NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Guideline

Obesity: identification and classification of overweight and obesity

Draft for consultation, April 2022

This guideline covers assessing overweight and obesity in adults, children and young people. It does not cover children aged under 2 or women during pregnancy.

The guideline will update and replace the recommendations on identification and classification of overweight and obesity in NICE's guidelines on:

- obesity: identification, assessment and management (2014) NICE guideline CG189
- BMI: preventing ill health and premature death in Black, Asian and other minority ethnic groups (2013) NICE guideline PH46

Who is it for?

- Healthcare professionals
- Commissioners and providers
- People who work in, and are responsible for providing, services in the wider public, private, voluntary and community sectors
- People using services, their families and carers, and the public

What does it include?

- the draft recommendations
- recommendations for research
- rationale and impact sections that explain why the committee made the 2022 recommendations and how they might affect practice and services
- the guideline context.

Information about how the guideline was developed is on the guideline's webpage This includes the evidence reviews, the scope, details of the committee and any declarations of interest.

New and updated recommendations

We have reviewed evidence on identification and classification of overweight and obesity. You are invited to comment on the new and updated recommendations. These are marked **[2022]**.

You are also invited to comment on recommendations that we propose to delete from the previous guidelines.

We have not reviewed the evidence for the recommendations shaded in grey, and cannot accept comments on them. In some cases, we have made minor wording changes for clarification.

See update information for a full explanation of what is being updated.

Full details of the evidence and the committee's discussions on the 2022 recommendations are in the evidence reviews. For the evidence on the 2006 recommendations see the supporting evidence for CG189.

Contents

Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on 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.

1.1 Identifying and assessing overweight and obesity in adults

Taking measurements in adults

1.1.1 Use clinical judgement to decide when to measure a person's height and weight. Opportunities include when registering with a GP, consultations for related conditions (such as type 2 diabetes and cardiovascular disease) and other routine health checks. **[2006, CG189 rec 1.2.1, to be reviewed in a forthcoming update]**

1.1.2 Encourage adults with a body mass index (BMI) below 35 kg/m² to:

- measure their own waist-to-height ratio
- seek further clinical measurements and advice from a healthcare practitioner if the measurement indicates an increased health risk.

Explain to people that to measure their waist, they should find the bottom of their ribs and the top of their hips, wrap a tape measure around the waist midway between these points and breathe out naturally before taking the measurement. You can also direct people to resources such as the NHS BMI healthy weight calculator, that explain this. See recommendation 1.1.10 for how to interpret waist-to-height ratio. **[2022]**

Measures of overweight, obesity and central adiposity in adults

1.1.3 Use BMI as a practical measure of overweight and obesity. Interpret it with caution because it is not a direct measure of central adiposity. **[2022, replaces CG189 rec 1.2.2]**

1.1.4 In adults whose BMI is below 35 kg/m² measure and use waist-to-height ratio, as well as BMI, as a practical estimate of central adiposity to help to assess and predict health risks (for example, type 2 diabetes, hypertension or cardiovascular disease). **[2022, replaces CG189 rec 1.2.3]**

1.1.5 Do not use bioimpedance as a substitute for BMI as a measure of general adiposity. [2006**, amended 2014,** CG189 rec 1.2.6]

Classifying overweight, obesity and central adiposity in adults

1.1.6 Define the degree of overweight or obesity in adults as follows, if they are not in the groups covered by recommendation 1.1.7:

- healthy weight: BMI 18.5 kg/m^2 to 24.9 kg/m^2
- overweight: BMI 25 kg/m^2 to 29.9 kg/m^2
- obesity class 1: BMI 30 kg/m^2 to 34.9 kg/m^2
- obesity class 2: BMI 35 kg/m^2 to 39.9 kg/m^2
- obesity class 3: BMI 40 kg/m^2 or more.

Use clinical judgement when interpreting the healthy weight category because a person in this category may nevertheless have central adiposity. **[2022, replaces CG189 rec 1.2.7]**

1.1.7 People with a South Asian, Chinese, other Asian, Middle Eastern, Black African or African-Caribbean family background are prone to central adiposity and their cardiometabolic risk occurs at lower BMI, so use lower BMI thresholds as a practical measure of overweight and obesity:

- overweight: BMI 23 kg/m^2 to 27.4 kg/m^2
- obesity: BMI 27.5 kg/m^2 or above.

When defining obesity classes 2 and 3 for people in these groups, reduce the BMI thresholds in recommendation 1.1.6 by 2.5 kg/m^2. **[2022, replaces PH46 rec 1 and CG189 rec 1.2.8]**

1.1.8 Interpret BMI with caution in adults with high muscle mass because it may be a less accurate measure of central adiposity in this group. **[2022, replaces CG189 rec 1.2.8]**

1.1.9 Interpret BMI with caution in people older than 65, taking into account comorbidities, functional capacity and the possible protective effect of adiposity. **[2022]**

1.1.10 Define the degree of central adiposity based on waist-to-height ratio as follows:

- healthy central adiposity: 0.4 to 0.49, indicating no increased health risks
- increased central adiposity: 0.5 to 0.59, indicating increased health risks
- high central adiposity: 0.6 or more, indicating further increased health risks.

Higher levels of adiposity are associated with health risks such as type 2 diabetes, hypertension or cardiovascular disease. The boundary value of 0.5 can be easily communicated: ‘Keep your waist to less than half of your height’.

This classification can be used for both sexes and all ethnic groups. It can also be used in highly muscular adults. **[2022, replaces CG189 rec 1.2.9]**

Discussing the results

1.1.11 Ask the person’s permission before talking about the degree of overweight, obesity and central adiposity, and discuss it in in a sensitive manner.

1.1.12 Give adults information about the severity of their obesity and central adiposity and the impact this has on their risk of developing other long-

term conditions (such as type 2 diabetes, cardiovascular disease, hypertension, dyslipidaemia, certain cancers, respiratory conditions, musculoskeletal conditions and other metabolic conditions such as non-alcoholic fatty liver disease). **[2006, amended 2022, CG189 rec 1.2.10]**

1.1.13 Discuss and decide the level of intervention with the person. Take into account their individual needs and factors such as weight-related comorbidities, ethnicity, socioeconomic status and family history. See NICE's guideline on obesity: identification, assessment and management: recommendations on lifestyle interventions, behavioural interventions, physical activity, diets, pharmacological interventions and surgical interventions. **[2022, replaces CG189 recommendation 1.2.11]**

1.1.14 Offer a higher level of intervention to people with weight-related comorbidities, regardless of their waist-to-height ratio. Adjust the approach depending on the person's clinical need. See NICE's guideline on obesity: identification, assessment and management: section 1.3 for details of comorbidities; recommendation 1.11.1 for people with a BMI over 35 kg/m² with recent onset of diabetes; and recommendations 1.3.7 and 1.10.7 for people with a BMI over 50. **[2022, replaces CG189 recommendation 1.2.11]**

For a short explanation of why the committee made the 2022 recommendations and how they might affect practice, see the rationale and impact section on identifying and assessing overweight and obesity in adults.

Full details of the evidence and the committee's discussion are in evidence review A: accuracy of anthropometric measures in assessing health risks associated with overweight and obesity in adults.

1.2 Identifying and assessing overweight and obesity in children and young people

Taking measurements in children

1.2.1 Use clinical judgement to decide when to measure a child or young person's height and weight. Opportunities include when registering with a GP, consultations for related conditions (such as type 2 diabetes and cardiovascular disease) and other routine health checks. **[2006, CG189 rec 1.2.1, to be reviewed as part of a forthcoming update]**

Measures of overweight, obesity and central adiposity in children and young people

1.2.2 Use BMI (adjusted for age and sex) as a practical estimate of overweight and obesity in children and young people. Interpret it with caution because it is not a direct measure of central adiposity. The Royal College of Paediatrics and Child Health UK-World Health Organization (WHO) growth and BMI charts may be used to plot and classify BMI centile. The childhood and puberty close monitoring (CPCM) form may be used for longitudinal BMI monitoring in children aged 4 and older. Refer to special growth charts if needed and available (for example for children with Down's syndrome). **[2022, replaces CG189 rec 1.2.4]**

1.2.3 Consider using waist-to-height ratio in children and young people aged 5 and older to assess and predict health risks associated with central adiposity (such as type 2 diabetes, hypertension or cardiovascular disease). **[2022, replaces CG189 rec 1.2.5]**

Classifying overweight, obesity and central adiposity in children and young people

1.2.4 Define the degree of overweight or obesity in children and young people using the following classifications:

- overweight: BMI 91st centile + 1.34 standard deviations
- clinical obesity: BMI 98th centile + 2.05 standard deviations

- severe obesity: BMI 99.6th centile + 2.68 standard deviations. **[2022]**

1.2.5 Define the degree of central adiposity in children and young people as follows:

- healthy central adiposity: 0.4 to 0.49, indicating no increased health risk
- increased central adiposity: 0.5 to 0.59, indicating increased health risk
- high central adiposity: 0.6 or more, indicating further increased health risk.

Higher central adiposity levels are associated with health risks such as type 2 diabetes, hypertension or cardiovascular disease. The boundary value of 0.5 can be easily communicated: ‘Keep your waist to less than half of your height’.

This classification can be used for both sexes and in all ethnic groups. **[2022]**

1.2.6 Ask permission from children, young people and parents or carers before talking about the degree of overweight, obesity and central adiposity, and discuss it in a sensitive manner. **[2022]**

Choosing interventions

1.2.7 Consider tailored interventions for children with a BMI at or above the 91st centile or waist-to-height ratio of 0.5 or more. Take into account their individual needs and factors such as weight-related comorbidities, ethnicity, socioeconomic status, family history, developmental age and special educational needs and disabilities (SEND). See NICE's guideline on obesity: identification, assessment and management: recommendations on lifestyle interventions, behavioural interventions, physical activity, diets, pharmacological interventions and surgical interventions. **[2022, replaces CG189 rec 1.2.13]**

1.2.8 Offer a higher level of intervention to children with weight-related comorbidities, regardless of their waist-to-height ratio. Adjust the approach depending on the child's clinical need. See NICE's guideline on

obesity: identification, assessment and management: section 1.3 for details of comorbidities; recommendation 1.8.5 and 1.8.6 for pharmacological treatment in children with comorbidities; and recommendations 1.10.12 and 1.10.13 for recommendations on surgical interventions in young people with exceptional circumstances. **[2022]**

For a short explanation of why the committee made the 2022 recommendations and how they might affect practice, see the rationale and impact section on identifying and assessing overweight and obesity in children and young people.

Full details of the evidence and the committee's discussion are in evidence review B: accuracy of anthropometric measures in assessing health risks associated with overweight and obesity in children and young people.

Recommendations for research

The guideline committee has made the following recommendations for research.

Key recommendations for research

1 Measurements for assessing health risks in adults

What are the most accurate and suitable measurements and boundary values to assess the health risk associated with overweight and obesity in adults of different ethnicities, particularly those in Black, Asian and minority ethnic groups?

For a short explanation of why the committee made the recommendation for research, see the rationale section on discussing the results.

Full details of the evidence and the committee's discussion are in evidence review A: accuracy of anthropometric measures in assessing health risks associated with overweight and obesity in adults .

2 Measurements for assessing health risks in children and young people

What are the most accurate and suitable measurements and boundary values to assess the health risk associated with overweight and obesity in children and young

people of different ethnicities, particularly those in Black, Asian and minority ethnic groups?

For a short explanation of why the committee made the recommendation for research, see the rationale section on measures of overweight, obesity and central adiposity in children and young people.

Full details of the evidence and the committee's discussion are in evidence review B: accuracy of anthropometric measures in assessing health risks associated with overweight and obesity in children and young people.

Rationale and impact

These sections briefly explain why the committee made the recommendations and how they might affect practice.

Identifying and assessing overweight and obesity in adults

Recommendations 1.1.1 to 1.1.13

Why the committee made the recommendations

Taking measurements in adults

The committee agreed that a clear benefit of waist-to-height ratio is that people can easily measure it themselves, interpret the results, and seek advice if they are at increased health risk.

Self-measurement may reduce the stigma associated with a healthcare practitioner doing the waist circumference measurement. When a person seeks advice because their self-measurement indicates an increased health risk, further clinical measurements, including a confirmation of the waist-to-height ratio, may be needed. If a healthcare practitioner is taking the measurement they need to be sensitive to people's needs, including religious and cultural beliefs, and recognise when it is not appropriate to measure.

Measures of overweight, obesity and central adiposity in adults

The committee looked at evidence from studies on the accuracy of different measures for predicting or identifying health conditions associated with overweight and obesity, including type 2 diabetes and cardiovascular disease. The quality of the evidence was mixed. Most studies included information on differences in predictive accuracy or diagnostic accuracy for people of various ethnicities.

Overall, the studies showed that BMI, waist circumference, waist-to-hip ratio and waist-to-height ratio could all accurately predict or identify weight-related conditions.

The committee noted that BMI is still a useful practical measure, particularly when it comes to defining overweight and obesity. But they emphasised that BMI should be interpreted with caution because it is not a direct measure of central adiposity.

The committee highlighted that waist-to-height ratio offers a truer measure of central adiposity by using waist circumference in the calculation, but waist circumference measurements are inaccurate in people with a BMI over 35 kg/m².

Based on the evidence and their expertise, the committee agreed that waist-to-height ratio was a valuable addition to BMI in adults with a BMI under 35 kg/m², as a practical estimate of central adiposity to help to assess and predict future health risks.

Classifying overweight, obesity and central adiposity in adults

BMI is the main measure for defining overweight and obesity, and the committee did not alter the definition for the general population. But they agreed it was important to highlight the need to estimate central adiposity when assessing future health risks, including for people whose BMI is in the healthy weight category. Based on their expertise, the committee also highlighted the need for caution when interpreting BMI in adults with high muscle mass and in older people because it may be less accurate in these groups. In addition, the committee noted that in people over 65 there is potentially a protective effect of being overweight because they are less likely to be experiencing undernutrition.

The committee also highlighted that people in Black, Asian and minority ethnic groups are prone to central adiposity and have an increased cardiometabolic health

risk at lower BMI thresholds. For example, South Asian and Chinese population studies identified BMI values ranging from 21 kg/m² to 26 kg/m², while higher values ranging from 25 kg/m² to 29 kg/m² were identified in studies in the White population. There was also some evidence for lower BMI values for Middle Eastern (Arab and Iranian), Black African, Black Caribbean and other Asian populations, for whom studies identified a range of values from 21 kg/m² to 30 kg/m² with most below 25 kg/m². The committee noted that these lower boundary values are in line with international guidance, and in practice these lower thresholds are used to refer people from these family backgrounds to weight management services.

The committee consensus was that in people from South Asian, Chinese, other Asian, Middle Eastern, Black African or African-Caribbean family background the threshold for defining obesity classes are usually reduced by 2.5 kg/m^2 compared to the general population. Based on this, they agreed that a similar reduction was appropriate when defining obesity classes 2 and 3 in these groups.

In line with the recommendation in the general population, the committee used the terms overweight and obesity to describe thresholds in people with a South Asian, Chinese, other Asian, Middle Eastern, Black African or African-Caribbean family background. This is a change from the NICE's previous guidance that referred to risk level, because the committee agreed there was more stigma attached to talking about risk than overweight or obesity. They noted that terms such as 'high' risk could result in anxiety and overinterpretation of risk more than terms such as living with 'obesity'.

The committee also discussed the accuracy of waist-to-height ratio boundary values in predicting and identifying health risks. The evidence showed that the cutoff was generally around 0.5 for all ethnicities and sexes. The committee noted that this was in line with the wider evidence base on the use of waist-to-height ratio. They agreed that waist-to-height ratio could be used to define central adiposity in adults, and that a boundary value of 0.5 to 0.59 corresponds to increased health risks. The committee noted a linear relationship between waist-to-height ratio and health risks, so added that a waist-to-height ratio of 0.6 or more indicates a further increase in risk.

The committee agreed that a benefit of using waist-to-height ratio is that the classification is the same for all ethnicities and sexes. It can also be useful in adults with high muscle mass, for whom BMI may be less accurate.

The committee noted that a cutoff of 0.5 for everyone facilitates a simple and memorable public health message: ‘Keep your waist to less than half your height’. To calculate waist-to-height ratio, measure the waist circumference and height using the same measure. Then, divide the waist circumference by height.

Discussing the results

The committee agreed that it is important for healthcare professionals to ask for permission before any discussions linked to overweight, obesity and central adiposity, and to discussing them in a sensitive and positive manner. This is because the substantial stigma associated with obesity has negative effects on people’s mental and physical health, which can lead to further weight gain and make people less likely to engage with healthcare practitioners. Particular sensitivity is needed about the possible negative impact on people with conditions such as eating disorders or disordered eating. Using words and language that avoid stigma and prejudice can help people to engage in conversations about obesity, and encourage weight loss.

The committee noted it is important for adults to know the long-term health risks and conditions associated with obesity and central adiposity. Knowledge of the linked conditions may support adherence to a weight loss strategy. This includes information about their risk of conditions such as type 2 diabetes, cardiovascular disease, hypertension, dyslipidaemia, certain cancers, respiratory conditions, musculoskeletal conditions and other metabolic conditions such as non-alcoholic fatty liver disease.

They also noted that a holistic approach is needed when identifying interventions and stressed the importance of reaching a shared decision with people. Based on their understanding of practice, the committee agreed on the importance of discussing the level of interventions with the person, tailoring them to individual needs of the individual, and taking account of factors such as ethnicity, weight-related comorbidities, socioeconomic status and family history.

Based on their expertise, the committee further noted that people with weight-related comorbidities may benefit from higher level treatment regardless of their waist-to-height ratio. They also highlighted groups of people, such as those newly diagnosed with type 2 diabetes and those with BMI over 50, who would benefit more from immediate weight management interventions. These groups are often not offered appropriate interventions early enough. The new recommendation replaces the existing recommendation in CG189 by adding a cross reference to recommendations for people with BMI over 35 kg/m^2 with recent onset of diabetes and people with a BMI over 50.

Although there was a large evidence base, the committee noted that for some ethnicities there was a lack of evidence on the accuracy of methods for predicting future risks. Few of the studies were based in the UK, so the evidence might not reflect the accuracy of different measures in a UK context. So the committee highlighted the need for more research on measurements and boundary values for different ethnicities (see research recommendation 1).

How the recommendations might affect practice

Using waist-to-height ratio, as well as BMI, would be likely to have minimal cost impact because measurements of waist circumference with a tape measure are already routinely available in NHS clinical settings.

There may be an increase in costs associated with giving information or support to people who measure their own waist-to-height ratio. This would be from extra staff time to teach people how to measure themselves and where to record the data. But such costs are likely to be small and will be offset by better health outcomes.

There may be additional training costs to help healthcare staff identify and manage overweight or obesity and related issues, for example monitoring blood pressure, and care for people with specific conditions such as eating disorders.

Using lower BMI thresholds in people from Black, Asian and minority ethnic groups will increase the number of people who are eligible for weight management services. This might lead to significant resource impact from increased intervention costs. But these may be offset by savings from avoiding future obesity-related conditions.

There may be challenges in using BMI or waist-to-height ratio in people with physical or learning difficulties. For example, if a person is unable to get on scales independently or be lifted safely. Measurements may also need to be modified, for example using sitting height instead of overall height, meaning specialist assessment may be needed. There is already published guidance on supporting people with learning disabilities in obesity and weight management: Public Health England guidance on obesity and weight management for people with learning disabilities. So this is unlikely to need a significant change in practice for services that already follow the guidance.

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Identifying and assessing overweight and obesity in children and young people

Recommendations 1.2.1 to 1.2.7

Why the committee made the recommendations

Taking measurements in children

The committee acknowledged the sensitivity involved in measuring a child's waist, whether it is done by a healthcare practitioner, by parents or carers, or by the child themselves. They also noted that there is stigma around discussing weight and taking measurements and healthcare practitioner should also take into consideration a child or young person's religious and cultural beliefs. Healthcare practitioners should be mindful and remain sensitive to children and young people's needs as well as the needs of their parent and carers and should recognise when it is not appropriate to take measurements.

The committee agreed that it is important for healthcare professionals to ask for permission from child, young people or their parents or carers (if appropriate) before any discussions linked to overweight, obesity or central adiposity, and to discuss them in a sensitive and positive manner. This is because the substantial stigma associated with obesity has negative effects on people's mental and physical health. Particular sensitivity is needed about the possible negative impact on children and young people with conditions such as eating disorders or disordered eating. Using

words and language that avoid stigma and prejudice can help people to engage in conversations about obesity.

Measures of overweight, obesity and central adiposity in children and young people

The committee looked at evidence from studies on the accuracy of different measures for predicting or identifying health conditions associated with overweight and obesity, including type 2 diabetes and cardiovascular disease. The quality of the evidence was mixed. Some studies included information on differences in predictive accuracy or diagnostic accuracy for people of various ethnicities.

Overall, the studies showed that BMI adjusted for sex and age, waist circumference adjusted for sex and age, waist-to-height ratio adjusted for sex and age, and unadjusted waist-to-height ratio could all accurately predict or identify weight-related conditions. BMI z-score (adjusted for sex and age) tended to be the most accurate measure for identifying different health conditions, but waist-to-height ratio was often equally accurate and, in some studies, more accurate.

Based on the evidence and their clinical expertise, the committee agreed that BMI is a useful practical measure for estimating and defining overweight and obesity. But waist-to-height ratio is a truer measure of central adiposity, which is related to health risks.

The committee noted that special growth charts may be needed when assessing children and young people with cognitive and physical impairment, including those with learning disabilities. They noted that growth charts for children with Down's syndrome are provided by the Centres for Disease Control and by the Royal College of Paediatrics and Child Health.

The committee agreed that the evidence for using waist-to-height ratio as a practical estimate for central adiposity to assess and predict health risk in children and young people was not as good as the evidence for adults. They agreed that it was still often useful as an indication of future health risks and should be considered. But they stated that more research was needed on the accuracy of different measures for assessing future health risks in children and young people (see research recommendation 2).

Classifying overweight, obesity and central adiposity in children and young people

The committee noted that the previous NICE guideline on obesity: identification, assessment and management (CG189) did not include a recommendation on how to define overweight and obesity in children and young people. Evidence was identified for this guideline for different boundary values for BMI and BMI z-scores, but these focused on identifying current health conditions rather than defining the degree of overweight and obesity.

There was a lack of evidence identified on boundary values for children and young people from different ethnicities. The committee agreed this was an important area for research to investigate whether there are variations in thresholds as there are adults (see research recommendation 2).

But the committee noted that although they could not provide different thresholds for BMI, waist-to-height ratio could be used as an indicator of central adiposity regardless of ethnicity and sex.

The diagnostic accuracy evidence for optimal waist-to-height ratio cutoffs ranged from 0.42 to 0.57, with most values clustering around 0.5. In line with the evidence and their clinical knowledge the committee agreed the waist-to-height ratio boundary values were the same for children and young people as for adults.

Choosing interventions

Based on their clinical expertise, the committee agreed that tailored interventions were useful for children with a BMI at or above the 91st centile or with a waist-to-height ratio of 0.5 and above. They noted the importance of taking into account weight-related comorbidities, ethnicity, socioeconomic status, family history, developmental age and special educational needs and disabilities (SEND) when tailoring interventions. They were particularly aware that children with weight-related comorbidities, such as type 2 diabetes, may benefit from a higher level of intervention regardless of their waist-to-height ratio. The committee stressed the collaborative process in which a child or young person works together with their family and healthcare practitioners to make an informed decision about the treatment or care option that is best for them.

How the recommendations might affect practice

Waist-to-height ratio is not routinely calculated in practice. There may be additional costs associated with measuring waist-to-height ratio due to extra staff time to support waist measurements. But the cost impact should be small because these measurements are already widely used in primary care.

There might be additional training costs involved in helping healthcare staff identify and manage overweight or obesity and associated issues in children and young people. There are a few training programmes developed by the World Obesity Federation, European Childhood Obesity Group, Department of Health obesity Team and Health Education England, which are based on existing recommended practice and in line with the new recommendations.

There may be potential challenges in using BMI or waist-to-height ratio in children and young people with physical impairments and learning difficulties. Measurements may need to be modified, for example using sitting height instead of overall height, and specialist assessment may be needed. There is published guidance on supporting people with learning disabilities in obesity and weight management, so this is not likely to represent a substantial change in practice for organisations already following that guidance.

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Context

The 2019 Health Survey for England estimated the prevalence of obesity in adults in England to be 28%, with overweight affecting a further 36%. It estimated the prevalence of obesity in children aged 2 to 15 to be 20% in boys and 13% in girls, with overweight affecting a further 12% of boys and 15% of girls. Government estimates indicate that the current costs of obesity in the UK are £6.1 billion to the NHS and £27 billion to wider society.

Currently, people who would benefit from weight management interventions are identified opportunistically. The lack of active case finding may mean that conditions such as type 2 diabetes are likely to be under-diagnosed in Black, Asian and other minority groups whose risk is increased at a lower BMI and waist circumference.

New evidence identified since the publication of NICE's previous guidelines on weight management may help to refine weight management programmes that address diet, physical activity and behaviour change, and inform implementation of interventions in specific settings.

This guideline update covers identifying and assessing overweight and obesity in children aged 2 years and older, young people and adults. It will replace the recommendations on identifying and classifying overweight and obesity from NICE's guidelines on obesity: identification, assessment and management (CG189) and BMI: preventing ill health and premature death in Black, Asian and other minority ethnic groups (PH46).

Forthcoming updates will cover preventing and managing these conditions. They will produce a single guideline that will partially replace NICE's guideline on weight management before, during and after pregnancy (PH27) (only the recommendations that apply before and after pregnancy) and will fully update and replace NICE's guidelines on:

- preventing excess weight gain (NG7)
- obesity: identification, assessment and management (CG189)
- weight management: lifestyle services for overweight or obese adults (PH53)
- weight management: lifestyle services for overweight or obese children and young people (PH47)
- BMI: preventing ill health and premature death in Black, Asian and other minority ethnic groups (PH46)
- obesity: working with local communities (PH42)
- obesity prevention (CG43).

Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE webpage on lifestyle and wellbeing.

For details of the guideline committee see the committee member list.

Update information

September 2022

This guideline updates the recommendations on identification and classification of overweight and obesity from CG189 and PH46. Recommendations from other sections of the guidelines will be updated at a later stage.

Recommendations are marked **[2022]** if the evidence has been reviewed. If these new recommendations replace recommendations from CG189 and PH46, the original recommendation number is given. For example, **[2022, replaces CG189 rec 1.2.13]**.

Recommendations that have been deleted, or changed without an evidence review

We propose to delete some recommendations from the previous guidelines. Table 1 sets out these recommendations and includes details of replacement recommendations. If there is no replacement recommendation, an explanation for the proposed deletion is given.

In recommendations shaded in grey and ending **[… amended 2022]**, we have made changes that could affect the intent without reviewing the evidence. Yellow shading is used to highlight these changes, and reasons for the changes are given in table 2. The 'Recommendation in current guideline column' uses the recommendation numbers that are used in this consultation draft of the guideline. The recommendation numbers may change for final publication.

For recommendations shaded in grey and ending **[2006]** we have not reviewed the evidence. The CG or PH number indicates the recommendation number in the original guideline. In some cases minor changes have been made – for example, to update links, or bring the language and style up to date – without changing the intent of the recommendation. Minor changes are listed in table 3.

See also the previous NICE guidelines and supporting documents: obesity: identification, assessment and management (CG189) and BMI: preventing ill health and premature death in Black, Asian and other minority ethnic groups (PH46).

1 Table 1 Recommendations that have been deleted

Recommendation in CG189 or PH46	Comment
CG189 recommendation 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.	Replaced by recommendation 1.1.3. Use BMI as a practical measure of overweight and obesity. Interpret it with caution because it is not a direct measure of central adiposity.
CG189 recommendation 1.2.3 Think about using waist circumference, in addition to BMI, in people with a BMI less than 35 kg/m^2. See also NICE's guideline on BMI: preventing ill health and premature death in Black, Asian and other minority ethnic groups.	Replaced by recommendation 1.1.4. In adults whose BMI is less than 35 kg/m² measure and use waist-to-height ratio, as well as BMI, as a practical estimate of central adiposity to help to assess and predict future health risks (for example type 2 diabetes, hypertension or cardiovascular disease).
CG189 recommendation 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	Replaced by recommendation 1.2.2 Use BMI (adjusted for age and sex) as a practical estimate of overweight and obesity in children and young people. Interpret it with caution because it is not a direct measure of central adiposity. The Royal College of Paediatrics and Child Health UK-World Health Organization (WHO) growth and BMI charts may be used to plot and classify BMI centile. The childhood and puberty close monitoring (CPCM) form may be used for longitudinal BMI monitoring in children aged 4 and older. Refer to special growth charts if needed and available (for example for children with Down's syndrome).

monitoring in children over 4.	
CG189 recommendation 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.	Replaced by recommendation 1.2.3 Consider using waist-to-height ratio in children and young people aged 5 and older to assess and predict health risks associated with central adiposity (such as type 2 diabetes, hypertension or cardiovascular disease).
CG189 recommendation 1.2.7 Define the degree of overweight or obesity in adults using the following classifications: • Healthy weight – BMI 18.5 kg/m^2 to 24.9 kg/m^2 • Overweight – BMI 25 kg/m^2 to 29.9 kg/m^2 • Obesity I – BMI 30 kg/m^2 to 34.9 kg/m^2 • Obesity II – BMI 35 kg/m^2 to 39.9 kg/m^2 • Obesity III – BMI 40 kg/m^2 or more.	Replaced by recommendation 1.1.6 Define the degree of overweight or obesity in adults as follows, if they are not in the groups covered by recommendation 1.1.7: • healthy weight: BMI 18.5 kg/m^2 to 24.9 kg/m^2 • overweight: BMI 25 kg/m^2 to 29.9 kg/m^2 • obesity class 1: BMI 30 kg/m^2 to 34.9 kg/m^2 • obesity class 2: BMI 35 kg/m^2 to 39.9 kg/m^2 • obesity class 3: BMI 40 kg/m^2 or more. Use clinical judgement when interpreting the healthy weight category because a person in this category may nevertheless have central adiposity.
CG189 recommendation 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	Replaced by recommendations 1.1.7 and 1.1.8: People with a South Asian, Chinese, other Asian, Middle Eastern, Black African or African-Caribbean family background are prone to central adiposity and their cardiometabolic risk occurs at lower BMI, so use lower BMI thresholds as a practical measure of overweight and obesity: • overweight: BMI 23 kg/m^2 to 27.4 kg/m^2 • obesity: BMI 27.5 kg/m^2 or above. When defining obesity classes 2 and 3 for people in these groups, reduce the BMI thresholds in recommendation 1.1.6 by 2.5 kg/m^2. Interpret BMI with caution in adults with high muscle mass because it may be a less accurate measure of adiposity in this group.

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.	
CG189 recommendation 1.2.9 Base assessment of the health risks associated with being overweight or obese in adults on BMI and waist circumference as follows: [table of risk levels] 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.	Replaced by recommendation 1.1.10 Define the degree of central adiposity based on waist-to-height ratio as follows: • healthy central adiposity: 0.4 to 0.49, indicating no increased health risks • increased central adiposity: 0.5 to 0.59, indicating increased health risks • high central adiposity: 0.6 or more, indicating further increased health risks Higher levels of adiposity are associated with health risks such as type 2 diabetes, hypertension or cardiovascular disease. The boundary value of 0.5 can be easily communicated: 'Keep your waist to less than half of your height'. This classification can be used for both sexes and all ethnic groups. It can also be used in highly muscular adults.
CG189 recommendation 1.2.11 Base the level of intervention to discuss with the patient initially as follows:	Replaced by recommendations 1.1.13 and 1.1.14, which add a cross reference to recommendations for people with BMI over 35 kg/m^2 with recent onset of diabetes and people with a BMI over 50: Discuss the level of intervention with the person. Take into account their individual needs and factors such as ethnicity, weight-related comorbidities, ethnicity, socioeconomic status and family history. See NICE's guideline on obesity:

[2 tables, of levels of interventions, and how they relate to obesity levels] Levels 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.	identification, assessment and management: recommendations on lifestyle interventions, behavioural interventions, physical activity, diets, pharmacological interventions and surgical interventions. Offer a higher level of intervention to people with comorbidities, regardless of their waist-to-height ratio. Adjust the approach depending on the person's clinical need. See NICE's guideline on obesity: identification, assessment and management: section 1.3 for details of comorbidities; recommendation 1.11.1 for people with a BMI over 35 kg/m² with recent onset of diabetes; and recommendations 1.3.7 and 1.10.7 for people with a BMI over 50.
CG189 recommendation 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.	Deleted because the information was also covered by recommendation 1.2.4 in the 2014 CG189 guidance. In this update, recommendation 1.2.2 covers this information.
CG189 recommendation 1.2.13 Tailored clinical intervention should be considered for children with a BMI at or above the 91st centile, depending on the needs of the individual child and family.	Replaced by recommendation 1.2.7 Consider tailored interventions for children with a BMI at or above the 91st centile or waist-to-height ratio of 0.5 or more. Take into account their individual needs and factors such as weight-related comorbidities, ethnicity, socioeconomic status, family history, developmental age and special educational needs and disabilities (SEND). See NICE's guideline on obesity: identification, assessment and management recommendations on lifestyle interventions, behavioural interventions, physical activity, diets, pharmacological interventions and surgical interventions.

PH46 recommendation 1 Follow NICE recommendations 1 to 18 in Preventing type 2 diabetes: risk identification and interventions for individuals at high risk (public health guidance 38). This includes: • using lower thresholds (23 kg/m^2 to indicate increased risk and 27.5 kg/m^2 to indicate high risk) for BMI to trigger action to prevent type 2 diabetes among Asian (South Asian and Chinese) populations • identifying people at risk of developing type 2 diabetes using a staged (or stepped) approach • providing those at high risk with a quality-assured, evidence-based, intensive lifestyle-change programme to prevent or delay the onset of type 2 diabetes. Extend the use of lower BMI thresholds to trigger action to prevent type 2 diabetes among Black African and African-Caribbean populations. Raise awareness of the need for lifestyle	First 4 points are replaced by recommendation 1.1.7: People with a South Asian, Chinese, other Asian, Middle Eastern, Black African or African-Caribbean family background are prone to central adiposity and their cardiometabolic risk occurs at lower BMI, so use lower BMI thresholds as a practical measure of overweight and obesity: • overweight: BMI 23 kg/m^2 to 27.4 kg/m^2 • obesity: BMI 27.5 kg/m^2 or above. When defining obesity classes 2 and 3 for people in these groups, reduce BMI thresholds in recommendation 1.1.6 by 2.5 kg/m^2.

interventions at a lower BMI threshold for these groups to prevent type 2 diabetes. For example, see box 1. In particular, use the public health action points advocated by WHO as a reminder of the threshold at which lifestyle advice is likely to be beneficial for Black and Asian groups to prevent type 2 diabetes.	

Table 2 Amended recommendation wording (change to intent) without an evidence review

Recommendation in CG189	Recommendation in current guideline	Reason for change
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]	1.1.11 Give adults information about the severity of their obesity and central adiposity and the impact this has on their risk of developing other long-term conditions (such as type 2 diabetes, cardiovascular disease, hypertension, dyslipidaemia, certain cancers, respiratory conditions, musculoskeletal conditions and other metabolic conditions such as non-alcoholic fatty liver disease)	Amended to offer more guidance on specific health risks, and to match the guideline's separation between overweight or obesity and central adiposity.