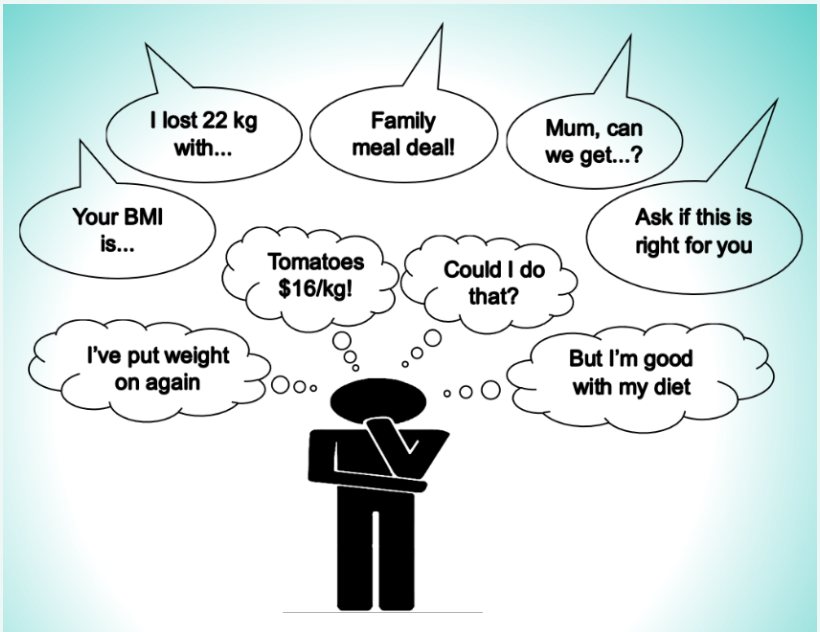
CLINICAL CONNECT
PEER EDUCATION PROGRAMME

GP24 Conference
Evidence review and resources

Supporting Healthy Weight

July 2024



[CQE 2023]

Nāu te rourou, nāku te rourou ka ora ai te tangata
With your contribution and my contribution, we will nourish people

Pegasus™ partners in health kia atawhai ki te tangata

TE RAU AKO
Learn and develop with Pegasus Health

LEARNING OBJECTIVES

After completing the pre-reading and attending this Small Group meeting, participants will be able to:

- Describe environmental, behavioural, and biomedical factors that contribute to adiposity and the inequities associated with these
- Outline potential harms from weight bias and stigma and develop skills to engage patients in mana-enhancing conversations about healthy weight
- Explain the uses and limitations of body mass index (BMI) and waist circumference
- Identify ways to work effectively with other health professionals, to support patients to navigate information and make healthy lifestyle changes
- Summarise evidence for the benefits and risks of weight loss medicines and surgery to inform discussions with patients

CONTENTS

INTRODUCTION

Obesity is a major worldwide health challenge that contributes to the risk of developing many diseases and can impact on quality of life and life expectancy. Globally, obesity prevalence has increased significantly over the past 40 years. Between 1975 and 2016, it has increased from <1% to 6–8% among girls and boys, from 3% to 11% in men and from 6% to 15% in women [Jaacks 2019].

This increase is reflected in Aotearoa NZ. We rank third highest in the OECD, with one in three adults >15yo and one in ten children classified as obese. Adult prevalence rates in 2022/2023 were 67% Pacific peoples, 48% Māori, 32% European/Other and 14% Asian (using the definition of BMI ≥30). Living in the most socioeconomically deprived areas is also associated with increased obesity prevalence [MOH 2023].

© Pegasus Health (Charitable) Ltd. July 2024

Increasing worldwide adiposity (obesity) is a major contributor to morbidity and mortality but also has social and economic costs. Over the next three decades 92 million deaths and a reduction of three years in life expectancy, in OECD countries, from obesity related diseases is projected [OECD 2019]. Direct health care costs of obesity and related conditions in Aotearoa NZ are estimated to be ~$2 billion and indirect costs (e.g., lost productivity) $7-9 billion a year. Harder to assign a dollar figure to, are the intangible costs (pain, physical limitations, stress, mortality). Obesity related conditions account for about 18% of all healthy life years lost [Barton and Love 2021].

Adiposity can have a significant impact on the daily lives of patients; weight stigma and bias, including from health professionals, contributes to poorer outcomes and difficulty for patients to raise concerns. A culture of individual blame ignores the many contributing factors to adiposity and inequities that exist across these, and in management options.

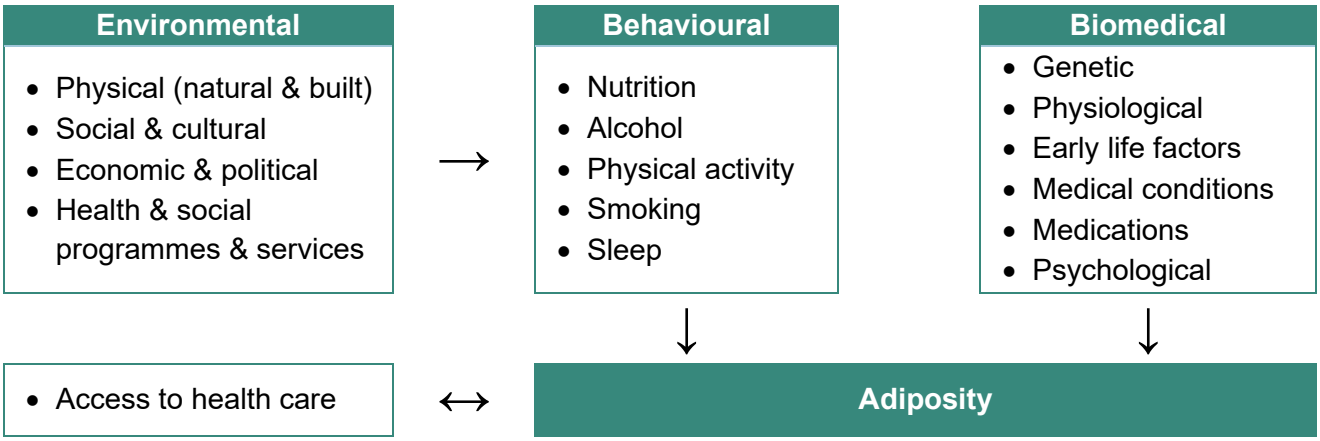
The increasing prevalence of obesity suggests that current approaches to address it are not working. This topic provides an opportunity to examine how we view weight, address contributing factors in a way that minimises stigma and bias and discuss holistic management strategies.

FACTORS THAT INFLUENCE ADIPOSITY

Body weight and composition are determined by complex interactions between a multitude of factors [CDC 2022a, DynaMed 2023b], demonstrated in figure 1 below. Many of these factors are beyond an individual's control, e.g., genetic, other biomedical/environmental factors. Environmental contributors include global, national, and local factors that strongly influence nutrition and other behaviours.

For an *individual*, both genetic and other factors are important in determining body size and composition. However, the increased prevalence of obesity globally in recent decades cannot be explained by genetic changes [Swinburn 2011]. Rather, this rapid increase in obesity has been attributed to societal changes resulting in a more 'obesogenic environment' [Swinburn 2011].

Figure 1. Factors that contribute to adiposity



Environmental influences include:

- Physical environment (natural and built): e.g., local food availability, neighbourhood walkability and transport infrastructure, work and education environments
- Social and cultural: including colonisation (e.g., loss of land, loss of cultural practices, intergenerational trauma)

© Pegasus Health (Charitable) Ltd. July 2024

- Economic (including commercial) and political: e.g., incomes, food affordability, food and beverage marketing, government policy
- Health and social programmes and services: including health promotion programmes
- Access to weight-related health care

Behavioural factors include:

- Food/nutrition: including yo-yo effect with repeated very low-calorie diets
- Alcohol intake: including alcoholism
- Physical activity: including work-related, recreational, travel and other incidental activity
- Smoking and smoking cessation
- Sleep: including quantity and quality

Biomedical contributors include:

- Genetic: including monogenic (caused by mutations in a single gene)
- Physiological: e.g., age, gender, post-pregnancy, menopause
- Early life factors:
  - Pre-conception and antenatal environmental exposures: including high maternal BMI pre-pregnancy, high gestational weight gain, gestational diabetes and maternal smoking
  - Evidence suggests breastfeeding reduces the likelihood of childhood obesity and there is some evidence that other aspects of infant feeding may have an influence
  - Antibiotic use early in life has been proposed to increase the risk of obesity via effects on the gut microbiome, although further research is needed
- Medical conditions, for example:
  - Syndromic obesity: e.g., Prader–Willi syndrome, Bardet–Biedl syndrome
  - Hypothalamic: e.g., hypothalamic tumour, post-radiation, surgery, or trauma
  - Endocrine: e.g., polycystic ovarian syndrome (PCOS), hypothyroidism, Cushing syndrome, hypogonadism, growth hormone deficiency
- Medications: some anti-epileptics, some antipsychotics, some antidepressants, some beta-blockers, corticosteroids, insulin, sulfonylureas, oral contraceptives, and Depo Provera (medroxyprogesterone)
- Mental health and psychological factors: including stress, trauma and depression

[Bell 2015, Bray 2016, CCHPW 2022, CDC 2022a, Howell and Booth 2022, Jebeile 2022, Jia 2023, Lam 2021, Lister 2023, Norman 2022a, Swinburn 2011, Vallianou 2021, van der Valk 2019, WHO 2023]

There are inequities in many of these contributors to adiposity, globally and in Aotearoa NZ. These include inequities in ‘upstream’ environmental factors, degree of choice in behavioural factors and access to solutions [de Jong 2023, Norman 2022a].

© Pegasus Health (Charitable) Ltd. July 2024

CONSEQUENCES OF ADIPOSITY

All organ systems are affected by excess adiposity [Marcus 2022], as demonstrated in Table 1. Variations in body fat distribution are associated with different levels of health risk [DynaMed 2023b].

Table 1. Summary of conditions caused or worsened by obesity (not an exhaustive list)

System	Condition
General	Adult obesity (for children), premature death
Endocrine/metabolic	Impaired glucose tolerance, type 2 diabetes, dyslipidaemia, polycystic ovary syndrome, hypogonadism (common in males, can occur in females), early puberty
Cardiovascular	Hypertension, ischaemic heart disease, heart failure, arrhythmias, stroke
Respiratory	Asthma, obstructive sleep apnoea, hypoventilation syndrome
Cancers	Many types of cancer
Immunologic/autoimmune	Various, including rheumatoid arthritis
Gastrointestinal	Gastro-oesophageal reflux disease, gallstones and gallbladder disease, non-alcoholic fatty liver disease
Urinary	Glomerulosclerosis, chronic kidney disease, kidney stones, urinary incontinence
Reproductive	Infertility, erectile dysfunction, pregnancy complications
Neurological	Intracranial hypertension
Musculoskeletal	Osteoarthritis, musculoskeletal discomfort, slipped capital femoral epiphysis
Dermatological	Skin fold infections, acne, acanthosis nigricans, psoriasis
Oral health	Caries, periodontitis
Mental health & social	Depression, anxiety, low self-esteem, social isolation, lower quality of life, stigma, disordered eating, bullying, absenteeism and lower educational achievement (children), workplace absenteeism, lower productivity, unemployment, and lower income (adults)

[CDC 2022b, DynaMed 2023a, Jebeile 2022, Marcus 2022, Markovic 2022, MOH 2017, OECD 2019]

Metabolically healthy obesity (MHO)

The impact of cardiovascular fitness in people with a high BMI has been debated in several large studies [Valenzuela 2023]. Some research shows a reduction in all-cause and cardiovascular mortality in people with a high BMI with good aerobic fitness [Barry 2014], another study found unfit normal weight individuals had a 30% lower risk of death from any cause than fit obese individuals [Hogstrom 2015]. A multi-ethnic longitudinal cohort study (6,814 participants) found:

- Over time the effects of excess adiposity can convert people with no metabolic manifestations to someone with cardiometabolic consequences [Mongraw-Chaffin 2018]
- The study suggests it is clear that many/most people classified with ‘metabolically healthy obesity’ will eventually convert to having a disease associated with obesity

MEASUREMENT AND DIAGNOSIS

History of Body Mass Index (BMI)

Ancel Keys devised the term Body Mass Index in 1972 based on the Belgian statistician astronomer’s ‘Quetelet Index’ (1796 -1874) which aimed to identify the characteristics of the ‘average man’ [Bray 2023]. The formula was used to measure ‘fitness to parent’ and as a scientific justification

for eugenics [Bray 2023]. Data from American life insurance companies in the 19th century, showed a detrimental association between increasing weight and early death. In 1942, the Metropolitan Life Insurance company published separate 'ideal weight' tables for women and men arranged by height, according to frame size.

- This and subsequent tables (based mainly on European and American populations) provided the basis for suggesting a reasonable BMI of 19-24kg/m^2 [Bray 2023]

Limitations of BMI

BMI has been useful as an international epidemiological tool used to trace the obesity pandemic. However, it has limitations when used to evaluate individual patients [Bray 2023].

- Body fat percentage (BF%), abdominal adiposity and health risks can vary for a given BMI [Dobbie 2023]. It is not possible to predict BF%, distribution of fat or health risk from BMI without considering age, gender, and ethnicity [Eme 2020, Markovic 2022]
- BMI does not provide insights into the heterogeneity of obesity or genetic, metabolic, physiological or psychological origins [Bray 2023]

International and Aotearoa NZ research has shown that the relationship between BMI and BF% differs between ethnic groups [Eme 2020, Markovic 2022, Rush 2009, Swinburn 1999].
An Aotearoa NZ study [Rush 2009] found that for a given BMI:

- Fat mass was lowest in Pacific people, followed by Māori and European, then South Asian
- Pacific men with a BMI of 34 had the same BF% as South Asian men with a BMI of 24, while Pacific women with a BMI of 35 had the same BF% as South Asian women with a BMI of 26
- Abdominal fat mass followed the same pattern: Pacific < Māori and European < South Asian
- Limb skeletal muscle mass was the opposite: Pacific > Māori and European > South Asian
- There were differences between ethnic groups in body fat distribution

This is consistent with an earlier Aotearoa NZ study that also found 'Polynesian' (Māori and Samoan) people had lower adiposity for a given BMI than European people [Swinburn 1999]. While there is limited evidence for Asian peoples in Aotearoa NZ, international studies have shown that many Asian peoples have higher BF% and health risks for a given BMI than European peoples. However, this varies between different Asian ethnicities [WHO Expert Consultation 2004].

When using BMI as an indicator of adiposity and associated health risks, it is important to consider age, gender, and ethnicity [AMA 2023, Eme 2020, Markovic 2022]. If a BMI raises concerns, consider fat distribution and individual impacts of increased adiposity.

Waist circumference

Waist circumference (WC) provides a simple way to measure adiposity and is a good estimate and tool to validate metabolic disease risk [AMA 2023, Markovic 2022]. Several international consensus statements recommend that BMI should be used together with waist circumference **in adults** [AMA 2023, Markovic 2022, Ross 2020]. Consistency in how you measure is important [Markovic 2022].

- Substantial differences in WC occur within and across all BMI levels [Ross 2020]
- BMI and WC can identify high-risk obesity phenotype better than either alone [Ross 2020]
- Clinical significance of measurement varies by age, gender and ethnicity [Markovic 2022]
- Randomised controlled studies show life-style induced reductions to waist circumference reduce cardiometabolic risk factors, with or without associated weight loss [Ross 2020]

© Pegasus Health (Charitable) Ltd. July 2024

Measuring adiposity in children

Meta-analyses have found that BMI has high specificity for detecting adiposity in children but lower sensitivity; this means it will miss many children with excess BF% [Javed 2015, Simmonds 2016]. Nevertheless, BMI-for-age values (e.g., BMI centile charts) are still the gold standard for assessing weight in children [AMA 2023]. Evidence for the use of WC in children is lacking [AMA 2023].

Adiposity in older adults

There is limited research on adiposity in older adults (>65yo) [Markovic 2022], what is available shows that BF% is higher in this age group [Eme 2020]. Aging is associated with a reduction in muscle mass, height loss and an increase in abdominal obesity however these are not accounted for with a specific BMI range. In older adults (>65yo) with obesity:

- BMI ≥30 kg/m^2 - lowest mortality is associated with BMI higher than the normal range Mortality risk **increases with weight loss** (including intentional) altering the risk/benefit ratio
- BMI 30-40 kg/m^2 and BMI ≥40 kg/m^2 **without complications**, aim to maintain physical function and health, prevent weight gain and moderate any intentional weight loss
- BMI ≥40 kg/m^2 **with obesity-related complications** requires more concerted management
- Focus on quality nutrition, activity to improve cardiovascular fitness/functional independence, quality of life to minimize the impact of obesity-related complications

[Markovic 2022]

PERCEPTIONS OF BODY SIZE

Primary care is seen as the ideal place to provide weight management care; however, barriers to care exist within this environment. These include the impact of societal stigmatisation of obesity but also bias and stigma within the health system and its workforce. There may be a perceived lack of motivation for patients to lose weight and perceptions of weight can differ between patients and health professionals. Weight bias impacts mental and physical health and does not support inclusion, diversity or equitable outcomes [Brown 2022]. Bias may be internal, inter-personal or systemic.

An Aotearoa NZ review looked at barriers to obesity health care from GP and client perspectives [Norman 2022b]. Four clear themes were identified: stigma, communication, inadequate health care (system limitations/lack of tailored advice), and sociocultural influences (e.g., associating weight loss with illness, links between obesity and poverty, and obesity and shame).

Stigma was demonstrated in many ways e.g., patients reported feelings of social embarrassment and shame, or being perceived as having character flaws e.g., laziness, unintelligent. Inappropriate humour, verbal comments, negative body language, not protecting dignity, and unmet healthcare needs (e.g., trying to avoid situations where stigma maybe an issue). GPs were aware of obesity stigma and the importance of avoiding this, which can be difficult, but improves patient relationships.

Quote from a GP who has done the Project Implicit test - *I came across Project Implicit…I thought myself to be impartial and was surprised and horrified to find that my result showed a bias against fat people… I started to re-educate myself… I now encourage good diet choices, movement in daily life as exercise and progress not perfection rather than watching the scales and aiming for weight loss. This year my project implicit result showed no bias on the weight test.*

The Harvard Weight ('Fat - Thin') Implicit Association Test (IAT) is a measure of attitudes and beliefs that individuals may be unwilling or unable to report. The findings may show an implicit attitude that you have been unaware of and offer an opportunity for reflection.

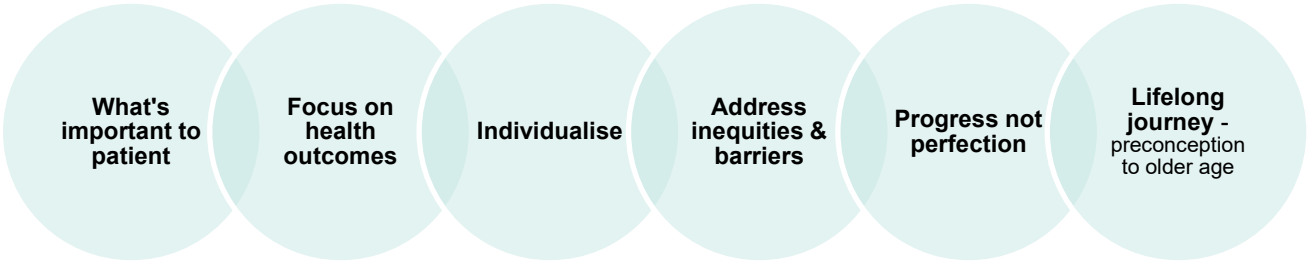
https://implicit.harvard.edu/implicit/takeatest.html
Click on 'I wish to proceed' at the bottom the page, then click on 'take a test', then select Weight IAT ('Fat - Thin' IAT) from the panel of options down the left side.

MANAGEMENT OPTIONS

Overview

'Obesity is complex. The causes are varied and multidimensional so management must be too' [The Lancet Diabetes & Endocrinology 2023]

To help guide management, a clinical evaluation should be undertaken and include weight history, weight loss attempts, past medical history (i.e., metabolic, functional, and psychosocial), lifestyle, family history and psychological health. Consider the timeline of weight change and coinciding life events (i.e., new job, pregnancy, trauma, loss) [Dobbie 2023]. A long-term approach with multidisciplinary team support is needed [Markovic 2022].
Consider:



Prevention, assessment, management - including contributing factors, & consequences
Teamwork, whānau/family, community

Lifestyle options

Lifestyle interventions are crucial for weight loss and should include diet (optimizing quality) **and** increasing physical activity **and** behavioural change [Markovic 2022]. While these interventions are effective, they can be difficult to maintain. Both patient and health care professional perceptions can influence engagement and outcomes of lifestyle interventions.

- Sustained long-term weight loss of 5-10% can improve related comorbidities [Noria 2023]
- Most dieters manage to lose some weight initially but regain the weight within two years, a minority maintain long-term weight loss [de Ridder 2017]
  - The limited long-term efficacy in most patients is due to adaptive metabolic and physiologic responses to weight loss [DynaMed 2023b]
- Childhood obesity risks can be modified by weight loss. The risk reduction is affected by the age at which weight loss occurs. Weight loss prior to puberty is usually more beneficial but there are marked disease-specific differences [Marcus 2022]

© Pegasus Health (Charitable) Ltd. July 2024

Barriers and facilitators that can impact engagement in lifestyle interventions include support, psychological factors, logistics, role of health professional, individual health, programme structures, and child/parent specific aspects [de Jong 2023]. The same systematic review found many participants were unaware of their weight classification and subsequent risk to health and appreciated initiation of conversations, referrals, and follow up.

A strong supportive network and personalised lifestyle interventions are essential for success. **Interventions need to continue alongside medication or surgery options.**

[de Jong 2023]

Medications for weight loss

There are currently four medicines approved for weight loss in Aotearoa NZ: liraglutide, phentermine, orlistat and naltrexone/bupropion. Pharmacological therapy may be considered *adjunctively* to lifestyle measures in adults with BMI ≥30 kg/m^2 where lifestyle changes have not produced clinically significant benefits after six months, or BMI ≥27 kg/m^2 with at least one weight-related comorbidity [MOH 2017, Walmsley and Sumithran 2023].

Efficacy of medicines licensed for weight loss in Aotearoa NZ is supported by evidence from meta-analyses of randomised controlled trials (RCTs). However, many of the RCTs have significant limitations, including risk of bias and short duration (most trials ≤12 weeks) [Lannone 2023]. While all these medicines are associated with improvements in weight and various cardiovascular (CV) risk factors, CV outcome trials are lacking (for patients without diabetes) [Walmsley and Sumithran 2023].

A recent network meta-analysis of RCTs examined the weight loss medicines orlistat, liraglutide, semaglutide, phentermine/topiramate, naltrexone/bupropion and lorcaserin [Lannone 2023].
It found:

- All medications were associated with a reduction of **body weight** and **WC** at 12 months, compared to placebo. Semaglutide and phentermine/topiramate were associated with greatest reduction in body weight, % body weight and WC at 12 months; followed by liraglutide and naltrexone/bupropion. The effects were smallest for orlistat and lorcaserin
- Liraglutide, phentermine/topiramate, orlistat and lorcaserin were associated with a reduced risk of **diabetes onset**, with liraglutide having the strongest association. The association was not statistically significant for semaglutide
- Evidence for associations with **all-cause mortality, cardiovascular mortality, non-fatal myocardial infarction** and **non-fatal stroke** was very limited
- **Drop-out due to adverse events** was higher for all medicines than placebo; the rate was greatest for naltrexone/buproprion

Another network meta-analysis of RCTs for weight loss medicines found phentermine/topiramate to be the most effective for reducing weight, followed by GLP-1 receptor agonists. Naltrexone/bupropion was associated with the highest odds of adverse effects leading to discontinuation, followed by phentermine/topiramate [Shi 2022].

Before initiation, weigh risks against potential benefits, recognising that **good long-term safety data are lacking and weight gain back to pre-existing weight is expected after stopping treatment** [Markovic 2022, Wilding 2022]. Establish treatment goals with the patient (e.g., weight loss, improved physical function, improving comorbidities), which may also help decide whether to continue treatment long-term.

Other considerations include:

- Interindividual variability in response is substantial [Walmsley and Sumithran 2023]
- When maximal therapeutic effect is reached, a plateau in weight loss occurs
- Discontinuation rates are high: 17-50% after 1 year in clinical trials [Walmsley and Sumithran 2023]
- Treatment >12 weeks is only recommended if the patient has achieved clinically significant weight loss (≥5%) and there are no concerns about ongoing treatment [MOH 2017]
- No treatments are currently funded in Aotearoa NZ for weight loss
- Treatment is generally ineffective unless it is used alongside lifestyle changes

Options for pharmacological therapy in adults

Medicine	Mechanism	Efficacy[+]	ADRs / Cautions	Cost*
Liraglutide (subcut)	*GLP-1 analogue* ↓ appetite & ↑ satiety by GLP-1 agonism in CNS	4-6% at 56 weeks	**ADRs:** GI disturbance (usually transient & dose-related), headache, cholelithiasis, tachycardia, injection site reactions. Avoid dehydration. Rarely reported: gallbladder disease, renal impairment, suicidal thoughts, possible thyroid cancer **Precautions/Contraindications:** Personal or family history of medullary thyroid carcinoma or multiple endocrine neoplasia syndrome type 2, history of pancreatitis, pregnancy, breastfeeding. Hypoglycaemia with insulin & sulphonylureas	$500
Phentermine (oral)	*Amfetamine-like stimulant* ↓ appetite by stimulating release of noradrenaline, serotonin, dopamine	7.4 kg over 36 weeks	**Abuse potential:** limit to ≤12 weeks use. **ADRs:** Dry mouth, insomnia, palpitations, tachycardia, hypertension, anxiety, dizziness, constipation **Precautions/Contraindications***:* heart disease, poorly controlled hypertension, pulmonary hypertension, history of addiction or drug abuse, hyperthyroidism, glaucoma, agitated states, MAOI use, pregnancy, breastfeeding	$100
Orlistat (oral)	*Lipase inhibitor* ↓ fat absorption in gut by inactivating gastric & pancreatic lipases	4% at 52 weeks	**ADRs:** Cramps, flatulence, steatorrhoea, fat-soluble vitamin deficiency. Rarely reported: severe liver injury, oxalate-kidney injury **Precautions/Contraindications:** pregnancy, breastfeeding	$160
Naltrexone + bupropion (oral)	*Opioid antagonist + noradrenaline/ dopamine inhibitor* ↓ appetite↑ energy expenditure, eating behaviour modified by stimulating pro-opiomelanocortin (POMC) neurons in hypothalamus	5% at 56 weeks	**ADRs:** GI disturbances, headache, dizziness, insomnia, dry mouth, hypertension (transient) **Precautions/Contraindications:** seizures, uncontrolled hypertension, bipolar affective disorder, chronic opioid use, use within 14 days of MAOIs, pregnancy, breastfeeding **Interactions***:* Bupropion inhibits CYP2D6 & may reduce metabolism of some medicines e.g., antidepressants, antipsychotics, metoprolol	$230

[+] Mean placebo subtracted weight loss. Figures are from Walmsley 2023. Losses are typically lower in people with type 2 diabetes than in those without diabetes. *Approximate cost per month at maximum dose as of Sep 2023. Prices will vary between pharmacies.

Adapted from [BPAC 2022, Markovic 2022, Walmsley and Sumithran 2023]

© Pegasus Health (Charitable) Ltd. July 2024

GLP-1 receptor agonists (GLP-1 RA) (e.g., liraglutide, dulaglutide, exenatide, semaglutide)*:*
Supply issues: Use for weight loss has surged due to social media and aggressive drug company marketing. The surge in use has created supply issues worldwide of all GLP-1 RAs that are not likely to stabilise until late 2024. Pharmac has had to restrict Special Authority access for patients with diabetes to ensure there is enough supply for those already stabilised on them [Pharmac 2023].

Efficacy and safety: GLP-1 RAs are a relatively new class of diabetes medicine, and their efficacy and safety longer term (e.g., >2-3 years) for weight loss are lacking. International regulatory authorities are currently monitoring their safety due to concerns they may increase the risk of suicidal ideation and thyroid cancer [Bezin 2023, Youmshajekian 2023]. It is expected patients will return near to their pre-treatment weight when GLP-1 RA treatment is discontinued [Wilding 2022].

Dietary supplements

Examples include berberine, slimming teas, chromium, chitosan, Vitamin B-12, and guar gum.

- There is poor evidence to support the efficacy or safety of complementary and alternative products for weight loss and limited evidence on interactions with prescription medicines [Bessell 2021, BPAC 2022]
- There is no quality assurance of products in Aotearoa NZ; adulteration with active pharmaceuticals and contamination is a common issue overseas [Gurley 2018]

Bariatric surgery

Bariatric surgery works by one or more of the following mechanisms [Ranjan 2023b]:

- **Restrictive:** decreased volume can be ingested in one go
- **Malabsorptive*:*** decreased absorption from the small intestine
- **Hormonal:** disruption of ghrelin, glucagon-like peptide 1 (GLP-1) and/or peptide tyrosine tyrosine (peptide YY, PYY)

The most common bariatric surgery procedures currently offered in Aotearoa NZ are described below. Early and late complications can occur with all types of bariatric procedures. Gastric banding is no longer recommended, due to lower efficacy and complications [Ranjan 2023b].

Laparoscopic sleeve gastrectomy

- Removal of most of the stomach, leaving a narrow tube/'sleeve' [Healthify 2022]
- Restrictive and hormonal effects [Ranjan 2023b]
- Relatively new but now very common [Arterburn 2020]

Laparoscopic Roux-en-Y gastric bypass (RYGB)

- A small pouch is formed from the proximal part of the stomach. This is connected to the small intestine, bypassing the rest of the stomach and first part of the small intestine [Ranjan 2023b]
- Restrictive, malabsorptive and hormonal effects [Ranjan 2023a]
- Long-term evidence available [Arterburn 2020]

Laparoscopic single anastomosis gastric bypass (SAGB)

- Also called one anastomosis gastric bypass, mini gastric bypass, omega loop gastric bypass
- Similar to Roux-en-Y gastric bypass but with one anastomosis instead of two and a longer length of small intestine bypassed [Healthify 2022, Ranjan 2023b]
- Becoming more common [Ranjan 2023b]

Efficacy for weight loss - weight loss varies between different types of bariatric surgical procedures [Arterburn 2020]. Uncertainty remains as to which procedure is most effective [Arterburn 2020].

- A 2019 meta-analysis of studies with 10 or more years of follow-up [O'Brien 2019] found while 'substantial and durable' weight loss was seen for all procedures, most of the studies were of low quality. Only two of the studies were RCTs (one for gastric banding and one comparing gastric banding and RYGB)
- Re-operation was common for all procedure types examined

Weight regain - the majority of patients regain a clinically significant amount of the initial weight-loss, most commonly from the second-year post-surgery [Arterburn 2020, Noria 2023]. Returning to within 5% of preoperative weight is less common, estimated to occur in ~13-15% of patients at 5 years for sleeve gastrectomy, 3% at 5 years for RYGB, 4% at 10 years for RYGB [Arterburn 2020].

- Common causes of weight regain are believed to include eating behaviours, lifestyle factors, physiological compensatory mechanisms e.g., hormonal changes, psychiatric comorbidities, particularly depression. Anatomic failures are a less common cause [Noria 2023]

Health outcomes - there is considerable evidence showing that bariatric surgery is associated with improved type 2 diabetes outcomes, including short and long-term remission [Arterburn 2020, Liao 2022]. Bariatric surgery has also been found to be associated with decreased risk of multiple other adverse health outcomes. However, the quality of evidence for most of these associations is low. In addition, bariatric surgery may also be associated with increased risk of some health outcomes.

Evidence of **benefits** from meta-analyses:

- Low to moderate quality evidence for substantial reductions in gestational diabetes, gestational hypertension and urinary incontinence [Liao 2022]
- Low or very low-quality evidence for substantial reductions in all-cause mortality, cardiovascular mortality, all cancer mortality, cardiovascular events and incidence of heart failure, myocardial infarction, stroke, all cancers, some types of cancers, polycystic ovary syndrome, hirsutism, menstrual irregularity and infertility [Liao 2022, van Veldhuisen 2022]

Evidence of potential **harmful outcomes** from meta-analyses:

- Moderate quality evidence for increased risk of suicide and low to moderate quality evidence for increased risk of self-harm [Liao 2022]
- Very low to moderate quality evidence for increased incidence of some adverse maternal and neonatal outcomes e.g., maternal anaemia and intrauterine growth restriction [Liao 2022]

Quality of life - some studies suggest that bariatric surgery may improve quality of life in the long term, evidence for this is currently limited in quality and by length of follow-up [Sierżantowicz 2022].

Efficacy of bariatric surgery compared to pharmacotherapy

There is very limited published research directly comparing the efficacy of bariatric surgery and GLP-1 RAs for weight loss.

- A small meta-analysis of head-to-head studies [Sarma and Palcu 2022] found that weight loss appeared to be greater with bariatric surgery than with GLP-1 RAs in adults with or without type 2 diabetes
    - However, this was based on five small studies (two RCTs, one non-RCT and two cohort studies), with a total of only 314 patients (195 bariatric surgery and 119 GLP-1 RA)
    - Other limitations include follow-up time (three of the five studies had a duration of ≤12 months), risk of bias in the studies and limitations of the meta-analysis
    - The specific surgical procedures and medications varied but did not include newer, more effective GLP-1 RAs such as semaglutide

© Pegasus Health (Charitable) Ltd. July 2024

APPROACHES TO CONVERSATIONS ABOUT WEIGHT

Body weight is intertwined with societal and cultural meanings contributing to the overall dimension of people's identity. Conversations about body weight can be complex and emotionally charged, particularly alongside experiences of weight stigmatisation, especially from health professionals.

- Harmful weight stigma can negatively affect psychological and physical wellbeing
- Self-perception, attitudes, and behaviours can be influenced by terminology
- Words used to discuss obesity and body weight should be considered, respectful and free of stigma [Ells 2022, Puhl 2020]

A systematic review of 33 studies examined preferences of weight related terminology. Overall neutral words such as weight or unhealthy weight and phrases such as 'your weight may be damaging your health' were preferred over obese, fat, large size or heaviness. Some studies showed a preference for using 'obese, others found 'fat' was more acceptable. Some studies found BMI was preferred to communicate body weight, others viewed it as not desirable or motivating [Puhl 2020].

There is no 'one size fits all' approach to discussions about weight and it is recommended that health professionals ask permission to discuss weight, avoid assumptions when building a patient-provider relationship, and ask patients what terms they are most comfortable with e.g.,

'Could we talk about your weight today?'

Acknowledge that people have different preferences when it comes to the words used to talk about weight, ask what words they feel most comfortable with when discussing weight related health.

[Puhl 2020]

Mana enhancing communication closes the space between different understandings, while building trust and mutual respect.

- Mana-enhancing practice nurtures the spiritual, emotional, physical and intellectual dimensions of a person. It has been developed from Māori ways of doing, thinking and feeling [Wi-Kaitaia 2021]

The Canadian 5As: An international Framework for Person-Centred Obesity Care

The 5As Team Research Program (5AsT) in collaboration with community partners and people with a lived experience of obesity developed a collaborative, personalised approach to address the complexity and chronic nature of obesity management. Pivotal to this approach are the 5As of Obesity Management™: **A**sk **A**ssess **A**dvise **A**gree **A**ssist

The approach considers the whole person, understanding the complexity of health by integrating other medical concerns and life context [Ells 2022]. This 5-minute video explains the program and gives practical advice about talking to patients about obesity.
https://obesitycanada.ca/resources/5as/

Ministry of Health Clinical Guidelines for Weight Management in New Zealand Adults.

The Ministry of Health also provide guidelines to facilitate clinical decision making for the identification and management of unhealthy weight in adults. This involves a four-stage pathway:

1. **Monitor:** The effectiveness of most weight-loss strategies and plans (particularly longer-term) is limited. Regularly monitor all adults' weight, to identify excess weight gain and suggest small diet and activity changes before someone becomes overweight or obese.
2. **Assess:** To identify co-morbidities, possible underlying causes or contributing factors. Examine and take a full history for adults with a BMI over 30kg/m2, or BMI 25-29.9 with waist circumference over 88cm for women or 102cm for men.
3. **Manage**: Work with patients and their family/whānau to develop a weight management plan. The key components of management are **FAB**: **F**ood and drink, **A**ctivity (including reducing sedentary time, and supporting sufficient sleep), and **B**ehavioural strategies.
4. **Maintain**: Management is a life-long journey. After achieving weight loss, continue to follow-up and monitor to maintain positive changes and make use of additional support.

[MOH 2017]

Strategies to guide constructive conversations and reduce stigma

- Understand complex causality of weight gain e.g., genetics, social, biological, psychological, environmental, to help support a positive attitude towards patients
- Shift focus from weight and weight loss to factors that can improve well-being
- Provide a welcoming environment e.g., suitable equipment options/chairs etc. [Phelan 2015]
- Patient-centered conversational styles, how to raise the topic, terminology to use, appropriate advice, discuss options, avoid over simplified messages e.g., 'eat less, exercise more'
- Provide an emotionally and culturally safe environment for patients 'to be heard', to provide a complete health picture, to avoid non-disclosure and subsequent health issues
- Treat obesity disclosures as a clinical health concern free from stigma or offence
- Use clinical relevance and discuss weight as a non-discriminatory health concern that can affect e.g., blood pressure or diabetes outcomes
- Incorporate cultural values in all management plans [Norman 2022b]

Interview data from one Aotearoa NZ study showed insights into the importance of relational aspects and connectedness to each other and the environment, as determinants for obesity expression.

The four intrinsic determinants were:

1. Relationships and social connectedness
2. Holistic health including spiritual beliefs and cultural practices (Indigenous worldview)
3. Historical trauma and the impacts of colonisation
4. The biomedical model of caloric restriction, diet and exercise were culturally insensitive, non-relatable, and were not significant drivers for engagement in healthier lifestyles

[Bell 2017]

CULTURALLY APPROPRIATE WEIGHT MANAGEMENT

The Ministry of Health advise effective weight management interventions involve a combination of food control, increased physical activity and behavioral changes actioned in culturally appropriate ways. This involves health practitioners being aware of cultural diversity while having the ability to engage effectively and respectfully with people from diverse cultural backgrounds [MOH 2017].

A review of peer-reviewed research about adult obesity management in Aotearoa NZ general practice found comprehensive approaches to weight loss are most effective. For Māori, they

© Pegasus Health (Charitable) Ltd. July 2024

identified a strong cultural component, along with exercise, nutrition, workshops, and behavioral changes contributed to statistically significant weight loss.

- The inclusion of whānau, and values such as whanaungatanga (support or connectedness), pātaka mātauranga (sharing knowledge that leads to understanding and responsibility) and manaakitanga (enhancing integrity of the person) were identified as essential components to the success of weight loss achievements within these interventions [Norman 2021]

The way that Māori conceptualize the body and view 'fatness' is complex and influenced by numerous factors such as colonization and the pathologising of indigenous peoples and bodies. Te reo Māori provides some insight into the understanding of body size [Gillon and Pausé 2022].

- **Mōmona** - often used for the word fat, it also means good condition, rich, fertile, nourished
- **Whakamōmona** - to make something fat, to enrich it, to nourish it
- **Tuawhiti** - thick, fleshy, succulent, or good quality, of substance
- **Matū** - richness, quintessence, and substance
- **Nui** - big, large, plentiful, great, abundant, important, and superior

These definitions of 'fatness' illustrate the non-medicalised and non-pathologised ways that Māori understand fatness and the intricacies surrounding it.

For Pacific people, food is a source of nourishment and serves to convey thanks, offer condolences, hospitality, celebrations, apologies and to build relationships.

- Weight watching is often a foreign concept, with Pacific people having differing views of larger body sizes, compared with people of Western descent [Field 2003]
- Many underestimate weight classification while larger body sizes are viewed as positive [Brewis 1998, Lousich 2023]
- Church-based programmes, and oral culture with clear examples, including storytelling, proverbs and whakapapa were deemed important to convey messaging about the value of physical activity, along with healthy eating [Hinkle 2010]

For Asian people, food is culturally important and embedded in heritage [Dinh 2021].

- Asian women have greater body dissatisfaction, a smaller ideal body image and greater consequential eating disorders, compared with Western women [Javier and Belgrave 2019, Wardle 1993]
- Some Asian parents have misconceptions about ideal body weight for their children, being aware of this when developing weight loss interventions is important [Park 2017]
- Studies found sedentary behaviours are common amongst Asian people [Horne and Tierney 2012, Misra 2012]
- Group-based activities may be valuable and can be facilitated through socialisation, community, family, friendship and religious connections [Horne and Tierney 2012, Jepson 2012]

RESOURCES FOR HEALTH PROFESSIONALS

BPAC article: Weight loss: the options and the evidence, includes a table showing several dietary regimens with evidence of effectiveness for weight loss or reduced cardiovascular disease risk (positives and negatives) – Diets included: Mediterranean, Low fat (e.g., Dietary approach to stop hypertension - DASH), Low (and very low) carbohydrate (e.g., Atkins, ketogenic), Paleo, Plant based, Vegetarian or Vegan, Very low energy, Intermittent fasting.
https://bpac.org.nz/2022/weight-loss.aspx#tab1

Ministry of Health *Clinical Guidelines for Weight Management in New Zealand Adults* (2017)
https://www.health.govt.nz/system/files/documents/publications/clinical-guidelines-for-weight-management-in-new-zealand-adultsv2.pdf

The Australian Obesity Management Algorithm [Markovic 2022]
https://www.sciencedirect.com/science/article/pii/S1871403X22000709

Clinical Guidelines for weight management in New Zealand Children and Young people (2016)
https://www.health.govt.nz/publication/clinical-guidelines

Te Whatu Ora Heath NZ Growth Charts - Updated 2023
https://www.tewhatuora.govt.nz/for-the-health-sector/specific-life-stage-health-information/child-health/well-child-tamariki-programme/growth-charts

BeSmarter tool - To help families set goals (takes 5-10 mins)
Bodywise-Be-Smarter-tool.pdf (waikatodhb.health.nz)
https://www.waikatodhb.health.nz/assets/Docs/Your-Health/Bodywise/092857abc5/BeSmarter-Practitioner-Manual.pdf (has background information for health care practitioners)

Health Literacy NZ
Raising Healthy Kids: how to talk with parents and whānau about healthy weight
https://www.healthliteracy.co.nz/site_files/13255/upload_files/RHKtalkingtoparentsandwhanau.pdf?dl=1

Learning opportunities for health professionals

Goodfellow unit webinar How we talk about weight and bodies: why it matters
Presented by Dr Maria Casale, a NZ registered dietitian with a specialist expertise in gastroenterology and the non-diet approach (health at every size). A patient-centred weight-inclusive lens, helps clients to recognise and understand how weight stigma and fatphobia impact their relationship with food and eating. Guides people to an intuitive and fearless relationship with food.
How we talk about weight and bodies: why it matters | Goodfellow Unit

EXAMPLES OF RESOURCES FOR PATIENTS

Information about different diets

Ministry of Health – Review of eight popular diets
https://info.health.nz/keeping-healthy/popular-diets-review/

Healthify - He Puna Waiora
Weight loss diets - questions to consider if tempted by a new ‘fad’ diet.
https://healthify.nz/hauora-wellbeing/w/weight-loss-diets/

BDA The Association of UK Dietitians Fad diets: Food fact Sheet
https://www.bda.uk.com/resource/fad-diets.html

© Pegasus Health (Charitable) Ltd. July 2024

Healthy eating resources

Hapū Hauora
Oranga kai (healthy food): Information on healthy eating from a Māori perspective.
https://www.hapuhauora.health.nz/health-areas/healthy-food/

Te Korowai Hauora o Hauraki – whānau focussed, nutritional, budget conscious recipes.
https://www.korowai.co.nz/upload/kiakahatekai.pdf

Healthinfo - Eating well section including: Dietitians, Eating well for children and older people, How to lose weight - (Tips to lose weight (realistic goals), Eating well to lose weight, Being active to lose weight, Eating well videos, Reading food labels, Eating well for good health, Support for food costs.
https://www.healthinfo.org.nz/index.htm?How-to-lose-weight.htm
Breakfast ideas for children Breakfast ideas for children (healthinfo.org.nz)
Dinners for children Dinners for children (healthinfo.org.nz)

Healthy eating, active living (HealthEd downloadable resource)
19-page booklet covering: Food and drink, alcohol, active living, healthy body weight, active living advice for adults 19 to 64.
https://healthed.govt.nz/products/healthy-eating-active-living

My Wellbeing/Oranga Chart - downloadable chart plus information for parents/guardians and their children to help create health goals and work towards achieving them.
https://healthed.govt.nz/products/healthy-kids-my-goal-chart

Healthify - He Puna Waiora

- Healthy eating basics: https://healthify.nz/hauora-wellbeing/h/healthy-eating-basics/
- Food groups and serving size: https://healthify.nz/hauora-wellbeing/f/food-groups-serving-size/
- Body size and health: https://healthify.nz/health-a-z/o/obesity/
- Body size and health in children: https://healthify.nz/health-a-z/o/obesity-children/
- Food diary: https://healthify.nz/media/15790/te-kete-fatigue-food-diary.pdf
- Options for weight loss: https://healthify.nz/health-a-z/w/weight-loss-topics/
- Nutrition App reviews: https://healthify.nz/apps/n/nutrition-apps/

Heart Foundation – food-portions-a4.pdf (heartfoundation.org.nz)

Options for accessing healthy food

WINZ - Eligibility for urgent food grants https://www.workandincome.govt.nz/eligibility/urgent-costs/.

Food banks - (eligibility criteria): https://www.foodbank.co.nz/foodbanks

Pātaka Kai - (Food storehouse) Free open street pantries. Facilitates neighbours helping neighbours, building community. Click on Pātaka locations. https://www.patakai.co.nz/

Foodtogether - local co-ops provide fresh fruit and vegetables to communities at a reduced rate. (Click on 'Find a local co-op drop down') https://www.foodtogether.co.nz/

Note: There may be other community co-ops or initiatives in your area to investigate.

Healthy movement

Healthify He Puna Waiora https://healthify.nz/hauora-wellbeing/p/physical-activity/

- Physical activity – 7 great reasons to exercise https://healthify.nz/hauora-wellbeing/p/physical-activity-7-good-reasons-to-exercise/
- Fitness – how to start exercising if you're out of shape https://healthify.nz/hauora-wellbeing/f/fitness-how-to-start-exercising-if-you-re-out-of-shape/
- Everyday exercise https://healthify.nz/hauora-wellbeing/e/exercise-how-to-get-moving
- Active children https://healthify.nz/hauora-wellbeing/a/active-children/
- Active play for under-5s https://healthify.nz/hauora-wellbeing/a/active-play-for-under-5s/
- Green Prescriptions https://healthify.nz/hauora-wellbeing/g/green-prescriptions/
- Active Families programme https://healthify.nz/hauora-wellbeing/a/active-families-programme/
- Fitness & weight loss apps https://healthify.nz/apps/f/fitness-weight-loss-apps/
- Exercise App reviews https://healthify.nz/apps/e/exercise-apps/

Hapu Hau Ora – information for Māori produced by Toi Te Ora Public Health

- Why be physically active https://hapuhauora.health.nz/health-areas/physical-activity/why-be-physically-active/
- What is physical activity? https://hapuhauora.health.nz/health-areas/physical-activity/what-is-physical-activity/
- How can whānau be physically active https://hapuhauora.health.nz/health-areas/physical-activity/

Falls prevention website offers strength and balance classes, search locally here: https://www.livestronger.org.nz/home/find-class/find-a-class-near-you/

Note: there may also be online fitness options that suit some patients.

Te Hiringa Hauora/Health Promotion Agency
(Sections on 'Eat', 'Move' and 'Sleep') *'Healthy Kids is full of fun, free and low-cost ideas to get your family eating, moving and sleeping well. Explore our recipes, activity ideas, goal chart and more.'* https://healthykids.org.nz/
Aotearoa NZ.

MEDICATION INFORMATION FOR PATIENTS

Healthify He Puna Waiora
Common questions about weight loss medicines https://healthify.nz/medicines-a-z/w/

- Phentermine - https://healthify.nz/medicines-a-z/p/phentermine/
- Liraglutide - https://healthify.nz/medicines-a-z/l/liraglutide/
- Orlistat - https://healthify.nz/medicines-a-z/o/orlistat/
- Bupropion/naltrexone (Contrave) - https://healthify.nz/medicines-a-z/c/contrave/

My Medicines (Te Whatu Ora Waitaha) patient information leaflets (Click on Phentemine, Liraglutide, Orlistat, Contrave) https://mymedicines.nz/cdhb/sheet/0GNyjlmrlaU=?format=inline

Dietary Supplements for weight loss: Fact sheet for consumers (National Institutes of Health) https://ods.od.nih.gov/pdf/factsheets/WeightLoss-Consumer.pdf

© Pegasus Health (Charitable) Ltd. July 2024

BARIATRIC SURGERY INFORMATION FOR PATIENTS

Healthify
Weight loss surgery - includes information on who can have weight loss surgery, different types of operations, what happens after surgery, keys to success.
https://healthify.nz/health-a-z/w/weight-loss-surgery/

HealthInfo
Bariatric (weight-loss) surgery https://www.healthinfo.org.nz/patientinfo/51647.pdf
Also recommends NHS pages:

- Overview Weight loss surgery https://www.nhs.uk/conditions/weight-loss-surgery/
- Recovering from weight loss surgery: https://www.nhs.uk/conditions/weight-loss-surgery/afterwards/

ACKNOWLEDGEMENTS

This material was prepared by the Clinical Quality and Education team in consultation with Small Group Leaders: Elizabeth Eadon (GP), Yvonne Denny (PN), Megan Harrop (CP).

Others consulted while preparing this topic include:

- Anna Wright, Procare, Auckland
- Equity Leadership Team, Pegasus Health
- Rukshan Ranjan, Bariatric, Upper Gastrointestinal and General Surgeon, Christchurch Hospital, Te Whatu Ora Waitaha Canterbury
- Wendy Scanlon, Puāwai Healthy Lifestyle Service
- Sharon Bennett, B4SC Nurse Educator, Pegasus Health
- Bek Parry, Te Mana Ora, National Public Health Service, Te Whatu Ora
- Kathy Casey, B4School Check coordinator, Counties Manukau
- Michael McCormack, Health and Wellness Development Manager, Sport Auckland
- Vanessa Kipa, Active Families manager, Harbour Sport

© Pegasus Health (Charitable) Ltd. July 2024

THE SEVEN CS OF CLINICAL CONNECT

The guidelines help to set ground rules and establish the way the group agrees to interact.

Confidentiality - Matatapu

- Reflecting on and learning from small group content and discussions is an important aspect of the small group process. Further discussion may happen within the practice setting when reflecting on the topic or applying learning within practice. Confidential information shared within the group must remain within the group. It is essential that individual patient, data, practitioner, and practice confidentiality is maintained where discussions occur outside of the small group environment
- To protect the privacy of others **when meeting online** please have your camera on for the duration of the meeting, so everyone can see who is in attendance. Where necessary please use a headset to ensure others outside the group cannot hear the discussion

Communication - Whakawhitiwhiti kōrero

- Provide an equal opportunity for everyone to actively participate and contribute

Courtesy - Atawhaitanga

- As all contributions are valuable only one person speaking at any time please
- Different viewpoints are natural, ensure respectful appreciation of differing views, critique the comment or idea, not the person. Be courteous to others especially if you disagree or do not understand

Co-operation - Mahi tahi

- Share knowledge/information to promote and enhance professional development within a supportive peer environment

Challenge - Wero

- Respectfully challenge one another and ourselves to identify and address our biases, attitudes, stereotypes, prejudices, to reduce inequity, and practice in a culturally safe manner

Commitment - Manawanui

- Prepare for small group meetings by reading the pre-reading. Attend small group meetings regularly and work within these guidelines to develop and support a healthy group culture

Constructive Feedback - Whakahoki kōrero

- Complete an Evaluation Form, constructive feedback improves the programme, encourages, and supports SGL development and provides an opportunity to suggest future education topics

© Pegasus Health (Charitable) Ltd. July 2024

REFERENCES

- AMA. AMA: Use of BMI alone is an imperfect clinical measure. American Medical Association; 2023 [15/08/23]; Available from: https://www.ama-assn.org/delivering-care/public-health/ama-use-bmi-alone-imperfect-clinical-measure.
- Arterburn DE, Telem DA, Kushner RF, Courcoulas AP. Benefits and Risks of Bariatric Surgery in Adults: A Review. Jama. 2020;324(9):879-87.
- Barry VW, Baruth M, Beets MW, et al. Fitness vs. fatness on all-cause mortality: a meta-analysis. Progress in cardiovascular diseases. 2014;56(4):382-90. Epub 2014/01/21.
- Barton B, Love T. Economic impact of excess weight in Aotearoa. 2021.
- Bell DS. Changes seen in gut bacteria content and distribution with obesity: causation or association? Postgrad Med. 2015;127(8):863-8. Epub 2015/10/17.
- Bell R, Smith C, Hale L, et al. Understanding obesity in the context of an Indigenous population - A qualitative study. 2017;2023(12.7.23).
- Bessell E, Maunder A, Lauche R, et al. Efficacy of dietary supplements containing isolated organic compounds for weight loss: a systematic review and meta-analysis of randomised placebo-controlled trials. International journal of obesity (2005). 2021;45(8):1631-43. Epub 2021/05/13.
- BPAC. Weight loss: the options and the evidence. BPAC. 2022 1 April 2022.
- Bray GA. Beyond BMI. Nutrients [Internet]. 2023; 15(10).
- Bray MS, Loos RJ, McCaffery JM, et al. NIH working group report—using genomic information to guide weight management: From universal to precision treatment. 2016;24(1):14-22.
- Brewis AA, McGarvey ST, Jones J, Swinburn BA. Perceptions of body size in Pacific Islanders. International Journal of Obesity. 1998;22(2):185-9.
- Brown A, Flint SW, Batterham RL. Pervasiveness, impact and implications of weight stigma. eClinicalMedicine. 2022;47:101408.
- CCHPW. Weight Management in Adults. Canterbury Community HealthPathways; 2022 [21/08/23]; Available from: https://canterbury.communityhealthpathways.org/28082.htm.
- CDC. Causes of Obesity. Centers for Disease Control and Prevention; 2022a [21/08/23]; Available from: https://www.cdc.gov/obesity/basics/causes.html.
- CDC. Consequences of Obesity. 2022b.
- de Jong M, Jansen N, van Middelkoop M. A systematic review of patient barriers and facilitators for implementing lifestyle interventions targeting weight loss in primary care. Obesity Reviews. 2023;24(8):e13571.
- de Ridder D, Kroese F, Evers C, et al. Healthy diet: Health impact, prevalence, correlates, and interventions. Psychology & health. 2017;32(8):907-41.
- Dinh D. Asian Cultural Heritage and the Impact on Food Choices. 2021; Available from: https://inkspire.org/post/asian-cultural-heritage-and-the-impact-on-food-choices/.
- Dobbie LJ, Coelho C, Crane J, McGowan B. Clinical evaluation of patients living with obesity. Internal and Emergency Medicine. 2023.
- DynaMed. Complications of Obesity. EBSCO Industries, Inc; 2023a [20/09/23]; Available from: https://www.dynamed.com/condition/complications-of-obesity.
- DynaMed. Obesity in Adults. EBSCO Industries, Inc; 2023b [20/09/23]; Available from: https://www.dynamed.com/condition/obesity-in-adults.
- Ells LJ, Ashton M, Li R, et al. Can We Deliver Person-Centred Obesity Care Across the Globe? Current obesity reports. 2022;11(4):350-5. Epub 2022/10/23.
- Eme PE, Burlingame B, Kim ND, et al. Obesity measures in the Kiribati population: a need to reclassify body mass index cut-points. BMC public health. 2020;20(1):1092.
- Field TP. Pacific People and Obesity. In: Beehive.govt, editor. Wgtn2003.
- Gillon A, Pausé C. Kōrero Mōmona, Kōrero ā-Hauora: a Kaupapa Māori and fat studies discussion of fatness, health and healthism. Fat Studies. 2022;11(1):8-21.
- Gurley BJ, Yates CR, Markowitz JS. "…Not Intended to Diagnose, Treat, Cure or Prevent Any Disease." 25 Years of Botanical Dietary Supplement Research and the Lessons Learned. 2018;104(3):470-83.
- Healthify. Weight loss surgery. Health Navigator Charitable Trust; 2022 [18/09/23]; Available from: https://healthify.nz/health-a-z/w/weight-loss-surgery/.
- Hinkle AJ. Examining healthy eating and physical activity programmes in Māori and Pasifika communities in Aotearoa: Fulbright New Zealand; 2010.
- Hogstrom G, Nordstrom A, Nordstrom P. Aerobic fitness in late adolescence and the risk of early death: a prospective cohort study of 1.3 million Swedish men. Int J Epidemiol. 2015. Epub 2015/12/22.
- Horne M, Tierney S. What are the barriers and facilitators to exercise and physical activity uptake and adherence among South Asian older adults: a systematic review of qualitative studies. Preventive medicine reports. 2012;55(4):276-84.
- Howell NA, Booth GL. The Weight of Place: Built Environment Correlates of Obesity and Diabetes. Endocrine Reviews. 2022;43(6):966-83.
- Jaacks L, Vandevijvere S, Pan A, et al. The obesity transistion: stages of the global epidemic. The Lancet. 2019;7(3):231-40.
- Javed A, Jumean M, Murad MH, et al. Diagnostic performance of body mass index to identify obesity as defined by body adiposity in children and adolescents: a systematic review and meta-analysis. Pediatric obesity. 2015;10(3):234-44.
- Javier SJ, Belgrave FZ. "I'm not White, I have to be pretty and skinny": A qualitative exploration of body image and eating disorders among Asian American women. Asian American journal of psychology. 2019;10(2):141.
- Jebeile H, Kelly AS, O'Malley G, Baur LA. Obesity in children and adolescents: epidemiology, causes, assessment, and management. The Lancet Diabetes & Endocrinology. 2022;10(5):351-65.
- Jepson R, Harris FM, Bowes A, et al. Physical activity in South Asians: an in-depth qualitative study to explore motivations and facilitators. journalsplosorg. 2012.
- Jia P, Shi Y, Jiang Q, et al. Environmental determinants of childhood obesity: a meta-analysis. The Lancet Global Health. 2023;11:S7.
- Lam TM, Vaartjes I, Grobbee DE, et al. Associations between the built environment and obesity: an umbrella review. International Journal of Health Geographics. 2021;20(1):7.
- Lannone A, Natale P, Palmer SC, et al. Clinical outcomes associated with drugs for obesity and overweight: A systematic review and network meta-analysis of randomized controlled trials. Diabetes, obesity & metabolism. 2023. Epub 2023/05/31.
- Liao J, Yin Y, Zhong J, et al. Bariatric surgery and health outcomes: An umbrella analysis. Frontiers in Endocrinology. 2022;13.
- Lister NB, Baur LA, Felix JF, et al. Child and adolescent obesity. Nature Reviews Disease Primers. 2023;9(1):24.
- Lousich KL, Tautolo E-S, Schluter PJ. Relationship between perceived and measured body size among Pacific 14-year-olds in Aotearoa|New Zealand: Findings from the Pacific Islands Families Study. Journal of paediatrics and child health. 2023.
- Marcus C, Danielsson P, Hagman E. Pediatric obesity—Long-term consequences and effect of weight loss. Journal of internal medicine. 2022;292(6):870-91.
- Markovic TP, Proietto J, Dixon JB, et al. The Australian Obesity Management Algorithm: A simple tool to guide the management of obesity in primary care. Obesity Research & Clinical Practice. 2022;16(5):353-63.
- Misra A, Nigam P, Hills AP, et al. Consensus physical activity guidelines for Asian Indians. Diabetes technology. 2012;14(1):83-98.
- MOH. Clinical Guidelines for Weight Management in New Zealand Adults. 2017.
- MOH. New Zealand Health Survey - Annual Data Explorer - Key indicators update. 2023.
- Mongraw-Chaffin M, Foster MC, Anderson CAM, et al. Metabolically Healthy Obesity, Transition to Metabolic Syndrome, and Cardiovascular Risk. Journal of the American College of Cardiology. 2018;71(17):1857-65. Epub 2018/04/28.
- Noria SF, Shelby RD, Atkins KD, et al. Weight Regain After Bariatric Surgery: Scope of the Problem, Causes, Prevention, and Treatment. Current diabetes reports. 2023;23(3):31-42.
- Norman K, Burrows L, Chepulis L, Lawrenson R. "Sometimes choices are not made, because we have 'a' choice, they're made because they are 'the' choice": Barriers to weight management for clients in rural general practice. BMC Primary Care. 2022a;23:268.
- Norman K, Chepulis L, Burrows L, Lawrenson R. Adult obesity management in New Zealand general practice: a review. Journal of Primary Health Care. 2021;13(3):249-59.
- Norman K, Chepulis L, Burrows L, Lawrenson R. Barriers to obesity health care from GP and client perspectives in New Zealand general practice: A meta-ethnography review. Obesity Reviews. 2022b;23(10):e13495.
- O'Brien PE, Hindle A, Brennan L, et al. Long-Term Outcomes After Bariatric Surgery: a Systematic Review and Meta-analysis of Weight Loss at 10 or More Years for All Bariatric Procedures and a Single-Centre Review of 20-Year Outcomes After Adjustable Gastric Banding. Obesity Surgery. 2019;29(1):3-14.
- OECD. The Heavy Burden of Obesity: The Economics of Prevention. Paris: OECD Publishing, 2019.
- Park SH. Asian parents' perception of child weight status: a systematic review. Journal of child family studies. 2017;26:2363-73.
- Pharmac. Dulaglutide (Trulicity) and Liraglutide (Victoza): Supply issue. 2023; Available from: https://pharmac.govt.nz/medicine-funding-and-supply/medicine-notices/dulaglutide.
- Phelan SM, Burgess DJ, Yeazel MW, et al. Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. Obesity Reviews. 2015;16(4):319-26.
- Puhl RM. What words should we use to talk about weight? A systematic review of quantitative and qualitative studies examining preferences for weight-related terminology. Obesity reviews : an official journal of the International Association for the Study of Obesity. 2020;21(6):e13008. Epub 2020/02/13.
- Ranjan RR. Bariatric, Upper Gastrointestinal and General Surgeon, Christchurch Hospital, Te Whatu Ora Waitaha Canterbury. Personal Communication; 2023a.
- Ranjan RR. Options in Bariatric Surgery & Issues Faced by the GP [Powerpoint slides]2023b.
- Ross R, Neeland IJ, Yamashita S, et al. Waist circumference as a vital sign in clinical practice: a Consensus Statement from the IAS and ICCR

Working Group on Visceral Obesity. Nature Reviews Endocrinology. 2020;16(3):177-89.
- Rush EC, Freitas I, Plank LD. Body size, body composition and fat distribution: comparative analysis of European, Maori, Pacific Island and Asian Indian adults. Br J Nutr. 2009;102(4):632-41.
- Sarma S, Palcu P. Weight loss between glucagon-like peptide-1 receptor agonists and bariatric surgery in adults with obesity: A systematic review and meta-analysis. Obesity. 2022;30(11):2111-21.
- Shi Q, Wang Y, Hao Q, et al. Pharmacotherapy for adults with overweight and obesity: a systematic review and network meta-analysis of randomised controlled trials. Lancet. 2022;399(10321):259-69. Epub 2021/12/14.
- Sierżantowicz R, Ładny JR, Lewko J. Quality of Life after Bariatric Surgery - A Systematic Review. International journal of environmental research and public health [Internet]. 2022; 19(15).
- Simmonds M, Llewellyn A, Owen CG, Woolacott N. Simple tests for the diagnosis of childhood obesity: a systematic review and meta-analysis. Obesity Reviews. 2016;17(12):1301-15.
- Swinburn BA, Ley SJ, Carmichael HE, Plank LD. Body size and composition in Polynesians. International Journal of Obesity. 1999;23(11):1178-83.
- Swinburn BA, Sacks G, Hall KD, et al. The global obesity pandemic: shaped by global drivers and local environments. The Lancet. 2011;378(9793):804-14.
- The Lancet Diabetes & Endocrinology. Let's talk about obesity. The Lancet Diabetes & Endocrinology. 2023;11(4):217.
- Valenzuela PL, Carrera-Bastos P, Castillo-García A, et al. Obesity and the risk of cardiometabolic diseases. Nature Reviews Cardiology. 2023;20(7):475-94.
- Vallianou N, Dalamaga M, Stratigou T, et al. Do Antibiotics Cause Obesity Through Long-term Alterations in the Gut Microbiome? A Review of Current Evidence. Current obesity reports. 2021;10(3):244-62. Epub 2021/05/05.
- van der Valk ES, van den Akker ELT, Savas M, et al. A comprehensive diagnostic approach to detect underlying causes of obesity in adults. Obesity Reviews. 2019;20(6):795-804.
- van Veldhuisen SL, Gorter TM, van Woerden G, et al. Bariatric surgery and cardiovascular disease: a systematic review and meta-analysis. European heart journal. 2022;43(20):1955-69.
- Walmsley R, Sumithran P. Current and emerging medications for the management of obesity in adults. Medical Journal of Australia. 2023;218(6):276-83.
- Wardle J, Bindra R, Fairclough B, Westcombe A. Culture and body image: Body perception and weight concern in young Asian and Caucasian British women. Journal of Community & Applied Social Psychology. 1993;3(3):173-81.
- WHO. Health service delivery framework for prevention and management of obesity. Geneva: World Health Organization, 2023.
- WHO Expert Consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. The Lancet. 2004;363(9403):157-63.
- Wi-Kaitaia M, Ruwhiu, L., Eruera, M. Development of the mana-enhancing paradigm for practice. Wellington: Oranga Tamariki—Ministry for Children; 2021.
- Wilding JPH, Batterham RL, Davies M, et al. Weight regain and cardiometabolic effects after withdrawal of semaglutide: The STEP 1 trial extension. 2022;24(8):1553-64.

FOR MORE INFORMATION ABOUT CLINICAL CONNECT PEER EDUCATION PROGRAMMES

https://clinicalconnect.nz/

CLINICAL QUALITY & EDUCATION TEAM WHAKATAUKĪ

Nāu te rourou, nāku te rourou ka ora ai te tangata

With your contribution and my contribution, we will nourish the people

For information about the whakataukĪ, please see the short video (2m22s) here https://vimeo.com/367611380/9469612fe9.

DISCLAIMER

This clinical resource was prepared by the Clinical Quality and Education Team, Pegasus Health. Any statement of preference made is a recommendation only. It is not intended to compel or unduly influence independent prescribing choices made by clinicians. References not listed are available on request. All clinical documents produced by Pegasus Health are dated with the date they were originally produced or updated, and reflect analysis of available evidence and practice that was current at that time. Any person accessing any clinical documents must exercise their own clinical judgment on the validity and applicability of the information in the current environment, and to the individual patient. The educational material developed for delivery at this education session remains the intellectual property of Pegasus Health. This material is not to be redelivered, on sold to any individual or organisation, or made publicly available on any website or in any publication, without written permission from Pegasus Health (Charitable) Ltd.

© Pegasus Health (Charitable) Ltd. July 2024