

Clinical Guidelines for Weight Management in New Zealand Children and Young People

This guideline represents a statement of best practice based on the available evidence and expert consensus. It is not intended to replace practitioners' judgement. In each case, practitioners should consider the individual's clinical state, age and co-morbidities; the individual's and their family/whānau preferences.

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Foreword

Addressing overweight and obesity is a priority for our health system. Together overweight and obesity affect nearly one third of New Zealand children. This is an issue that will have serious long-term effects on the health and wellbeing of our children as they grow older. In 2015 the Ministry of Health released its Childhood Obesity Plan to support action in this area.

Evidence shows that diet, excess weight and physical inactivity, in the context of our obesogenic environment, are the major modifiable risk factors that contribute to early death, illness and disability in New Zealanders. If we can identify children and young people who are overweight and obese and support them to attain and maintain a healthy weight, we can help them not only to improve their wellbeing but also to live longer, healthier lives. This approach is consistent with the *New Zealand Health Strategy* (Ministry of Health 2016a), which focuses on living well, staying well and getting well.

Community and primary health care providers are an individual's first point of contact with the health system. They are well placed to help identify whether a particular child is a healthy weight, to support family/whānau to help children to attain and maintain a healthy weight and to coordinate referral to specialist services if required.

The previous version of *Clinical Guidelines for Weight Management in New Zealand Children and Young People* was published in 2009 (Ministry of Health and Clinical Trials Research Unit 2009a). The Ministry of Health has released this updated version to equip health practitioners with up-to-date evidence-based guidance to identify, assess and manage overweight and obese children and young people aged 2 to 18 years. The Guidelines aim to improve health outcomes and equity of health outcomes for children, families and whānau.

This update includes a limited review of evidence that has emerged since the previous publication. A new addition to the Guidelines is recognition of the role that sufficient sleep plays in weight management in children and young people.

We encourage health practitioners and others to use this information in their daily practice, with an eye to supporting the new Health Target: Raising Healthy Kids.

Chai Chuah
Director-General of Health

Acknowledgements

The Ministry of Health is grateful to Best Practice Advocacy Centre NZ who commissioned a technical advisory group to undertake a limited review of the 2009 Guidelines and relevant new evidence to ensure that the recommendations are still current.

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The Guidelines Technical Advisory Group

The Guidelines Technical Advisory Group comprised eight members with technical expertise in weight management:

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|-------------------------------|--|
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Contents

| | |
|---|------------|
| Foreword | iii |
| Acknowledgements | iv |
| Executive summary | vii |
| Background | 1 |
| Health literacy in the context of weight management | 2 |
| Cultural competence | 3 |
| Guideline stages | 4 |
| 1. Monitor | 4 |
| 2. Assess | 7 |
| 3. Manage | 10 |
| 4. Maintain | 18 |
| References | 19 |
| Appendix 1: Behavioural Tools | 22 |

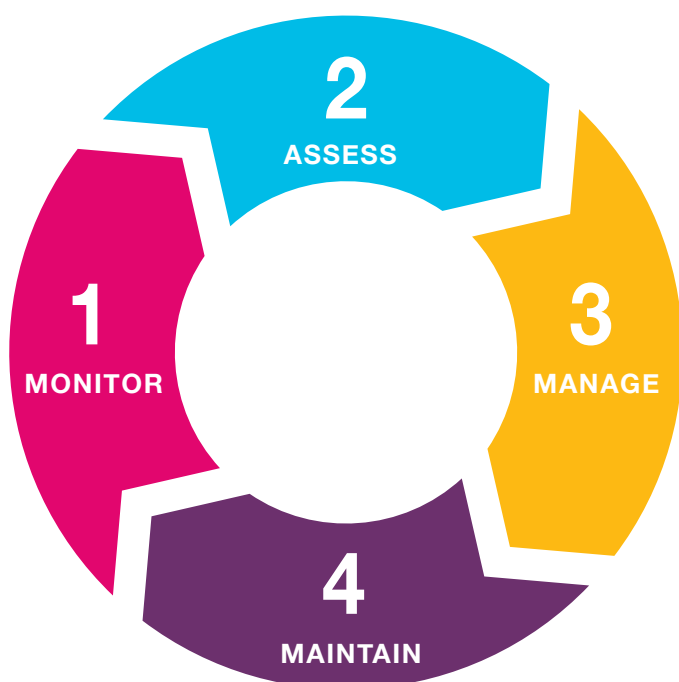
Executive summary

This document provides clinical guidance for primary health care practitioners and others who provide advice on weight management for New Zealand children and young people aged 2 to 18 years. This guideline updates those published in 2009 (Ministry of Health and Clinical Trials Research Unit 2009a).

These Guidelines only include references to research that has been published since the 2009 Guidelines. A Guidelines Technical Advisory Group (GTAG) was commissioned to consider New Zealand population-specific research, and review recent meta-analyses, systematic reviews and large randomised controlled trials. It did not undertake a formal Grading of Recommendation, Assessment, Development and Evaluation (GRADE) analysis for this update. For earlier references and more detailed background, including on GRADE analysis, refer to the 2009 Guidelines.

The GTAG found that, in general, recent evidence supported and/or strengthened the 2009 Guidelines recommendations. A notable new addition to the evidence is recognition of the role that sufficient sleep plays in weight management for children and young people.

These Guidelines present a four-stage pathway designed to facilitate clinical decision-making for the identification and management of weight gain in children and young people. We acknowledge that practitioners may not have time during a single consultation to follow the entire pathway. However, a practitioner can provide brief motivational advice with follow-up as appropriate during subsequent consultations, and/or refer to other relevant services if required.



The four stages

1. Monitor: A key recommendation of these Guidelines is that practitioners measure and monitor height and weight, and determine the Body Mass Index (BMI) for all children and young people regularly (ideally every 12 months), to enable brief intervention if their BMI is trending towards, or is over, the 91st centile. This is preferable to a practitioner waiting to take action until a child is obese (over the 98th centile).

Community and primary health care providers are ideally placed to monitor the growth of children and support families/whānau to help their children grow into a healthy weight. They can tailor their advice and support based on their knowledge of individual families/whānau.

To align with the New Zealand-World Health Organization (NZ-WHO) growth chart for two to five year-olds, the Guidelines include the recommendation to use a new NZ-WHO growth chart for 5–18-year-olds. Both charts define overweight as over the 91st centile, and obesity as over the 98th centile.

2. Assess: The assessment stage involves taking a full history and examination for children and young people with a BMI over the 98th centile, to identify co-morbidities, and possible underlying causes or contributing factors.

3. Manage: The aim is to slow weight gain so the child or young person can grow into their weight. Any weight management plan needs to involve the parents or caregivers and family/whānau. The key components of management are FAB: Food and drink, Activity (including reducing sedentary time, and supporting sufficient sleep), and Behavioural strategies.

4. Maintain: Long-term follow-up and monitoring of growth is important to maintain positive changes and provide additional support as appropriate.

A summary of the key information in the Guidelines is available online in the Practice Essentials: Weight Management in 2–5 year olds, and will shortly be available in *Weight Management in 5–18 year olds*. Practical nutrition, physical activity and sleep tips are available separately.

An accompanying updated clinical guideline for weight management in New Zealand adults will be published in 2017. The two sets of guidelines sit alongside the *Food and Nutrition Guidelines for Healthy Children and Young People* [Ministry of Health 2012 (partially revised 2015)] and the *Eating and Activity Guidelines for New Zealand Adults* (Ministry of Health 2015b), which provide advice on healthy eating and being physically active to achieve, maintain and support good health and a healthy body weight.

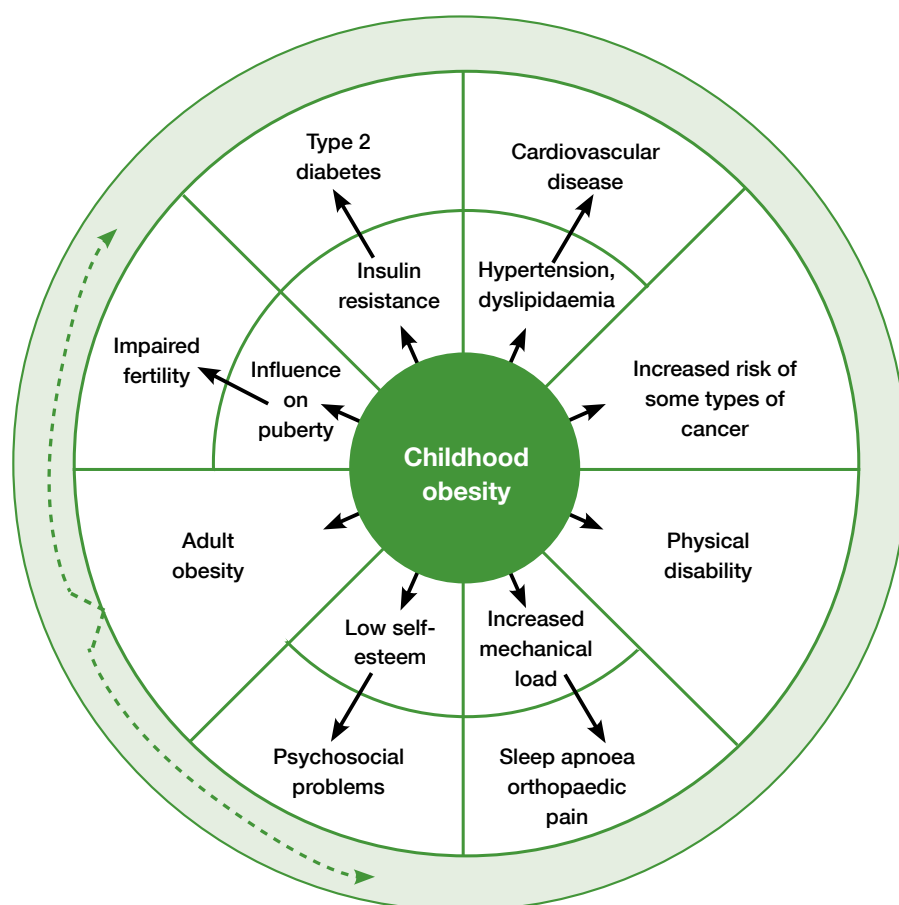
In order for the system as a whole to improve the equity of health outcomes for children and families/whānau, it is important that all practitioners are culturally competent. By providing appropriate support to children and young people who are overweight and obese, we can help them to improve their wellbeing and live longer, healthier lives.

Background

Children who are overweight and obese are at risk of serious health consequences. Obese children are more likely to be obese as adults, and to have abnormal lipid profiles, impaired glucose tolerance and high blood pressure at a younger age. Obesity in children is also associated with obstructive sleep apnoea, musculoskeletal problems, asthma and psychological problems including body dissatisfaction, poor self-esteem, depression, and other mental health problems. Children that are obese may become a target for bullying which can further impact on self-esteem and mental health. Obesity can also contribute to attention problems, which can affect learning.

Figure 1 presents a summary of the complications of childhood obesity. Comorbidities of childhood obesity are depicted in the outer ring with their intermediate processes in the inner ring. Childhood obesity also increases the risk of adult obesity, which in turn increases the likelihood of those comorbidities.

Figure 1: Summary of complications associated with childhood obesity



Lakshman et al 2012

Together, overweight and obesity affect nearly one in three¹ children in New Zealand aged between 2–14 years, and there is a higher prevalence of obesity among Pacific and Māori children. Children living in our most deprived areas are three times as likely to be obese as those living in the least deprived areas (Ministry of Health 2016b).

Health literacy in the context of weight management

The term ‘health literacy’ refers to a person’s ability to obtain, process, understand and act on basic health information and services to make appropriate health decisions (Ministry of Health 2010). Health literacy includes the extent to which an individual is able to navigate and interact with our health system. The term also covers their expectations about health and wellbeing; their understanding of health messages, medicine labels and nutrition information; and their ability to fill out forms or talk with their doctor or nurse.

Health literacy applies to services, as well as users of services. A health literate service recognises that good health literacy practice contributes to improved health outcomes and reduced health costs.

Health practitioners should develop their ability to assist children and family/whānau of varying levels of health literacy, including the ability to tailor the style of communication. To the same end, practitioners should endeavour to maintain a culturally competent practice.

The Health Literacy Framework supports a culture shift whereby health literacy becomes core business at all levels of the health system.

In the context of health literacy regarding weight management, health practitioners should:

- establish long-term trust relationships with patients, family/whānau, to build a shared understanding of values, priorities and weight management strategies
- routinely review weight management plans
- use relevant support services to address identified barriers
- develop collaborative partnerships with Māori health providers, Whānau Ora providers and other community-based organisations that provide weight management education and services, to ensure advice is consistent, timely and comprehensive.

For more information on health literacy, see these Ministry of Health publications:

- *Health Literacy Review: A guide* (Ministry of Health 2015c)
- *A Framework for Health Literacy* (Ministry of Health 2015a)
- *Three steps to better health literacy – a guide for health professionals* (Health Quality & Safety Commission 2014).

¹ Note that the New Zealand Health Survey uses the International Obesity Taskforce growth chart for population reporting.

Cultural competence

Culturally competent health practitioners are aware of cultural diversity and have the ability to engage effectively and respectfully with people of different cultural backgrounds. They also acknowledge their own biases and how those biases manifest when they treat patients.

Primary health practitioners can support engagement and health literacy by learning, appreciating, developing and applying a culturally responsive approach. In general practice clinics, this approach should extend to the practice as a whole, including the receptionist, general practitioners, nursing staff and other health practitioners.

To support cultural competence, good practice points are provided for each stage of the Guidelines. They aim to provide achievable actions for practitioners that will enhance engagement with their patients/clients.

The Ministry of Health offers a free online foundation course in cultural competence for all people working in the New Zealand health sector (<http://learnonline.health.nz/course/category.php?id=84>).

Guideline stages

1. Monitor

Regular monitoring of growth in children and young people is important for the early identification of those who may need extra support and weight management.

Body Mass Index (BMI) is an indirect measure of the extent of a child or young person's fat tissue, or adiposity, in contrast to a more direct measure such as dual-energy x-ray absorptiometry (DXA). Practitioners more commonly use BMI as an indirect measure of adiposity in health care settings, because direct measures are not practical.

Practitioners determine a child or young person's weight status using an age- and gender-specific centile for BMI, because body composition changes with normal growth and maturation, and varies by gender.

Good practice points for engagement

- Ensure a welcoming environment (eg, a friendly greeting from the receptionist, a waiting room space for family/whānau, information available in te reo Māori or another appropriate language).
 - Acknowledge the role of the broader family/whānau and other environmental factors in the child or young person's care, and engage in discussions to discover concerns, provide support and celebrate improved health outcomes. Do not assume it is appropriate to involve family/whānau – always ask.
 - Spend time getting to know the child and their family/whānau during their visit. Building a relationship allows a greater understanding of their situation; if they are comfortable with you, they are more likely to feel comfortable asking questions and coming back for further advice.
 - Take your time to listen, and to explain things at a pace that allows time for individual contribution. Take your cues from the family/whānau.
 - Acknowledge when you are uncertain about cultural processes.
 - Know who to contact for support, translation and cultural advice.
-

Evidence update

Body mass index (BMI) is the most widely used, practical and convenient measure of general adiposity, and is recommended in guidelines internationally. There has been concern expressed that BMI cannot discriminate between fat and lean tissues. Results from a meta-analysis demonstrate that commonly used BMI cut-offs for obesity are good at identifying children who truly have lower levels of body fat (specificity: 93%), but that their ability to identify those with higher levels of body fat is more moderate (73%) (Javed et al 2015). While BMI does not identify all children who have high body fat levels, there is no clear consensus on the best supplementary measures (Freedman et al 2013; Brambilla et al 2013).

Waist circumference is not recommended as a means of diagnosing childhood obesity, as there is no clear threshold for waist circumference associated with morbidity outcome in children and young people (NICE 2006 (amended 2014)).

Recommendations

To monitor the growth of children and young people according to best practice, practitioners should take the following steps.

1. Regularly measure height and weight to calculate body mass index (BMI) for all children over the age of two years and young people up to the age of 18, ideally at least once a year.
 - a) For children under five years, measure and plot height/length and weight as outlined in the Well Child / Tamariki Ora schedule (www.health.govt.nz/publication/well-child-tamariki-ora-national-schedule-2013).
 - b) For children and young people aged 5–18 years, calculate BMI: $\text{BMI} = \text{weight (kg)} / \text{height (m)}^2$.
2. Use New Zealand (NZ)-World Health Organization (WHO) age- and sex-specific growth charts².
 - a) For children under five years, plot the centiles on the weight–height BMI conversion chart (www.health.govt.nz/our-work/life-stages/child-health/well-child-tamariki-ora-services/growth-charts) to determine BMI centile (Ministry of Health 2013 (updated 2015)).
 - b) For children and young people aged 5–18 years, plot BMI on the NZ-WHO Growth Charts. (These will be available in 2017. In the meantime continue to use your current growth charts).

New NZ-WHO growth charts for 5–18-year-olds

The new NZ-WHO growth charts (one for males and one for females) are based on the WHO growth reference for 5–19 year-olds. They will use modified cut-off points for overweight (over the 91st centile) and obesity (over the 98th centile), to align with the NZ-WHO charts for two to five-year-olds. The Ministry of Health will continue to use the International Obesity Task Force growth chart for population reporting from the New Zealand Health Survey.

2 Many different reference standards to assess childhood obesity are used internationally, making inter-country comparisons difficult. A number of countries now use the WHO growth reference, which allows the collection of a standardised international dataset. The Ministry of Health adopted a modified version of the WHO growth reference for 2–5-year-olds in 2010: referred to as the New Zealand (NZ) -WHO chart.

3. Next steps

- If BMI is less than the 91st centile and stable – monitor growth opportunistically (ideally annually) or as advised in the Well Child / Tamariki Ora Schedule.
- If BMI is less than, but trending towards, the 91st centile – offer brief food and activity advice. Select appropriate advice for the family/whānau from the information provided in Stage 3: Management section, or use the Eating, Activity and Sleep Tips sheets. Monitor growth opportunistically (ideally six monthly).
- If BMI is between the 91st and 98th centiles – discuss current and long-term health risks with the family/whānau (Refer Background section), and offer brief food and activity advice. Select appropriate advice for the family/whānau from the information provided in Stage 3: Management section, or use the Eating, Activity and Sleep Tips sheets (link). Monitor growth opportunistically (ideally six monthly).
- If BMI is over the 98th centile, discuss current and long-term health risks with the family/whānau (Refer Background section) and proceed to Stage 2 of the weight management pathway – Assess.

Useful resources

Growth Charts for under 5s (www.health.govt.nz/our-work/life-stages/child-health/well-child-tamariki-ora-services/growth-charts) – including health professional notes for how to measure height/length and weight.

2. Assess

Assessment should determine current health risks (Figure 1 on page 1) along with lifestyle habits that may be susceptible to positive change, identify barriers and enablers, contributing factors or conditions, and exclude endocrine³ and genetic⁴ causes of obesity.

Children's health and wellbeing are heavily dependent on the family/whānau environment in which they live. It is essential that assessment takes into account the eating habits, lifestyle, attitudes and practices of individual families/whānau.

Good practice points for engagement

- It is important that everyone understands what is being said. Avoid jargon, and explain any health terms clearly. If English is the second language of a child or family/whānau, consider using a translator.
- Thoughtful and individualised communication builds effective relationships. Reflect on your own communication preferences; think about what messages your body language might be giving, as well as the words and tone that you use.
- Consider undergoing training on how to talk about weight issues with family/whānau or caregivers (eg, Healthy Conversation Skills training: www.gravida.org.nz/what-we-do/translation-projects-and-programmes/gravida-healthy-start-workforce/healthy-conversation-skills-training/)
- Use the 'teach back' technique – keep checking that your information is being understood (eg, by asking the patient to explain what you've told them) (for more information see, eg, *Three steps to better health literacy*: www.healthliteracy.org.nz/wp-content/uploads/2013/11/Health-literacy-information-booklet.pdf).

Recommendations

To assess children and young people with a BMI over 98th centile, according to best practice, practitioners should take a full history and examination, with further investigations if indicated.

History

- **Current physical** (eg, snoring, joint problems, abdominal pain, or breathing difficulties) **and social consequences** (eg, isolation, bullying, behaviour problems and depression) of their body size.
- **Family history:** Ask about family history of obesity, early cardiovascular disease or dyslipidaemia; precipitating events that may have contributed to the weight gain, and any actions the family/whānau have already taken to address the weight gain. Assess the readiness of the individual and family/whānau or caregivers to make required lifestyle changes.
- **Medications** that may contribute to weight gain.

3 Endocrine disorders that may cause obesity: hypothyroidism, Cushing's syndrome.

4 Genetic or congenital conditions:

- Prader-Willi syndrome
- Trisomy 21 (Down's syndrome)
- other rare genetic syndromes, such as Alström syndrome, Carpenter syndrome, and Cohen syndrome; these disorders are typically associated with other clinical signs (eg, short stature, delayed growth and sexual maturation, and cognitive impairment).

- **Food and drinks:** Assess the contribution of high fat (especially saturated fat), added sugar and salt foods and drinks to the individual's diet⁵ by asking parents/caregivers questions like these about their family eating habits, or asking the young person directly.
 - How often do they eat fast food or takeaways and ready-to-eat high fat, added sugar and salt food (eg, donuts, pies, hot chips)?
 - How often do they drink sugary drinks (eg, soft drinks, energy drinks, cordial or juice)?
 - What type of snacks do they eat between or after meals?
 - Do they include vegetables and/or fruit with each meal over the day?
 - How many times a week do they eat breakfast?
 - What do they usually eat for lunch?
 - Do they eat dinner as a family/whānau?
 - Does the child or young person help with preparing and cooking food at home?
- **Alcohol:** Ask about alcohol use in young people.
- **Physical activity and sedentary behaviours:** Ask about usual levels of physical activity (time playing outside is a good indication of physical activity in younger children) and sport participation and usual levels of sedentary activity (eg, screen time such as watching television, playing on the computer or playing electronic games); whether there is a television in the bedroom.
- **Sleep:** Ask about usual sleep length and patterns covering regular sleep and nap times, instances of disturbed sleep, and sleep 'hygiene' (that is, how optimal conditions including temperature, crowding, noise and light are for sleep). The BEARS mnemonic below may be useful.

An adaptation of the BEARS mnemonic to assess sleep history

To assess sleep history, practitioners should investigate the following areas.

B = Bedtime issues (trouble going to bed or trouble falling asleep)

'Does your child have any difficulty going to bed or falling asleep?'

E = Excessive daytime sleepiness/excessive disruptive symptoms

'Is your child difficult to wake in the morning? Do they act sleepy, or are they overactive, inattentive or easily frustrated?'

A = Awakenings at night

'Does your child have trouble with waking up at night?'

R = Regularity and duration of sleep (bedtime, wake time, average sleep duration)

'What time does your child go to bed and get up on schooldays? And on weekends?'

S = Snoring/sleep disordered breathing (SDB)

'Does your child have noisy breathing, or snore on most nights?'

Adapted from: Chamness 2008

The New Zealand Guidelines for the Assessment of Sleep-Disordered Breathing in Childhood (Paediatric Society of New Zealand 2014 (revised 2015)) provides more detailed information on assessment of obstructive sleep apnoea and obesity, together with a supporting questionnaire.

Other factors: Consider growth and pubertal status, and possible pregnancy.

⁵ The 2002 National Children's Nutrition Survey (Ministry of Health 2003) estimated that energy-dense, nutrient-poor (high-fat, -sugar and/or -salt) food and drinks, such as sugary drinks, biscuits, sugar and sweets, and cakes and muffins, contributed 20 percent of total energy intake to children's diets. This is likely to be higher now. Regular intake of these foods and drinks is associated with poor health outcomes in children and adults.

Clinical examination

In the clinical examination, practitioners should consider the following as appropriate based on history:

- measure blood pressure using appropriate cuff size (hypertension)
- hip or knee pain and/or limited hip motion, or lower leg bowing (which can be due to slipped capital femoral epiphysis or Blount's disease/tibia vara)
- poor linear growth (which can be due to hypothyroidism, Cushing syndrome or Prader-Willi syndrome)
- dysmorphic features (which can be due to genetic disorders such as Prader-Willi syndrome)
- tonsillar hypertrophy (which can cause sleep apnoea)
- abdominal tenderness or hepatomegaly (which may be caused by non-alcoholic fatty liver disease)
- skin: striae (which can be due to Cushing syndrome), intertrigo (rash in the flexures or body folds), acanthosis nigricans (velvety, light-brown to black markings on the skin, usually on the neck, under the arms or in the groin which suggests insulin resistance), or skin infections such as cellulitis or carbuncles.
- undescended testicle (which can be due to Prader-Willi syndrome).

Laboratory studies

Where they are indicated by history and clinical examination, practitioners may consider making further investigations including:

- a fasting lipid profile (which measures total cholesterol, triglycerides, High Density Lipoprotein (HDL) cholesterol, and calculated Low Density Lipoprotein (LDL) cholesterol)
- HbA1c testing (which measures average blood glucose over the previous 8 to 12 weeks, thereby indicating longer-term blood glucose control)
- an overnight sleep study using pulse oximetry (a non-invasive method for monitoring oxygen levels in a person's blood) (see also Paediatric Society of New Zealand 2014).

3. Manage

The aim for management is for a child or young person to decrease the rate of weight gain, and grow into their weight.

If, based on the assessment (history and clinical examination), there are significant comorbidities or complex needs, consider referral to a multidisciplinary team, appropriate specialist or specialist services (eg, a paediatrician or dietitian) (NICE 2006 (amended 2014)). In most district health boards (DHBs), such services are available through paediatric services resources. Refer also to *weight management support services and programmes* at the end of this section.

For all other children and young people, realistic goals aimed at changes in Food, Activity (including sleep), and Behavioural strategies (FAB) should be jointly agreed between the practitioner, the individual and their family/whānau. A plan to regularly review and monitor (ideally every three to six months) progress will also be needed.

Good practice points for engagement

- See good practice points for Step 2 – Assess on page 7.
- Build relationships with Māori and Pacific health providers, Whānau Ora providers and other community-based organisations.
- Ensure that weight management support is consistent, and that the practice offers a range of local and community support options to everybody.

The Food, Activity, Behavioural strategies approach

Evidence update

Childhood obesity interventions should encompass multiple approaches: changes in eating and drinking, increased physical activity together with behavioural strategies (Oude Luttikhuis et al 2009; Ho et al 2012; Janicke et al 2014).

Lifestyle changes following the Food, Activity, Behavioural (FAB) approach need to be made by the child or young person's caregivers and the whole family/whānau, not just the individual. Combined, a healthy diet, increased physical activity, less sedentary activity, sufficient sleep and relevant behavioural strategies form the first line of treatment for reducing overweight and obesity. Lifestyle changes need to become firmly established habits over the long term.

The remainder of this section sets out each component of the FAB approach.

Food

Evidence update

No one particular type of eating pattern (eg low-glycaemic, low-fat, low-carbohydrate, or increased protein diets) has been shown to consistently be more effective for weight management in the short and medium term, than another (Schwingshackl et al 2015; Gow et al 2014; Wycherley 2012; Ajala et al 2013). There is also insufficient evidence to assess the long term efficacy or safety of many of these dietary approaches.

Long-term compliance with any dietary changes is required (Sacks et al 2009; Pagoto and Appelhaus 2013).

Recommendations

To ensure the maintenance of growth and development, and improve health outcomes, energy restriction should be moderate and food intake should follow a nutritionally balanced healthy eating pattern. Adopting a healthier lifestyle for the whole family is important and needs to be led and maintained by the parents/caregivers.

Features of a healthy eating pattern

- Enjoy a variety of nutritious foods every day including:
 - plenty of vegetables and fruit
 - grain foods, mostly whole grain and those naturally high in fibre
 - some milk and milk products, mostly low and reduced fat
 - some legumes, nuts⁶, seeds, fish and other seafood, eggs, poultry (eg, chicken) and/or red meat with the fat removed.
- Choose and/or prepare foods and drinks:
 - that are mostly whole or less processed, and low in saturated fat, added sugar and salt
- Make plain water your first choice over other drinks.
- Alcohol is not recommended for children or young people.

Suggestions to encourage change

- Parents/caregivers are in charge of what food they buy and bring into the household. Recommend decreasing the amount and frequency of energy-dense, nutrient-poor foods and drinks bought by:
 - not buying sugar-sweetened drinks and offering mostly water, along with two or three glasses of milk per day
 - deciding to have takeaways no more than once a week, or choosing healthier takeaway options
 - providing healthier snacks (eg, fruit, cheese and crackers), rather than snack foods like chippies and snack bars.

⁶ Whole nuts are not recommended before the age of five due to choking risk.

Useful resources

- For more detailed background on healthy eating for children and young people, see the *Food and Nutrition Guidelines for Healthy Children and Young People (Aged 2–18 years): A background paper* (Ministry of Health 2012 (revised 2015)). Of particular relevance in this document are Part 1 (New Zealand Food and Nutrition Guidelines), Part 2 (Meal patterns of New Zealand children and young people), Part 3 (Growth and body size), Part 5 (Fluids), Part 6 (The home environment), Part 7 (The wider environment) and Appendix 5 (3-day sample menus).
- Healthy eating tips for 2–5-year-olds; 6–12-year-olds; 13–18-year-olds
- Recipes, tips and meal ideas to help families can be found at the My Family Food website: <http://myfamily.kiwi/foods>
- Heart Foundation’s online recipe books and other relevant resources in a range of languages www.heartfoundation.org.nz/wellbeing/healthy-recipes/
- Eating for Healthy Children aged 2 to 12 www.healthed.govt.nz/system/files/resource-files/HE1032-eating-for-healthy-children.pdf
- Healthy Eating for Young People www.healthed.govt.nz/system/files/resource-files/HE1230-healthy-eating-for-young-people.pdf
- Sport Waikato Active & Well Resource Library www.sportwaikato.org.nz/programmes/active-and-well.aspx

Activity

Evidence update

Meta-analyses support the inclusion of exercise and physical activity in weight management plans (Kelley and Kelley 2013; Schranz et al 2013; Ho et al 2013; Harris et al 2009).

The goal of physical activity in this context is to increase a child’s or young person’s energy expenditure and their resting metabolic rate.

Recommendations

For children under the age of five years, practitioners should advise families/whānau to:

- provide lots of opportunities for children to be active both inside and outside, in ways that develop their fundamental movement skills (eg, running, jumping, throwing, catching, skipping and balance)
- be active as a family/whānau
- enable children to safely explore their environment, play, and enjoy being active in ways that are appropriate for their developmental stage.

For children and young people aged 5–18-years that are not regularly active, practitioners should advise families/whānau to:

- start with five to 10 minutes’ aerobic activity⁷ a day and increase the time each week; examples include skateboarding, dancing, running, cycling, swimming, fast walking, ball sports, tag, or
- split activity into smaller bouts that total at least 60 minutes per day (eg, walking for 10 minutes, stair climbing, active play, activity based virtual reality games, or household chores)

⁷ Aerobic activities involve the body’s large muscles moving in a rhythmic manner for a sustained period of time. Aerobic activities improve cardiorespiratory fitness.

- progressively increase intensity levels to at least 60 minutes of moderate⁸ to vigorous⁹ intensity each day
- include some muscle-strengthening¹⁰ and bone-strengthening¹¹ exercises/activity (eg, trampolining, skipping, climbing objects like trees or play equipment, gymnastics and running) at least three days a week. Formal muscle-strengthening training is unnecessary (especially for children); if young people wish to do it, they should seek the advice of a health or exercise professional. Children and young people must avoid power lifting, body building, and maximal lifts until they reach physical and skeletal maturity. Practitioners should remind people that muscle-strengthening activities may result in an initial weight gain as muscles increase in size
- encourage active transport (eg, walking or cycling) to and from school or other activities.

Useful resources

- Be Active Every Day, Physical activity for 5–18 year olds www.healthed.govt.nz/resource/be-active-every-day-physical-activity-5-18-year-olds
- *Food and Nutrition Guidelines for Healthy Children and Young People (Aged 2–18 years)* (Ministry of Health 2012) page 101
- low-cost ideas for activities at the My Family Activities website: <http://myfamily.kiwi/activities>
- Fitness New Zealand's¹² *Guidelines for Children in Exercise Facilities* (2009).

Reducing sedentary time

Evidence update

International research including several meta-analyses has recently added significantly to the evidence base on the positive effects of a range of different interventions (primarily aimed at reductions in TV or other screen time) for reducing sedentary time, and subsequent reduction in BMI (Liao et al 2014; Van Grieken et al 2012; Wahi et al 2011; Biddle et al 2011).

Recommendations

For children under the age of five, practitioners should advise families/whānau to:

- provide activity breaks to limit the amount of time a child sits without moving (eg, stop at a playground to break up long car trips)
- discourage screen time for under-two-year-olds and limit it to less than one hour per day for those two years and older.

For children and young people aged 5–18 years, practitioners should advise families/whānau to:

- reduce time children spend being inactive – aim for less than two hours of recreational screen time per day.

8 Moderate-intensity activities make breathing harder than normal, but a person should still be able to talk while doing them. Examples are brisk walking on flat ground, cycling (at a speed of <16 km/h), active play, dancing and kapa haka.

9 Vigorous-intensity activities make breathing a lot harder than normal, and a person would not be able to talk easily while doing them. Examples are brisk walking uphill, fast cycling (at a speed of >16 km/h), running, fast swimming and team sports (such as netball, touch, rugby and football).

10 Muscle-strengthening activities build skeletal muscle strength, power, endurance and mass.

11 Bone-strengthening activities produce an impact or tension force on the bones that promote bone growth and strength.

12 Now called the Exercise Association of New Zealand.

Sleep

Evidence update

An inadequate amount of good-quality sleep has wide-ranging implications for health including weight status, school performance, driver safety, emotional and behavioural difficulties, risky behaviour and dietary intake (Shochat et al 2014; Bartel et al 2015). For example, children who sleep less than the recommended amount are twice as likely to be overweight or obese as children who meet the recommendation (Fatima et al 2015).

Sleep problems are common; up to one-third of parents of infants and toddlers say their child has a sleep problem that negatively impacts on their family, and two-thirds of adolescents say their sleep needs are not being met (Galland and Mitchell 2010; National Sleep Foundation 2011; Léger et al 2008).

Exactly *how* greater amounts of sleep are protective against weight gain is not clear, but sleep deprivation is thought to affect both sides of the energy balance equation. Being awake for longer leaves a person more time to eat, but it also affects appetite regulation, leading to excess energy intake. Not getting enough sleep may also lead to less physical activity and reduced energy expenditure, although these effects may not be as strong (Schmid et al 2015).

Although the epidemiological evidence linking short sleep duration to an increased risk of obesity in children is strong (Fatima et al 2015), relatively few interventions have been undertaken to determine how feasible it is to change sleep behaviours (Tan et al 2012). Most sleep interventions have been undertaken in clinical settings, rather than focusing on improving sleep as a public health intervention (Wing et al 2015). However, the existing research indicates a number of behavioural and environmental factors collectively known as sleep ‘hygiene’ that practitioners can recommend to promote healthy sleep (Irish et al 2015); see below.

Recommendations

For healthy individuals, appropriate sleep durations within a 24-hour period (adapted from Hirshkowitz et al 2015) are:

| Age | Recommended (hours) |
|----------------------------------|---------------------|
| newborn babies (0–3 months) | 14–17 |
| infants (4–11 months) | 12–15 |
| toddlers(1–2 years) | 11–14 |
| preschoolers (3–4 years) | 10–13 |
| school age children (5–13 years) | 9–11 |
| teenagers (14–17 years) | 8–10 |
| young people (18–25 years) | 7–9 |

Simple behavioural strategies to improve sleep include:

- ensuring sleep and wake times (including at the weekends) are regular
- adopting a regular bedtime routine
- ensuring a comfortable sleeping environment (quiet, warm and dark)

- making sure there are no distractions (including screens and portable electronic devices) where children sleep
- avoiding caffeine – especially caffeinated drinks.

Useful resources

- For more sleep tips, see the Ministry of Health’s ‘Sleep tips for young children’: www.health.govt.nz/your-health/healthy-living/food-and-physical-activity/obesity/sleep-tips-young-children
- [Sleep Health Fact Sheets](#) by the Sleep Health Foundation of Australia. Useful consumer focused factsheets on a range of topics including behavioural sleep problems in school aged children, childhood snoring and sleep apnoea, sleep tips for children, teens and sleep, sleep problems and sleep disorders in school aged children, nightmares. www.sleephealthfoundation.org.au/public-information/fact-sheets-a-z.html

Behavioural strategies

Behavioural strategies help plan, implement and reinforce changes in lifestyle, particularly in terms of eating and physical activity. Unless a child or young person acquires new habits, they will be unlikely to manage their weight over the long term.

Children’s eating and physical activity behaviours are largely influenced by their parents/caregivers. Parents/caregivers usually do the household shopping, and have control over what is eaten and where, the time spent on sedentary activities (eg screen time) and the amount of physical activity a child engages in through play opportunities, and participation in sports teams and clubs. Parents/caregivers also act as role models, particularly for younger children.

Young people are more independent of the family/whānau environment, and need to learn skills to make healthy choices for themselves. Behavioural interventions are relevant to both children and young people, but may need to be adapted based on maturity level.

Evidence update

A systematic review of behaviour change techniques aimed at changing physical activity and/or eating behaviour for the prevention or management of childhood obesity was undertaken by Martin, Chater and Lorencatto, 2013. They identified the following six techniques as likely to be effective: providing information on the consequences of behaviour to the individual, environmental restructuring, prompt practice, prompt identification as role model/position advocate, stress management/emotional control training, and general communication skills training.

Recommendations

Behavioural strategies, particularly for younger children are more effective if directed at the parents or caregivers and the family/whānau. Young people have more autonomy over their food and drink choices so strategies need to be developed in consultation with them, with support from their parents/caregivers if appropriate.

Behavioural strategies generally involve forms of self-monitoring, goal-setting, contracting and skills provision for high-risk situations (see below for more information on each), and are age-dependent. In implementing behavioural strategies, practitioners should do the following.

- Based on the history, identify problem behaviours and the circumstances under which they occur.
- Identify which changes the child or young person and their family/whānau want to work on first.

- Encourage the use of problem-solving and goal-setting strategies to achieve changes. Goals should be specific, measurable and modest.
- Target behaviours should be monitored, usually by the child or young person and their parents/ caregivers, to record behavioural change
- Consider suggesting behavioural contracts (eg, a commitment to aim for five minutes of active play per day for the first week, rising to 10 minutes in the second week).
- Encourage appropriate (not food-related) rewards for when the child or young person meets a goal.
- Unmet goals can be viewed as opportunities for families to learn more about their situation, including the barriers they face to achieving their goals.

Five key behavioural tools are: self-monitoring, stimulus control, problem solving, contingency management or contracting, cognitive restructuring. See Appendix 1 for more information on these tools.

Other options for weight management

Weight management support services and programmes

Weight management services and programmes range from nutrition and healthy-eating services to exercise and weight-loss programmes. Some such services are publicly funded, through the Ministry of Health or DHBs. The types of services available vary throughout the country. Ideally, they should have input from a multidisciplinary team.

Examples of relevant services and programmes include:

- dietetic services
- whānau planning services – Whānau Ora providers and collectives work to support whānau aspirations by helping whānau to set goals and creating a pathway towards achieving them (including by facilitating access to services)
- Active Families – an exercise and nutrition programme designed for families. See www.health.govt.nz/your-health/healthy-living/food-and-physical-activity/green-prescriptions/active-families
- community-funded physical activity services and programmes specifically for Māori and Pacific communities, such as church groups, Zumba programmes and youth exercise programmes
- whānau-based programmes such as Triple P (Positive Parenting Program).

Weight-loss drugs

The weight-loss drug Orlistat promotes weight loss by blocking enzymes (lipases) that break down fats in the gut, preventing the absorption of fat, allowing it to pass through the body undigested. No weight loss drugs are registered for use with children and young people in New Zealand.

Evidence update

The United Kingdom National Institute for Health and Clinical Excellence (see NICE 2006 (revised 2014)) only recommends treatment with Orlistat¹³ in children aged 12 years and over if physical comorbidities (such as orthopaedic problems or sleep apnoea) or severe psychological comorbidities are present.

13 Orlistat is a gastrointestinal lipase inhibitor that binds with lipase in the stomach or small intestine, and thereby prevents dietary fat from being broken down, digested and absorbed.

Recommendations

Practitioners should not use weight-loss drugs with children aged under 12 years, and are generally best avoided with young people.

Orlistat may be considered in children aged 12 years and over if physical comorbidities (such as orthopaedic problems or sleep apnoea) or severe psychological comorbidities are present. Treatment should only be started in a specialist paediatric setting, by multidisciplinary teams with experience of prescribing in this age group. The efficacy and safety of Orlistat for children and adolescents below the age of 18 years have not been established (see www.medsafe.govt.nz/profs/datasheet/x/Xenicalcap.pdf).

Bariatric surgery

Bariatric surgery promotes weight loss by changing the digestive system's anatomy, limiting the amount of food that can be eaten and digested.

Recommendations

It is not recommended in those under the age of 14 years. A young person should meet a number of criteria before a practitioner considers him or her for bariatric surgery (Australian and New Zealand Association of Paediatric Surgeons et al 2010):

- a minimum age of 15 years, although surgery may be considered in exceptional circumstances at age 14
- attainment of Tanner stage¹⁴ 4 or 5 pubertal development
- attainment of final or near-final adult height (ie, bone age \geq 13.5 in females and \geq 15.5 in males)
- severe obesity. The recommended threshold for bariatric surgical intervention is a body mass index (BMI) >40 kg/m², although it should be considered in adolescents with a BMI >35 kg/m² in the presence of severe obesity-associated complications
- the presence of an associated severe co-morbidity, such as type 2 diabetes, hypertension, non-alcoholic steatohepatitis, benign intracranial hypertension or obstructive sleep apnoea
- persistence of the level of obesity despite involvement in a formal multidisciplinary and supervised programme of lifestyle modification and pharmacotherapy (a minimum six months of supervised multidisciplinary therapy should be provided prior to bariatric surgery being performed)
- understanding on the part of the adolescent and family of the treatment, required lifestyle change and review following surgery, and motivation to engage in the process
- informed consent for the surgery from the adolescent.

Bariatric surgery is not recommended for adolescents that are pregnant or breast-feeding, have significant cognitive disabilities, have an untreated or untreatable psychiatric or psychological disorder, or have Prader-Willi syndrome or other similar hyperphagic conditions (Australian and New Zealand Association of Paediatric Surgeons et al 2010).

14 The Tanner scale (also known as the Tanner stages) is a scale of physical development in children, adolescents and adults. The scale defines physical measurements of development based on external primary and secondary sex characteristics, such as the size of the breasts, genitals, testicular volume and development of pubic hair.

4. Maintain

Long-term follow-up and monitoring of growth is important to maintain positive changes and provide additional support as appropriate.

Good practice points for engagement

- Identify and promote local support services that encourage healthy lifestyle approaches.
 - Develop collaborative partnerships with Māori health providers, Whānau Ora providers, Pacific Health providers and other community-based organisations.
-

Recommendations

To help children and young people attain and maintain a healthy weight according to best practice, practitioners should take the following steps.

- Maintain contact and support as necessary.
- Continue to monitor the child's or young person's height and weight and BMI centile (ideally every 3 to 6 months) to ensure they are progressing to a healthy weight.
- Routinely review the suitability of the weight management approach, and use relevant support services.
- Continue to offer advice on healthy eating, physical activity (including sedentary time and sleep), and behavioural strategies.
- Reassess and review management if progress towards a healthy weight is not sustained.

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Appendix 1: Behavioural tools

Self-monitoring

Self-monitoring involves a child or young person or their parents/caregivers recording the child's or young person's food intake (in terms of amounts and types of food) and physical activity. Self-monitoring is a key step in behavioural approaches, because it leads to the child or young person and their parents/caregivers gaining increased awareness of patterns they can then adjust.

Stimulus control

Stimulus control occurs when a person behaves in one way in the presence of a given stimulus and another way in its absence (eg, when chippies are in the cupboard, the child will want to eat them; when chippies are not there, he or she will not). Stimulus control can modify a child or young person's eating and physical activity behaviours by limiting their exposure to high-risk situations (Wilfley et al 2011).

Problem solving

Problem solving involves identifying, planning and implementing the healthier alternative, and then evaluating the outcome of possible changes in behaviour. Approaches to problem solving include identifying weight-related problems, brainstorming possible solutions and then choosing one. When problem solving, participants should view setbacks in behavioural change as opportunities to learn (eg, by asking, 'What did we learn from this attempt and how else can we achieve what we want to?').

Contingency management or contracting

Contingency management or contracting is the planned use of rewards for specific activities with a positive benefit (eg, increased time spent doing physical activity or engaging in other healthy behaviours). Rewards can come from parents/caregivers or from the child or young person him- or herself.

A review on monetary incentives for weight loss found no effect for such incentives; researchers conclude that rewards should be intrinsically valuable to the person attempting to lose weight (Paul-Ebhohimhen and Avenell 2008). Examples of such rewards include family/whānau time, a new pet or music downloads.

Cognitive restructuring

Cognitive restructuring requires people to actively change the way they think. People need to manage their unrealistic goals and inaccurate beliefs about weight loss and body image, to address self-defeating thoughts and feelings. 'Cognitive restructuring' refers to the encouragement of rational responses to negative thoughts. For example, a person can restructure the thought 'I blew my eating plan by eating a pie this morning; I may as well eat what I like for the rest of the day' into the more adaptive 'Well, I ate that pie this morning, but I can still eat in a healthy manner at lunch and dinner'.