate between liquid VLCDs and those VLCDs which incorporate solid food products to identify whether the liquid formulation or the energy reduction alone affected weight loss, quality of life, and subsequent disordered eating.

## Finding more information and committee details

You can see everything NICE says on this topic in the [NICE Pathways on diet, obesity and physical activity](#).

To find NICE guidance on related topics, including guidance in development, see the [NICE webpage on obesity](#).

For full details of the evidence and the guideline committee's discussions, see the [full guideline and appendices](#). You can also find information about [how the guideline was developed, including details of the committee](#).

NICE has produced [tools and resources to help you put this guideline into practice](#). For general help and advice on putting our guidelines into practice, see [resources to help you put NICE guidance into practice](#).

## Update information

**November 2014:** This guideline updated and replaced section 1.2 of NICE guideline CG43 (published December 2006). We reviewed the evidence in section 1.2 of NICE guideline CG43 and made new recommendations on very low calorie diets for adults, bariatric surgery for people with recent-onset type 2 diabetes, and follow up care after bariatric surgery. These recommendations are marked [new 2014].

We also made some changes without an evidence review to:

- reflect changes to national core standards and service organisation, how blood glucose is measured, the definition of a very-low-calorie diet, use of BMI and z scores, and current practice to ensure safe prescribing
- better reflect the needs of people with learning disabilities
- improve alignment between recommendations for adults and children
- include cross references to the NICE guideline on waist circumference, the 'Weight Wise' campaign, the NHS Choices healthy eating website, and the National Bariatric Surgery Register
- remove 'life-threatening' and examples of severe life-threatening comorbidities, because they were considered by the Guideline Development Group to be unhelpful in clinical practice
- remove reference to sibutramine because marketing authorisation has been suspended for this drug
- highlight that the use of orlistat in children and young people is outside its marketing authorisation.

These recommendations are marked [2006, amended 2014].

Recommendations marked [2006] last had an evidence review in 2006. In some cases minor changes have been made to the wording to bring the language and style up to date, without changing the meaning.

### Minor changes since publication

**February 2021:** We updated the information on amounts of exercise in recommendations 1.6.1 and 1.6.4 in line with the 2019 [UK Chief Medical Officers' physical activity guidelines](#).

ISBN: 978-1-4731-0854-7

## Accreditation

