

# Obesity in Adults: A 2022 Adapted Clinical Practice Guideline for Ireland

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## Keywords

Obesity · Ireland · Clinical practice guideline

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## Abstract

**Background:** This Clinical Practice Guideline (CPG) for the management of obesity in adults in Ireland, adapted from the Canadian CPG, defines obesity as a complex chronic disease characterised by excess or dysfunctional adiposity that impairs health. The guideline reflects substantial advances in the understanding of the determinants, pathophysiology, assessment, and treatment of obesity. **Summary:** It shifts the focus of obesity management toward improving patient-centred health outcomes, functional outcomes, and social and economic participation, rather than weight loss alone. It gives recommendations for care that are underpinned by evidence-based principles of chronic disease management; validate patients' lived experiences; move beyond simplistic approaches of "eat less, move more" and address the root drivers of obesity. **Key Messages:** People living with obesity face substantial bias and stigma, which contribute to increased morbidity and mortality independent of body weight. Education is needed for all healthcare professionals in Ireland to address the gap in skills, increase knowledge of evidence-based practice, and eliminate bias and stigma in healthcare settings. We call for people living with obesity in Ireland to have access to evidence-informed care, including medical, medical nutrition therapy, physical activity and physical rehabilitation interventions, psychological interventions, pharmacotherapy, and bariatric surgery. This can be best achieved by resourcing and fully implementing the Model of Care for the Management of Adult Overweight and Obesity. To address health inequalities, we also call for the inclusion of obesity in the Structured Chronic Disease Management Programme and for pharmacotherapy reimbursement, to ensure equal access to treatment based on health-need rather than ability to pay.

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Published by S. Karger AG, Basel

## Introduction

This adapted clinical practice guideline (CPG) for Ireland joins Obesity Canada (OC) and the Canadian Association of Bariatric Physicians and Surgeons (CABPS) [1], the World Health Organisation [2], the European Association for the Study of Obesity [3], the European Commission [4, 5], the American Medical Association [6], the Obesity Society [7] and the World Obesity Federation [8] in defining obesity as a complex

chronic disease in which excess or dysfunctional adiposity impairs health [9].

The last decade has seen substantial advances in our understanding of the determinants, pathophysiology, assessment, and treatment of obesity across the life course. Historically, obesity has been defined based on an arbitrary cut-off of a body mass index (BMI) >30 kg/m<sup>2</sup>. At a population level, health complications increase as BMI increases, and consequently, epidemiological studies continue to use this stratification for surveillance and as an indicator to screen for weight-related health risks [10]. However, BMI is not an accurate standalone tool for identifying adiposity-related complications in individuals [11]. At an individual level, health complications occur because of the mass, location, and distribution of adiposity, in addition to factors such as genetic predisposition and health inequalities [12]. The threshold at which excess adiposity impairs health in individuals varies, and there is a U-shaped distribution between BMI and all-cause mortality [13, 14].

Excess or dysfunctional adiposity is associated with inflammation and an increased risk of metabolic, mechanical, and mental health complications. Potential complications include type 2 diabetes, hypertension, nonalcoholic fatty liver disease, polycystic ovary disease, obstructive sleep apnoea, gallbladder disease, osteoarthritis, pain, gastroesophageal reflux disease, incontinence, lymphoedema, plantar fasciitis, certain cancers (colon, kidney, oesophageal, postmenopausal breast, and endometrial), as well as mood, anxiety, and eating disorders [15–26]. Obesity can reduce healthy-life years and can reduce life expectancy by 6–14 years [27, 28].

An improved understanding of the biological underpinnings of the disease of obesity has emerged [11]. The brain plays a central role in energy homeostasis by regulating food intake and energy expenditure [29]. Appetite regulation is complex and involves the integration of central neural circuits including the hypothalamus (homeostatic control), the mesolimbic system (hedonic control), and the frontal lobe (executive control). The neurobiology of appetite, body weight, and energy regulation is mediated by a milieu of hormonal signals from the gut, adipose tissue, and other organs. Many of these signalling pathways are altered by obesity [30–33]. While in the short term, restricting energy intake and increasing physical activity leads to a negative energy balance and weight loss, this triggers a cascade of adaptive metabolic and neurohormonal mechanisms that increase hunger, reduce satiety and energy expenditure, attenuate weight loss and promote weight regain [34–36].

**Table 1.** Irish model of care for overweight and obesity

Level of care	Patient profile and suggested services
Adult level 0 Living well with overweight and obesity + Adult level 1 General practice and primary care team	BMI >25 kg/m <sup>2</sup> with: <ul style="list-style-type: none"> <li>• None or subclinical risk factors</li> <li>• Mild symptoms/health impairment not requiring medical treatment</li> </ul> Suggested services include early identification, brief advice, self-management supports, commercial programmes, and primary care team interventions Assessment may include physical examination, laboratory assessment, and other diagnostics to identify obesity complications and diagnose obesity. Assessment may also be required at this level for individuals that have undergone bariatric procedures outside of Ireland or are not under the care of a bariatric surgeon, with onward referral to specialist services The GP, GPN, and the wider multidisciplinary primary care team are the key healthcare professionals within this level
Adult level 2 Community specialist ambulatory care	BMI >30 kg/m <sup>2</sup> with: <ul style="list-style-type: none"> <li>• Established but controlled obesity-related complications requiring medical intervention (hypertension, T2DM, sleep apnoea, polycystic ovarian syndrome, osteoarthritis)</li> <li>• Moderate but controlled obesity-related psychological symptoms (depression, eating disorder, anxiety disorder)</li> <li>• Moderate functional limitations in daily activities</li> </ul> Level 2 community specialist ambulatory care hubs will provide specialist support to GPs in assessing and treating people living with obesity and preventing disease progression. Additional suggested enhanced support services at this level include behaviourally focused programmes Assessment needs will likely be similar to those outlined at level 1 with access as required to phlebotomy, X-ray, and echocardiography to support comprehensive clinical assessment
Adult level 3 Acute specialist ambulatory care + Adult level 4 Specialist hospital care	BMI >30 kg/m <sup>2</sup> with: <ul style="list-style-type: none"> <li>• Significant/severe/uncontrolled obesity-related end organ disease, psychological symptoms, functional limitations and/or impairment of well-being</li> </ul> Consultant physician or surgeon-led MDT services, co-located in hospital sites, to provide care for adults with severe and complicated obesity Clinical assessment will involve screening for underlying causes and consequences of obesity, including assessment and review of existing complications and screening for additional complications. Individualised clinical assessments will be undertaken across the MDT. This also includes rescreening and treatment (and referral as indicated) for eating disorders, trauma and chronic mental health conditions. Assessments specific to bariatric surgery include preoperative medical, nutritional, psychological, and functional assessment, as well as an assessment of risk of postoperative complications

GP, general practitioners; GPN, general practice nurse; MDT, multidisciplinary team; T2DM, type 2 diabetes mellitus.

Obesity is also influenced by environmental factors. The increased availability and pervasive marketing of energy-dense, inexpensive foods and beverages, in parallel with economic growth, rapid urbanisation, health inequalities, changes to sleep, screen time, working patterns, and sedentary time, have resulted in a “health disrupting” environment, which promotes the development of obesity in susceptible populations [37, 38]. For individuals with a genetic predisposition, small surpluses in energy intake can accumulate over years, leading to excessive weight gain [29]. Twin studies show a 50–80% degree of concordance of BMI and regional adiposity [39]. The prevalence of higher body weights is increasing throughout the world [40]. In Europe, the prevalence of

a BMI >30 kg/m<sup>2</sup> ranges from 19.5 to 31.3% [41], and in Ireland, this has increased by over 60% since 1990 [42]. Data on the prevalence of obesity, defined by the impact of adiposity on health, however, is lacking.

Despite an improved understanding of the disease, people with obesity continue to experience weight bias and stigma, which contributes independently to increased morbidity and mortality [43]. The dominant narrative fuels assumptions about personal irresponsibility and lack of willpower and casts blame and shame upon people living with obesity [44]. Obesity stigma negatively influences the quality of healthcare that people living with obesity receive [45, 46]. Historically, obesity has not been managed well within healthcare [47–49], and many healthcare

professionals (HCPs) feel ill-equipped to deliver obesity care [44, 50, 51].

In Ireland, there have been efforts to embed obesity care in national policy and healthcare delivery since the Report of the National Task Force on Obesity in 2005 [52]. The Obesity Policy and Action Plan acknowledged that obesity is a complex issue requiring a cross-sectoral approach [53]. It recommended developing an integrated service model for the health and social care of people living with overweight and obesity that included quality assurance guidance for obesity services. In 2017, the National Clinical Programme for Obesity was established, and in 2021, the Irish Health Service Executive launched the Model of Care (MOC) for the Management of Overweight and Obesity in Ireland. This describes how these services should be organised, delivered, and resourced across the healthcare system and the life course [49]. The model has five levels of care, in line with the National Framework for the Integrated Prevention and Management of Chronic Disease in Ireland. Each level brings more intensive intervention to individuals with increasing disease complexity. Individuals will move between levels as required based on complexity using an adapted Edmonton Obesity Staging System (EOSS) framework (Table 1).

OC (<https://obesitycanada.ca/>) is a leader in the field of obesity research, education, and advocacy to reduce obesity stigma. In 2020, OC and the CABPS published CPGs for adult obesity providing an evidence- and experience-based, patient-centred framework for HCPs, patients, and policy makers [1]. They proposed new approaches to diagnose and assess obesity in clinical practice and outlined comprehensive and holistic treatments that focus on improved health and well-being, not just weight loss [54–56].

The Irish MOC identified the need to develop clinical practice guidelines to support HCPs. When an Obesity Canada and European Association for the Study of Obesity (EASO) call opened to pilot the adaptation of the Canadian CPGs in 2021, the Association for the Study of Obesity on the Island of Ireland (ASOI) ([www.asoi.info](http://www.asoi.info)) partnered with the Obesity National Clinical Programme (ONCP) (<https://www.hse.ie/eng/about/who/cspd/ncps/obesity>) and the Irish Coalition for People Living with Obesity (ICPO) (<https://icpobesity.org>) to become the first European country to adapt the Canadian CPGs. This paper describes the adaptation process and outlines the recommendations that have been contextualised for guiding evidence-based obesity care in Ireland with a change of focus, from an exclusively weight-based diag-

nosis to a health-linked diagnosis, and a shift in the goals of management from weight change alone to patient-centred health outcomes, functional outcomes, and social and economic participation.

## Scope

The target users for this adaptation are HCPs working at all levels of the MOC in Ireland. The guideline is also relevant to policy makers and stakeholder groups working in the area of health promotion. It contains key messages for people living with obesity, which will serve as a guide to the quality of evidence-based care that should be accessible to them. The guideline refers to obesity in adults only; however, the authors recognise the need to develop future CPGs for childhood and adolescent obesity in Ireland. The recommendations are intended to serve as a guide; clinical discretion should be used by all who refer to them. The aim of the guideline is to disseminate evidence-informed options for assessing and treating obesity and to improve the standard of, and access to, care for individuals with obesity in all regions of Ireland. As much of the existing literature is based primarily on weight-loss outcomes, several recommendations in this guideline are weight-loss centred. This guideline does not focus on obesity prevention, but Chapter 4 of the CPG does summarise public health strategies in Ireland that may influence environmental determinants of obesity ([asoi.info/guidelines/prevention](http://asoi.info/guidelines/prevention)).

## Recommendations

The CPG recommendations are shown in Table 2, and the supporting evidence is available in the full CPG chapters at [asoi.info/guidelines](http://asoi.info/guidelines). This summary paper refers to five steps to broadly guide HCPs in the care of people living with obesity. These 5 steps map onto the '5 As Tool' – a framework for guiding obesity-focused clinical consultations with individuals [57]. Each step is outlined below with highlights of the relevant recommendations and an overview of the supporting evidence.

### *Step 1: Recognition of Obesity as a Chronic Disease and Obtaining Patient Permission*

HCPs should recognise and treat obesity as a chronic disease characterised by excess or dysfunctional adiposity which impairs health [9, 10, 36, 58, 59]. Obesity is a complex and heterogeneous disease that does not present in

**Table 2.** Recommendations on management of obesity in adults in Ireland

Recommendations	Category of evidence and strength of recommendation
<i>Reducing weight bias in obesity management, practice, and policy</i>	
1 Healthcare professionals should assess their own attitudes and beliefs regarding obesity and consider how their attitudes and beliefs may influence care delivery	Level 1a, grade A
2 Healthcare professionals should recognise that internalised weight bias (bias toward oneself) in people living with obesity can affect behavioural and health outcomes	Level 2a, grade B
3 Healthcare professionals should avoid using judgemental words (level 1a, grade A), images (level 2b, grade B), and practices (level 2a, grade B) when working with patients living with obesity	See recommendation
4 We recommend that healthcare providers avoid making assumptions that an ailment or complaint a patient presents with is related to their body weight	Level 3, grade C
5 We recommend that all professional health disciplines include training on weight bias, stigma, and discrimination in their curricula	Level 4, grade D (consensus)
6 We recommend that formal teaching on the uncontrollable and nonmodifiable causes of obesity, and the management of obesity as a chronic disease, should be incorporated into training programmes for healthcare professionals	Adapted from recommendation 68, level 1, grade A
<i>Epidemiology of adult obesity</i>	
7 Healthcare providers can recognise and treat obesity as a chronic disease, caused by excess or dysfunctional body fat accumulation (adiposity), which impairs health, with increased risk of premature morbidity and mortality	Level 2b, grade B
8 The development of evidence-informed strategies at the health system and policy levels can be directed at managing obesity in adults	Level 2b, grade B
9 Continued longitudinal national and regional surveillance of obesity that includes self-reported and measured data (i.e., height, weight, waist circumference) may be collected on a regular basis	Level 2b, grade B
<i>Enabling participation in activities of daily living for people living with obesity</i>	
10 We recommend that healthcare professionals ask patients living with obesity if they have concerns about managing self-care activities such as bathing, getting dressed, bowel and/or bladder management, skin and/or wound care, foot care	Level 3, grade C
11 We recommend that healthcare professionals assess falls risk in people living with obesity as this could interfere with their ability and interest in participating in physical activity	Level 3, grade C
<i>Assessment of people living with obesity</i>	
12 We suggest that healthcare professionals involved in screening, assessing, and managing people living with obesity use the 5As framework to initiate the discussion by asking for their permission and assessing their readiness to begin treatment	Level 4, grade D (consensus)
13 Healthcare professionals can measure height and weight; and calculate the BMI in all adults (level 2a, grade B); and measure waist circumference in individuals with a BMI 25–35 kg/m <sup>2</sup> (level 2b, grade B)	See recommendation
14 We suggest that a comprehensive history to identify root causes of weight gain as well as complications of obesity and potential barriers to treatment be included in the assessment	Level 4, grade D
15 We recommend measuring blood pressure in both arms, fasting glucose or glycated haemoglobin (HbA1c), and lipid profile to determine cardiometabolic risk and where appropriate screen for nonalcoholic fatty liver disease and sleep disordered breathing in people living with obesity	Level 3, grade D
16 We suggest that healthcare providers consider using the Edmonton Obesity Staging System to determine the severity of obesity and guide clinical decision-making	Level 4, grade D
<i>The role of mental health in obesity management</i>	
17 Regular monitoring of weight, fasting glucose, and lipid profile in people with a mental health diagnosis who are taking medications associated with weight gain is recommended	Level 3, grade C
18 Healthcare professionals can consider both efficacy and effects on body weight when choosing psychotropic medications	Level 2a, grade B
19 Pharmacological treatment such as metformin and psychological treatment, such as cognitive behavioural therapy, should be considered for prevention of weight gain in people with severe mental illness who are treated with antipsychotic medications associated with weight gain	Level 1a, grade A
20 Healthcare providers should be aware that both lisdexamfetamine and topiramate have been shown to reduce eating pathology and weight in people with overweight or obesity and in binge-eating disorders (level 1a, grade A). However, both medications are not licenced in Ireland for this indication currently, and specialist opinion should be sought before considering such treatment options in conjunction with psychological interventions (level 4, grade D, consensus)	See recommendation
<i>Medical nutrition therapy in obesity management</i>	
21 We suggest that nutrition recommendations for adults of all body sizes should be personalised to meet individual values, preferences, and treatment goals to support a dietary approach that is safe, effective, nutritionally adequate, culturally acceptable, affordable, and enjoyable for long-term adherence	Level 4, grade D
22 Adults living with obesity should receive individualised medical nutrition therapy provided by a CORU registered dietitian (when available) to improve health outcomes including weight (body weight, BMI), waist circumference, glycaemia, lipid, and blood pressure	Level 1a, grade A

**Table 2** (continued)

Recommendations	Category of evidence and strength of recommendation
23 Adults living with obesity and impaired glucose tolerance (prediabetes) or T2DM may receive medical nutrition therapy provided by a CORU registered dietitian (when available) to improve glycaemia and blood pressure and reduce body weight and waist circumference	Level 2a, grade B
24 Adults living with obesity can consider any of multiple medical nutrition therapies to improve health-related outcomes, choosing the dietary patterns, and food-based approaches that support their best long-term adherence:	See recommendation
a Calorie-restricted dietary patterns emphasising variable macronutrient distribution ranges (lower, moderate, or higher carbohydrate with variable proportions of protein and fat) to achieve similar body weight reduction over 6–12 months (level 2a, grade B)	
b Mediterranean dietary pattern to improve glycaemia, HDL-cholesterol and triglycerides (level 2b, grade C), reduce cardiovascular events (level 2b, grade C), reduce the risk of T2DM (level 2b, grade C), and increase reversion of metabolic syndrome (level 2b, grade C) with little effect on body weight and waist circumference (level 2b, grade C)	
c Vegetarian dietary pattern to improve glycaemia; establish blood lipid targets, including LDL-C; and reduce body weight, (level 2a, grade B), risk of T2DM (level 3, grade C), and coronary heart disease incidence and mortality (level 3, grade C)	
d Portfolio dietary pattern to improve established blood lipid targets, including LDL-C, apo B and non-HDL-C (level 1a, grade B), CRP, blood pressure, and estimated 10-year coronary heart disease risk (level 2a, grade B)	
e Low-glycaemic index dietary pattern to reduce body weight (level 2a, grade B), glycaemia (level 2a, grade B), established blood lipid targets, including LDL-C (level 2a, grade B), and blood pressure (level 2a, grade B) and the risk of T2DM (level 3, grade C) and coronary heart disease (level 3, grade C)	
f Dietary Approaches to Stop Hypertension (DASH) dietary pattern improve blood pressure (level 2a, grade B), established lipid targets, including LDL-C (level 2a, grade B), CRP (level 2b, grade B), and glycaemia (level 2a, grade B); reduce the risk of T2DM, cardiovascular disease, coronary heart disease, and stroke (level 3, grade C); and reduce body weight and waist circumference (level 1a, grade B)	
g Nordic dietary pattern to improve blood pressure (level 2b, grade B), and established blood lipid targets, including LDL-C, apo B, (level 2a, grade B), non-HDL-C (level 2a, grade B), reduce the risk of cardiovascular and all-cause mortality (level 3, grade C), and reduce body weight (level 2a, grade B) and body weight regain (level 2b, grade B)	
h Partial meal replacements (replacing one to two meals/day as part of a calorie-restricted intervention) to reduce waist circumference, blood pressure, body weight, and improve glycaemia (level 1a, grade B)	
i Intermittent or continuous calorie restriction achieved similar short-term body weight reduction (level 2a, grade B)	
j Pulses to (i.e., beans, peas, chickpeas, lentils) improve glycaemia (level 2, grade B) and established lipid targets, including LDL-C (level 2, grade B), and systolic BP (level 2, grade C); reduce the risk of coronary heart disease (level 3, grade C); and improve body weight (level 2, grade B)	
k Vegetables and fruit to improve diastolic BP (level 2, grade B) and glycaemia (level 2, grade B) and reduce the risk of T2DM (level 3, grade C) and cardiovascular mortality (level 3, grade C)	
l Nuts to improve glycaemia (level 2, grade B), established lipid targets, including LDL-C (level 3, grade C) and reduce the risk of cardiovascular disease (level 3, grade C)	
m Whole grains (especially from oats and barley) to improve established lipid targets, including total cholesterol and LDL-C (level 2, grade B)	
n Dairy foods to reduce the risk of T2DM and cardiovascular disease (level 3, grade C); to reduce body weight, waist circumference, body fat; and to increase lean mass in calorie-restricted diets but not in unrestricted diets (level 3, grade C)	
25 Adults living with obesity and impaired glucose tolerance (prediabetes) should consider intensive interventions that target a 5–7% weight loss, to improve glycaemia, blood pressure, and blood lipid targets (level 1a, grade A) and reduce the incidence of T2DM (level 1a, grade A), microvascular complications (retinopathy, nephropathy, and neuropathy) (level 1a, grade B), and cardiovascular and all-cause mortality (level 1a, grade B)	See recommendation
26 Adults living with obesity and T2DM should consider intensive interventions that target a 7–15% weight loss to increase the remission of T2DM and reduce the incidence of nephropathy, OSA, and depression	Level 1a, grade A
27 We recommend nonrestrictive approaches to improve quality of life, psychological outcomes (general well-being, body image perceptions), cardiovascular outcomes, body weight, physical activity, cognitive restraint, and eating behaviours	Level 3, grade C
<i>Physical activity in obesity management</i>	
28 Aerobic physical activity (30–60 min of moderate to vigorous intensity most days of the week) can be considered for adults who want to:	See recommendation
a Increase cardiorespiratory fitness (level 2a, grade B) and mobility (level 2a, grade B)	
b Optimise the maintenance of muscle mass and physical function during weight loss (level 2a, grade B)	
c Achieve small amounts of body weight and fat loss (level 2a, grade B)	
d Achieve reductions in abdominal visceral fat (level 1a, grade A) and ectopic fat, such as liver and heart fat (level 1a, grade A), even in the absence of weight loss	
e Optimise weight maintenance after weight loss (level 2a, grade B)	
29 For adults living with overweight or obesity, resistance training may promote weight maintenance or modest increases in muscle mass or fat-free mass and mobility	Level 2a, grade B

**Table 2** (continued)

Recommendations	Category of evidence and strength of recommendation
30 Increasing exercise intensity, including high-intensity interval training, can achieve greater increases in cardiorespiratory fitness and reduce the amount of time required to achieve benefits similar to those from moderate-intensity aerobic activity	Level 2a, grade B
31 Regular physical activity, with and without weight loss, can improve many cardiometabolic risk factors in adults who have overweight or obesity, including hyperglycaemia and insulin sensitivity (level 2b, grade B), high blood pressure (level 1a, grade B), and dyslipidaemia (level 2a, grade B)	See recommendation
32 Regular (120 min or more per week) aerobic physical activity may improve overall mental health and health-related quality of life in adults who are middle aged or older living with overweight or obesity (level 2, grade B). There is evidence to suggest that regular exercise (dance therapy) may improve body image (level 3, grade C)	See recommendation
<i>Effective psychological and behavioural interventions in obesity management</i>	
33 Multicomponent psychological interventions (combining behaviour modification [goal setting, self-monitoring, problem-solving]; cognitive therapy [reframing]; and values-based strategies to alter diet and physical activity) should be incorporated into care plans for obesity management, and improved health status and quality of life (level 1a, grade A) in a manner that promotes adherence, confidence, and intrinsic motivation (level 1b, grade A)	See recommendation
34 Healthcare professionals should provide longitudinal care with consistent messaging to people living with obesity to support the development of confidence in overcoming barriers (self-efficacy) and intrinsic motivation (personal, meaningful reasons to change), to encourage the patient to set and sequence health goals that are realistic and achievable, to self-monitor behaviour, and to analyse setbacks using problem-solving and adaptive thinking (cognitive reframing), including clarifying and reflecting on values-based behaviours	Level 1a, grade A
35 Healthcare professionals should ask people living with obesity for permission to share information that success in obesity management is related to improved health, function, and quality of life resulting from achievable behavioural goals and not on the amount of weight loss	Level 1a, grade A
36 Healthcare professionals should provide follow-up sessions consistent with repetition and relevance to support the development of self-efficacy and intrinsic motivation. Once an agreement to pursue a behavioural path has been established (health behaviour and/or medication and/or surgical pathways) follow-up sessions should repeat the above messages in a fashion consistent with repetition (the provider role) and relevance (the patient role) to support the development of self-efficacy and intrinsic motivation	Level 1a, grade A
<i>Pharmacotherapy in obesity management</i>	
37 Pharmacotherapy for obesity management can be used for individuals with BMI $\geq 30$ kg/m <sup>2</sup> or BMI $\geq 27$ kg/m <sup>2</sup> (BMI $\geq 28$ kg/m <sup>2</sup> in the case of orlistat) with adiposity-related complications, in conjunction with medical nutrition therapy, physical activity and/or psychological interventions (liraglutide 3 mg [level 2a, grade B], semaglutide 2.4 mg weekly [level 1a, grade A], naltrexone-bupropion 16 mg/180 mg BD [level 2a, grade B], orlistat 120 mg TDS [level 2a, grade B])	See recommendation
38 Pharmacotherapy may be used to maintain weight loss that has been achieved by health behaviour changes and to prevent weight regain (liraglutide 3 mg or orlistat)	Level 2a, grade B
39 For people living with T2DM and a BMI $\geq 27$ kg/m <sup>2</sup> , pharmacotherapy can be used in conjunction with health behaviour changes for weight loss and improvement in glycaemia: liraglutide 3 mg (level 1a, grade A), naltrexone-bupropion combination (level 2a, grade B), orlistat (level 2a, grade B)	See recommendation
40 We recommend pharmacotherapy in conjunction with health behaviour changes for people living with prediabetes and overweight or obesity (BMI $\geq 27$ kg/m <sup>2</sup> ) to delay or prevent T2DM (liraglutide 3 mg; orlistat)	Level 2a, grade B
41 We do not suggest the use of prescription or over-the-counter medications other than those approved for weight management	Level 4, grade D (consensus)
42 For people living with overweight or obesity who require pharmacotherapy for other health conditions, we suggest choosing drugs that are not associated with weight gain where potential differences in efficacy, tolerability, and affordability allow	Level 4, grade D (consensus)
<i>Bariatric surgery: selection and preoperative workup</i>	
43 We suggest a comprehensive medical, nutritional, psychological and functional evaluation be completed, and nutrient deficiencies corrected, in candidates for bariatric surgery	Level 4, grade D
44 Preoperative smoking cessation can minimise perioperative and postoperative complications	Level 2a, grade B
45 We suggest screening for and treatment of OSA in people seeking bariatric surgery	Level 4, grade D
<i>Bariatric surgery: surgical options and outcomes</i>	
46 Bariatric surgery can be considered for people with BMI $\geq 40$ kg/m <sup>2</sup> or BMI $\geq 35$ kg/m <sup>2</sup> with at least 1 adiposity-related disease (level 4, grade D, consensus) to: a Reduce long-term overall mortality (level 2b, grade B) b Induce significantly better long-term weight loss compared with medical management alone (level 1a, grade A) c Induce control and remission of T2DM, in combination with best medical management, over best medical management alone (level 2a, grade B) d Significantly improve quality of life (level 3, grade C) e Induce long-term improvement or remission of most adiposity-related diseases, including dyslipidemia (level 3, grade C), hypertension (level 3, grade C), and liver steatosis and nonalcoholic steatohepatitis (level 3, grade C)	See recommendation

**Table 2** (continued)

Recommendations	Category of evidence and strength of recommendation
47 Bariatric surgery should be considered in patients with BMI between 30 and 35 kg/m <sup>2</sup> and complex T2DM despite optimal medical management	Level 1a, grade A
48 Bariatric surgery may be considered to facilitate weight loss and management of obesity-related disease in persons with BMI between 30 and 35 kg/m <sup>2</sup> , in certain cases where optimal medical and behavioural management has been insufficient	Level 2a, grade B
49 We suggest the choice of bariatric procedure is decided according to the patient's need, in collaboration with an experienced multidisciplinary team	Level 4, grade D (consensus)
50 We suggest that adjustable gastric banding not be offered due to unacceptable complications and long-term failure	Level 4, grade D
<i>Bariatric surgery: postoperative management</i>	
51 Healthcare professionals can encourage people who have undergone bariatric surgery to participate and maximise their access to behavioural interventions, and health and social care services at a level 4 bariatric surgical centre (level 2a, grade B), or the appropriate service for the level of care required (grade D, level 4, consensus). We suggest postoperative follow-up care is delivered at a level 4 bariatric surgical centre for a minimum of 2 years (level 4, grade D, consensus)	See recommendation
52 We suggest that level 4 bariatric surgical centres communicate a comprehensive care plan to primary care providers, and other services as relevant, for patients who are discharged, including bariatric procedure, emergency contact numbers, annual blood tests required, long-term vitamin and minerals supplements, medications, and behavioural interventions, as well as when to refer back	Level 4, grade D (consensus)
53 We suggest that after a patient has been discharged from the level 4 bariatric surgical centre, care provided at levels 1–3 of the Irish Model of Care for Obesity should annually review: nutritional intake, activity, compliance with multivitamin and mineral supplements and weight, as well as assess comorbidities, order laboratory tests to assess for nutritional deficiencies and investigate abnormal results and treat as required	Level 4, grade D (consensus)
54 We suggest that primary care providers consider referral back to the bariatric surgical centre or level 3 specialist services for technical or gastrointestinal symptoms, nutritional issues, pregnancy, psychological support, weight regain, or other medical issues as described in this chapter related to bariatric surgery	Level 4, grade D (consensus)
55 We suggest that level 4 bariatric surgical centres provide follow-up and appropriate laboratory tests at regular intervals post-surgery with access to appropriate healthcare professionals (as per the Irish Model of Care for Obesity) until discharge is deemed appropriate for the patient	Level 4, grade D (consensus)
<i>Primary care and primary healthcare in obesity management</i>	
56 We recommend that primary care clinicians identify people with overweight and obesity, and initiate patient-centred, health-focused conversations with them	Level 3, grade C
57 We recommend that healthcare professionals ensure they ask people for their permission before discussing weight or taking anthropometric measurements	Level 3, grade C
58 Primary care interventions should be used to increase health literacy in individuals' knowledge and skill about weight management as an effective intervention to manage weight	Level 1a, grade A
59 Primary care clinicians should refer persons with overweight or obesity to primary care multicomponent programs, where available (levels 2–3 as appropriate) with personalised obesity management strategies as an effective way to support obesity management	Level 1b, grade B
60 Primary care clinicians can use collaborative deliberation with motivational interviewing to tailor action plans to individuals' life context in a way that is manageable and sustainable to support improved physical and emotional health, and weight management	Level 2b, grade C
61 Interventions that target a specific ethnic group should consider the diversity of psychological and social practices with regard to excess weight, food, and physical activity, as well as socioeconomic circumstances, as they may differ across and within different ethnic groups	Level 1b, grade B
62 Longitudinal primary care interventions should focus on incremental, personalized, small behaviour changes (the "small change approach") to be effective in supporting people to manage their weight	Level 1b, grade B
63 Primary care multicomponent programs should consider personalised obesity management strategies as an effective way to support people living with obesity	Level 1b, grade B
64 Primary care interventions that are behaviour based (nutrition, exercise, lifestyle), alone or in combination with pharmacotherapy, should be used to manage overweight and obesity	Level 1a, grade A
65 Group-based diet and physical activity sessions (e.g., interventions in level 2 of the Irish Model of Care) and those informed by the Diabetes Prevention Program and the Look AHEAD (Action for Health in Diabetes) programs should be used as an effective management option for adults with overweight and obesity	Level 1b, grade A
66 Intensive weight management within routine primary care, as informed by the primary care-led interventions for remission of T2DM (e.g., DiRECT trial) should be considered as a management option for adults with overweight and obesity	Level 1a, grade A
67 Interventions that use technology to increase reach to larger numbers of people asynchronously should be a potentially viable lower cost intervention in a community-based setting (level 1b, grade B). Virtual group consultations also offer a novel and potentially scalable approach (level 4, grade D, consensus)	See recommendation
68 Educators of undergraduate, graduate, and continuing education programs for primary healthcare professionals should provide courses and clinical experiences to address the gaps in skills, knowledge of the evidence, and attitudes necessary to confidently and effectively support people living with obesity	Level 1a, grade A



**Table 2** (continued)

Recommendations	Category of evidence and strength of recommendation
<i>Commercial products and programs in obesity management</i>	
69 For adults living with overweight or obesity, some commercial programmes exist which may achieve mild to moderate weight loss over the short or medium term (level 1a, grade A) and a mild reduction of glycated haemoglobin values over a short-term in adults with T2DM (level 1b, grade B) compared to usual care or education. However, none of those programmes are currently available in Ireland	See recommendation
70 We do not recommend the use of over-the-counter commercial weight loss products for obesity management, owing to lack of evidence	Level 4, grade D
71 We do not suggest that commercial weight loss programs be used for improvement in blood pressure and lipid control in adults living with obesity	Level 4, grade D
<i>Emerging technologies and virtual medicine in obesity management</i>	
72 Implementation of management strategies can be delivered through Web-based platforms (e.g., online education on medical nutrition therapy and physical activity) or mobile devices (e.g., daily weight reporting through a smartphone application) in the management of obesity	Level 2a, grade B
73 We suggest that healthcare professionals incorporate, or use technology which incorporates, individualised feedback, and follow-up (e.g., personalised coaching or feedback via phone or email) into technology-based management strategies to improve weight-loss outcomes	Level 4, grade D
74 The use of wearable activity-tracking technology should be part of a comprehensive strategy for weight management	Level 1a, grade A
<i>Weight management over the reproductive years for adult women living with obesity</i>	
75 We recommend healthcare professionals discuss weight-management targets specific to the reproductive years with adult women living with obesity: preconception weight loss (level 3, grade C); gestational weight gain of 5 kg–9 kg over the entire pregnancy (level 4, grade D); postpartum weight loss of – at minimum – gestational weight gain (level 3, grade C) to reduce the risk of adverse outcomes in the current or in a future pregnancy	See recommendation
76 Healthcare professionals should offer behavioural support interventions, including both nutrition and physical activity to adult women with obesity who are considering a pregnancy (level 3, grade C), who are pregnant (level 2a, grade B) and who are postpartum (level 1a, grade A) to increase the likelihood of achieving weight targets	See recommendation
77 We recommend that healthcare professionals encourage and support pregnant women with obesity to consume foods consistent with a healthy dietary pattern in order to meet their target gestational weight gain	Level 3, grade C
78 We recommend that healthcare professionals encourage and support pregnant women living with obesity who do not have contraindications to exercise during pregnancy to engage in at least 150 min per week of moderate-intensity physical activity, to assist in the management of gestational weight gain	Level 3, grade C
79 Healthcare professionals should not prescribe metformin for gestational weight gain in pregnant women living with obesity (level 1b, grade A). We suggest that weight-management medications not be used during pregnancy or breast-feeding (level 4, grade D)	See recommendation
80 We recommend that women living with obesity be offered additional breast-feeding support because of decreased rates of initiation and continuation	Level 3, grade C
T2DM, type 2 diabetes mellitus; OSA, obstructive sleep apnoea; CORU, the authority responsible for the regulation of health and healthcare professionals in Ireland.	

the same way in all patients. It requires individualised assessment, treatment, and long-term support, as with any other chronic disease.

Weight bias in healthcare settings can reduce the quality of care delivery [45, 46]. To reduce weight stigma HCPs need to become aware of their own attitudes and behaviours toward individuals living with obesity [60]. This can be explored by completing a self-assessment tool like the Implicit Association Test for weight bias [61]. We recommend that all HCP disciplines include training on weight bias, stigma, and discrimination in their curricula [62]. A full description and supporting evidence for weight bias recommendations are available online at [aso.i.info/guidelines/stigma](http://aso.i.info/guidelines/stigma).

HCPs should not assume that patients with larger bodies have obesity. We recommend the '5 As' framework to initiate discussion and ask for permission to discuss weight. If the patient agrees, then assessment and consideration of treatment options can begin [57, 63, 64].

### *Step 2: Clinical Assessment*

Clinical assessment informs diagnosis, determines disease severity, identifies drivers and barriers, and guides management. Root causes of obesity can include biological factors, other chronic diseases, medications, sociocultural practices and beliefs, social determinants of health, built environment, individual life experiences, and psychological factors such as mood, anxiety, binge-eating

disorder, attention-deficit/hyperactivity disorder, and personal self-worth and identity [63]. Understanding people's context and culture, and integrating their root causes, allows the development of personalised treatment plans, which should be integrated into long-term therapeutic relationships in line with chronic disease care models.

We recommend a comprehensive medical, physical, functional, psychosocial, and behavioural assessment to identify the root causes of weight gain and potential barriers to treatment. Physical examination, laboratory tests, interviews, questionnaires, and other investigations should be carried out as relevant to an individualised assessment, including BMI as a screening tool and waist circumference/waist to height ratio in BMI <35 mg/m<sup>2</sup> [65–67] to identify individuals with increased visceral adiposity-related health risks.

The Edmonton Obesity Staging System (EOSS) can guide clinical decisions from assessment [68]. This 5-stage system integrates metabolic, physical, functional, mental health, and psychological parameters to assess the severity of obesity and guide treatment. It is a better predictor of all-cause mortality and COVID-19 outcomes than BMI or waist circumference alone [55, 69, 70] and is feasible to calculate quickly and easily from standard medical records [71]. A full description and supporting evidence for assessment recommendations are available at [aso.info/guidelines/assessment](http://aso.info/guidelines/assessment).

### *Step 3: Discussion of Treatment Options*

Individualised care plans that address the root causes of obesity and that may include behavioural support, medical nutrition therapy, physical activity and physical rehabilitation, psychological, medical, pharmacological, and/or surgical interventions should be developed. Options should be explored with patients to support shared decision-making about the specific elements of an individualised plan.

#### Behavioural Interventions

All health behaviour interventions such as changes to sleep, eating, activity, medication use, or surgery require preparation, adjustment, and support [72]. Behavioural interventions are the “how to” of change and should be incorporated into all obesity management plans. Behavioural counselling includes communication skills, the spirit of the approach (respecting autonomy, empathy, nonjudgemental) and behavioural strategies (e.g., self-monitoring, goal setting, planning) [73]. These skills empower HCPs to work collaboratively with patients toward

recommended health behaviours that can be sustained [74]. Individuals living with obesity should be encouraged to build self-esteem and self-efficacy (confidence to overcome barriers to desired behaviours), based on results that are achievable and not on idealised ideas of body weight and shape. A full description of behavioural recommendations and supporting evidence are available online at [aso.info/guidelines/behavioural](http://aso.info/guidelines/behavioural).

Weight loss linked to health behaviour change is on average 3–5% of body weight, which can lead to meaningful improvements in some obesity-related health complications [74, 75]. Weight change varies substantially among individuals, however, depending on biological and psychosocial factors [76]. The weight at which an individual's body stabilises when engaging in health behaviour change is sometimes referred to as “best weight” [77]. If further weight loss or treatment of complications is needed to improve health and well-being beyond what can be achieved with behavioural interventions, then more intensive therapeutic options should be considered [78].

#### Nutritional Interventions

All individuals, regardless of body size or composition, benefit from a nutritious approach to eating. There is no one-size-fits-all eating pattern for obesity management and various interventions are associated with improvements in blood pressure, glycaemia, lipids, adiposity, quality of life, well-being, nutritional biochemistry, and eating behaviours [79, 80]. Adults living with obesity may consider various flexible nutrition interventions that are personalised to meet their values and preferences while fulfilling nutritional needs, with a focus on health outcomes, not just weight. Interventions should also consider food quality and support a long-term healthy relationship with food. Collaborative care with a registered dietitian who has experience in medical nutrition therapy for obesity management is recommended [81, 82]. Medical nutritional therapy should be used in combination with other evidence-based interventions rather than in isolation, as compensatory mechanisms promote weight regain in the longer term [79, 81, 83, 84]. A full description of nutrition recommendations and supporting evidence are available online at [aso.info/guidelines/nutrition](http://aso.info/guidelines/nutrition).

#### Physical Activity and Physical Rehabilitation Interventions

Rather than viewing physical activity through a narrow focus of its influence on body weight, it should be considered in the context of its broader influence on

health outcomes and, ultimately, its role in the preservation of physical function, social participation, and quality of life. Both aerobic and resistance activity can favour improvements in cardiorespiratory fitness, mobility, strength, muscle mass, health-related quality of life, mood, weight and fat loss, and weight maintenance after weight loss, across the life course [85]. Recommended guidelines for the general population may need to be tailored to address individual physical abilities and preferences. The FITTE (Frequency, Intensity, Type, Time, Enjoyment) framework may be helpful to guide individualised activity prescriptions [86]. Collaborative care with a Chartered Physiotherapist who has experience in obesity management and physical rehabilitation interventions is recommended. A full description of physical activity recommendations and supporting evidence are available online at [aso.info/guidelines/physicalactivity](http://aso.info/guidelines/physicalactivity).

#### Psychological Interventions

Psychological interventions may include cognitive behavioural therapy, acceptance, and commitment therapies and compassion-focussed therapies. Integration with mental health services/interventions may be needed for conditions such as severe mental illness, depression, anxiety, eating disorders, attention deficit hyperactivity disorder, and trauma. A full description of psychological and mental health recommendations and supporting evidence are available online at [aso.info/guidelines/behavioural](http://aso.info/guidelines/behavioural) and [aso.info/guidelines/mentalhealth](http://aso.info/guidelines/mentalhealth).

#### Pharmacotherapy

We recommend pharmacotherapy for weight loss and weight-loss maintenance for adults with a BMI  $\geq 30$  kg/m<sup>2</sup> or BMI  $\geq 27$  kg/m<sup>2</sup> with adiposity-related complications, to support medical nutrition therapy, physical activity, and behavioural and psychological interventions. Current options in Ireland, depending on diabetes status, include liraglutide, semaglutide, naltrexone-bupropion combination, and orlistat. Pharmacotherapy leads to improvements in health, augments the magnitude of weight loss beyond that which health behaviour changes can achieve alone, and is important in the prevention of weight regain [87–91]. In choosing the most appropriate pharmacotherapy, HCPs should consider the mechanism of action, safety, potential side effects/tolerability, contraindications, drug interactions, mode of administration, and cost with the patient. A full description of the pharmacotherapy recommendations and supporting evidence is available online at [aso.info/guidelines/pharmacotherapy](http://aso.info/guidelines/pharmacotherapy).

#### Bariatric Surgery

Bariatric surgery may be considered for adults with BMI  $\geq 40$  kg/m<sup>2</sup> or BMI  $\geq 35$  kg/m<sup>2</sup> with at least one adiposity-related health complication. It is associated with improved quality of life, long-term weight loss, and resolution of adiposity-related diseases, including type 2 diabetes, obstructive sleep apnoea, nonalcoholic fatty liver disease, and hypertension [92]. The decision regarding the type of surgery should be made in collaboration with a multidisciplinary (MDT) team, balancing the patient's expectations, disease complexity, and expected benefits and risks. Perioperative considerations include preoperative preparation and evaluation, enhanced recovery protocols, anaesthesia requirements, postoperative nutrition, behavioural and psychological adjustment, and longer-term MDT care pathways. A full description of the surgical recommendations and supporting evidence are available online at [aso.info/guidelines/preop](http://aso.info/guidelines/preop), [aso.info/guidelines/surgeryoptions](http://aso.info/guidelines/surgeryoptions), and [aso.info/guidelines/postop](http://aso.info/guidelines/postop).

#### *Step 4: Agreeing Goals of Therapy and Care Plans*

Collaborative care between patients and HCPs involves agreeing health-focused goals, realistic expectations, person-centred and evidence-informed treatments, and sustainable goals for the behavioural aspects of interventions [64, 93, 94]. As obesity is chronic in nature, the treatment plan must be long term. HCPs and patients should design and agree on a personalised care plan that is practical and addresses the drivers of health complications and weight gain [95]. Integrating digital and virtual options for aspects of care may provide more flexibility for some patients and services [96]. A full description of the virtual medicine recommendations and supporting evidence are available online at [aso.info/guidelines/technologies](http://aso.info/guidelines/technologies).

Helpful actions in healthcare consultations to mitigate weight stigma include [97]

- explicitly acknowledging the multiple determinants of weight
- disrupting stereotypes of personal failure or success attached to body size or weight
- focussing on behaviours that improve overall health
- redefining success as health improvement regardless of body size or weight

#### *Step 5: Follow-Up and Advocacy*

HCPs play a key role in assisting patients to manage barriers to treatment plans, including signposting to other supports (patient support organisations, commercial options, and/or credible resources) and referring on to

other providers [57]. A full description of the commercial programme recommendations and supporting evidence are available online at [asoi.info/guidelines/commercial](http://asoi.info/guidelines/commercial) products. As obesity is a common disease, professionals across the spectrum of healthcare provide care for people living with obesity. Improving bi-directional referral and care pathways with specialities not traditionally involved in obesity care, such as obstetrics/gynaecology, orthopaedic, mental health, respiratory, hepatology, and nephrology services, will also assist in the delivery of holistic healthcare delivery. A full description of the primary care, reproductive, and mental health recommendations and supporting evidence are available online at [asoi.info/guidelines/primarycare](http://asoi.info/guidelines/primarycare), [asoi.info/guidelines/reproductive](http://asoi.info/guidelines/reproductive), [asoi.info/guidelines/mentalhealth](http://asoi.info/guidelines/mentalhealth).

There is a need to advocate for better care for people living with obesity. This includes improving training of all HCPs to deliver evidence-based obesity care and allocation of healthcare resources to improve access to treatment. There are substantial barriers to obesity care in Ireland, including a lack of resourced MDT treatments, a lack of access to HCPs with expertise in obesity, long wait times for referral and surgery, and the high cost of some treatments [49, 98]. In general, healthcare professionals are poorly prepared to treat obesity [99]. While the MOC was launched in 2021, it has not yet been adequately resourced and implemented to make a meaningful difference to deficits in obesity care in Ireland. Pharmacotherapy remains unreimbursed and although access to bariatric surgery has increased in some parts of Ireland, it is still limited in most areas. Wait times for access to medical and surgical care in Ireland are extensive. In 2018, the publicly funded level 3 and 4 services in Dublin were found to have a total waiting time of  $6.5 \pm 2.5$  years from referral to surgery – approximately half of that time was spent waiting for level 3 medically led MDT assessment [100].

## Methodology

The GRADE methodology for developing the Canadian CPGs has been described in detail previously [1, 101, 102]. Following the CPG launch, several countries expressed an interest in endorsement and adaptation. To determine the feasibility of adaptation, OC and EASO launched a pilot adaptation project in two countries in 2021. Ireland, under the leadership of ASOI, was selected as the pilot site in Europe. Chile, under the leadership of the Sociedad Chilena de Cirugía Bariátrica y Metabólica (SCCBM), was selected as the participating country in

Latin America. To guide the pilot, OC and EASO established an International Guideline Adaptation Committee, composed of Canadian guideline authors, OC, CABPS, and EASO as strategic collaborators. The International Guideline Adaptation Committee developed guidance that would ensure that the key principles and values of the Canadian CPG were maintained, a 1-year grant was provided to pilot sites, and licence agreements were established.

The ADAPTE framework [103] guided the adaptation process in Ireland to ensure it fulfilled the criteria for relevance, generalisability, and applicability in an Irish setting. During preparation, a project coordinator and research assistant were appointed. Terms of references for an Executive Committee for project governance were drawn up. The Executive Committee, multidisciplinary in nature and including representatives from ASOI, ICPO, and ONCP, as well as public health, bariatric surgery, and primary care, met monthly for the duration of the project. A number of instruments from the ADAPTE toolkit were completed to assess the quality (AGREE II), currency (ADAPTE Tool 11), content (ADAPTE Tool 13), and consistency (ADAPTE Tool 14) of the overall guideline before the adaptation phase proceeded [103].

Sixty-three specialists from broad multidisciplinary and geographical backgrounds in Ireland were invited to take part in the adaptation writing teams – including academic and clinical researchers, anaesthetics, dietetics, endocrinology, epidemiology, general practice, midwifery, nursing, obstetrics, occupational therapy, physiotherapy, psychology, psychiatry, public health, pharmacology, respiratory, and surgical representatives. There was a particular focus on clinical staff who were/would be involved with the operational delivery of the MOC in Ireland. Two ICPO representatives were supported to sit as co-authors on the “Reducing Weight Bias in Obesity Management, Practice and Policy” and “Enabling Participation in Activities of Daily Living for People Living with Obesity” chapters.

A lead adaptation author was appointed to each of the eighteen chapters. Each writing group had access to the original research questions that underpinned the literature search and were asked to consider the following factors from the ADAPTE framework for contextualisation of the chapter: the cultural and organisational context of healthcare delivery in Ireland versus Canada; the availability of services, expertise, and resources; inclusion of any relevant local Irish data; values within Irish healthcare that synergised or contrasted with the Canadian model such as evidence-based practice, patient-centred

care, and shared decision models; and any population characteristics or cultural beliefs that may apply specifically in an Irish setting [103]. Examples of adaptations undertaken included referring to levels of care within the Irish MOC, referring to organisations specific to Ireland, modifications for pharmacotherapy regulations in Europe, references to Irish research, ensuring guidance was in line with other Irish guidelines (e.g., from the Food Safety Authority of Ireland in relation to sarcopenia in older adults) or guidelines commonly referred to by Irish HCPs (e.g., British Obesity and Metabolic Surgery Society guidelines).

An adapted ADAPTE Tool 15 was completed for each chapter to assess acceptability and applicability of the recommendations. As an extensive updated literature review was not undertaken, grade A-C recommendations and actionable verbs remained broadly consistent with the original Canadian recommendations. If the writing group was aware of significant new evidence which may change the recommendations, this was summarised on the ADAPTE Tool 15 for feedback to the Canadian Guideline Committee for update consideration. If the writing group changed grade D recommendations (generated from consensus and qualitative literature), they were asked to ensure the wording still aligned with the overall spirit of the original CPGs. The ADAPTE Tool 15 was also used to summarise gaps in the literature that may direct future research (online suppl. Material; for all online suppl. material, see [www.karger.com/doi/10.1159/000527131](http://www.karger.com/doi/10.1159/000527131)).

The writing groups liaised with the project coordinator mainly via virtual meetings and email. Shared folders (Dropbox, Inc.) were used to manage document versions. Chapters were referenced using Endnote 20 (Thomson Reuters, USA) with the original libraries for each chapter provided by OC and updated by the Irish adaptation team. Each chapter and its ADAPTE Tool 15 were reviewed by a member of the EC in addition to the OC project leads. There was then an iterative process between the writing groups and the EC to finalise the adaptation of each chapter. Key messages for people living with obesity were reviewed for each chapter by ICPO representatives, and overall chapter recommendations were voted upon and approved by the EC.

## Implementation

ASOI has created a guideline website ([asoi.info/guidelines](http://asoi.info/guidelines)) that hosts the full CPGs as living documents and will in the future host interim updates, quick reference

guides, healthcare provider tools, videos, webinars, and resources for people living with obesity. Going forward, an international collaboration between ASOI, SCCBM, and OC will monitor evidence related to this CPG and update it if new evidence becomes available that could influence the recommendations. Implementation of this guideline will require resource allocation and targeted policy action, as well as ongoing advocacy by HCPs and people living with obesity.

## Conclusion

Obesity is a complex, chronic disease that impairs health. This adapted guideline reflects advances in our understanding of the determinants, pathophysiology, assessment, and treatment of obesity and shifts the focus of obesity management toward improving patient-centred health outcomes, rather than weight loss alone. Reducing weight bias and stigma, understanding the root causes of obesity, and promoting and supporting patient-centred evidence-informed treatments will improve the standards and quality of obesity care. Dissemination and implementation of this guideline will help to improve obesity care, and to close the gaps in knowledge through obesity research, education, clinical practice, and collaboration.

## Acknowledgments

The authors thank OC staff members Ximena Ramos-Salas, Miguel Alejandro Saquimux Contreras, Nicole Pearce, Brad Hussey, Ian Patton, and all of the OC CPG Adaptation Committee for their support, in addition to all those involved in the original CPG development. We also thank Natalie Wallace, Anne Nugent, St Columcille's Hospital, Loughlinstown, the Health Service Executive, and University College Dublin for hosting and facilitating clinical backfill arrangements for the project researchers.

## Conflict of Interest Statement

The OC Executive Committee developed and managed the competing interest policy and procedures for mitigating bias for the original CPGs, which are available on the OC guideline website and reported previously [1]. Individuals with direct competing interests abstained from voting in the areas in which they had the conflict. Any discussion regarding off-label use of drugs included the caveat that the use was off label. Methodologists from MERST who had no competing interests reviewed and graded each included study to ensure the evidence had been appropriately assessed to ensure they aligned with the evidence. The Irish adaptation authors report the following competing interests.

The OC adaptation grant was used to provide part-time clinical backfill for Cathy Breen to act as project coordinator. She reports receiving honoraria for educational events or conference attendance from Astra Zeneca, Behaviour Change Training Ltd., Diabetes Ireland, EASO, International Medical Press, Eli Lilly, Medscape, MSD, Novo Nordisk and Sanofi Aventis and is a member of the Dexcom Advisory Board, ONCP Clinical Advisory Group, and MECC working group. Susie Birney reports funding to ICPO from the HSE, Novo Nordisk, and the European Coalition for People Living with Obesity (ECPO) and consulting fees or honoraria from Diabetes Ireland, ECPO, Novo Nordisk, and International Medical Press. She also reports that she is the Secretary of ECPO. Sarah Browne reports receiving institutional research grants from the Irish Research Council and ASOI and honoraria for educational events from the European Federation of the Associations of Dietitians. Michael Crotty reports honoraria for educational events or conference attendance from Novo Nordisk and Consilient Health and is a member of a Novo Nordisk advisory board. He is a member of the ONCP Clinical Advisory Group, Adult Weight Management Working Group, and ASOI. Frances Finucane reports a Saolta Hospital Group Clinical Research Career Development Award, is Chair of DSMB – The LEGEND Study: Lifestyle Education about Nutrition for Diabetes, a board member of the Irish Heart Foundation and National Office for Clinical Audit, and a council member of the RCSI. Siobhan Foy reports support for conference attendance from Novo Nordisk. Karen Gaynor reports receiving honoraria from Behaviour Change Training Ltd. and is Programme Manager with the ONCP. Irene Gibson reports that she is the Chair of the European Society of Cardiology, Association of Cardiovascular Nurses and Allied Healthcare Professionals Committee and the Director of Programmes and Innovation at the National Institute for Prevention and Cardiovascular Health. Anne Griffin reports that she is Chair of the Executive Council of the Irish Nutrition and Dietetic Institute, a member of the CORU Dietitian Registration Board and the European Federation of Associations for Dietetics Education and Lifelong Learning Committee. Janas Harrington reports that she is Co-Chair of the EASO Public Health Task Force. Andrew Hogan reports receiving institutional research grants from the National Children’s Research Centre, the Dublin Skin and Cancer Hospital Charity, and the Health Research Board. Dervla Kelly reports she is a member of the National Research Ethics Committee for Clinical Trials. Carel le Roux reports receiving institutional research grants from the Irish Research Council, Health Research Board, Science Foundational Ireland and Anabio; consulting fees for Global Advisory Boards for Boehringer Ingelheim, Eli Lilly, GI Dynamics, Herbalife, Johnson & Johnson, and Novo Nordisk; and honoraria for educational events or conference attendance from Herbalife, Johnson & Johnson, and Novo Nordisk. He previously held stock and worked in a voluntary capacity as Chief Medical Officer and Director of the Medical Device Division with Keyron and continues to provide them with scientific advice. He is a member of the Irish Society for Nutrition and Metabolism. Niamh Moran reports she is Chair of the Irish Society of Lifestyle Medicine. Maura Murphy reports that she is the Secretary of ICPO. Celine Murrin reports that she is a member of the Nutrition Council of the Irish Heart Foundation. Karl Neff reports honoraria for educational events or conference attendance from Novo Nordisk and Sanofi Aventis. He is a member of a data monitoring board for Fractyl Health, and he attended an advisory board meeting for Novo Nordisk and Consilient Health. Jean O’Connell reports honoraria for educational events or conference

attendance from Novo Nordisk and MSD and is Chair of ASOI. Grace O’Malley reports receiving institutional research grants from the Health Research Board, Temple Street Foundation, EASO, the HSE, and honoraria for educational events from the University of Minnesota Obesity Centre. She is a committee member of ASOI and is Director and Secretary of EASO. She has received support for committee meeting attendance. Sharleen O’Reilly reports receiving institutional research grants from the European Commission Horizon 2020, the National Health and Medical Research Council of Australia, the Health Research Board Ireland, Al Qasimi Foundation, and the University of Sharjah Grant. She is an Associate Editor with Diabetic Medicine, a member of the European Federation of Associations of Dietitians Executive Committee, the Nutrition and Dietetics Journal Editorial Board, and the Irish Section of the Nutrition Society. Donal O’Shea reports that he is the National Clinical Lead with the ONCP. Leona Ryan reports receiving institutional research support from the Science Foundation Ireland Centre for Research Training in Digitally Enhanced Reality. Suzanne Seery reports receiving honoraria for educational events from the National Institute for Prevention and Cardiovascular Health. Conor Woods reports receiving honoraria for educational events or conference attendance from Astra Zeneca and Novo Nordisk. No other competing interests were declared.

## Funding Sources

Funding for producing the original Canadian CPG came from the Canadian Institutes of Health Research Strategic Patient-Oriented Research initiative, OC’s Fund for Obesity Collaboration and Unified Strategies (FOCUS) initiative, CABPS, and in-kind support from the scientific and professional volunteers engaged in the process. The international adaptation pilot funding came from OC and EASO based on an unrestricted grant from Novo Nordisk Global. Novo Nordisk was not involved with the implementation of the project. Committee members and adapting authors were volunteers and were not remunerated for their services.

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Methodology, manuscript writing, chapter review, and chapter writing: Cathy Breen, Jean O’Connell, Justin Geoghegan, Donal O’Shea, Susie Birney, Louise Tully, Karen Gaynor, Mark O’Kelly, Grace O’Malley, Clare O’Donovan, Oonagh Lyons, and Mary Flynn; manuscript review and chapter writing: Suzanne Allen, Niamh Arthurs, Sarah Browne, Molly Byrne, Shauna Callaghan, Chris Collins, Aoife Courtney, Michael Crotty, Ciara Donohue, Caroline Donovan, Colin Dunlevy, Diarmuid Duggan, Naomi Fearon, Francis Finucane, Ita Fitzgerald, Siobhan Foy, John Garvey, Irene Gibson, Liam Glynn, Edward Gregg, Anne Griffin, Janas Harrington, Caroline Heary, Helen Heneghan, Andrew Hogan, Mary Hynes, Claire Kearney, Dervla Kelly, Karl Neff, Carel W Le Roux, Sean Manning, Fionnuala McAuliffe, Susan Moore, Niamh Moran, Maura Murphy, Celine Murrin, Sarah M. O’Brien, Caitriona O’Donnell, Sarah O’Dwyer, Cara O’Grada, Emer O’Malley, Orlaith O’Reilly, Sharleen O’Reilly, Olivia Porter, Helen M. Roche, Amanda Rhynehart, Leona Ryan, Suzanne Seery, Corina Soare, Ferrah Shaamile, Abigail Walsh, Catherine Woods, Conor Woods, and Ruth Yoder.

## References

- Wharton S, Lau DCW, Vallis M, Sharma AM, Biertho L, Campbell-Scherer D, et al. Obesity in adults: a clinical practice guideline. *CMAJ*. 2020;192(31):E875–91.
- World Health Organization. *Obesity preventing and managing the global epidemic: report of a WHO Consultation*. Geneva: World Health Organization. 2000.
- Frühbeck G, Busetto L, Dicker D, Yumuk V, Goossens GH, Hebebrand J, et al. The ABCD of obesity: an EASO position statement on a diagnostic term with clinical and scientific implications. *Obes Facts*. 2019;12(2):131–6.
- European Commission. *Strategic foresight report*. 2020.
- Burki T. European Commission classifies obesity as a chronic disease. *Lancet Diabetes Endocrinol*. 2021 Jul;9(7):418.
- Kyle TK, Dhurandhar EJ, Allison DB. Regarding obesity as a disease: evolving policies and their implications. *Endocrinol Metab Clin North Am*. 2016;45(3):511–20.
- Jastreboff AM, Kotz CM, Kahan S, Kelly AS, Heymsfield SB. Obesity as a disease: the obesity society 2018 position statement. *Obesity*. 2019 Jan;27(1):7–9.
- Bray GA, Kim KK, Wilding JPH; World Obesity Federation. Obesity: a chronic relapsing progressive disease process. A position statement of the World Obesity Federation. *Obes Rev*. 2017 Jul;18(7):715–23.
- Prospective Studies Collaboration, Whitlock G, Lewington S, Sherliker P, Clarke R, Emberson J, et al. Body-mass index and cause-specific mortality in 900 000 adults: collaborative analyses of 57 prospective studies. *Lancet*. 2009 Mar 28;373(9669):1083–96.
- Global BMI Mortality Collaboration, Di Angelantonio E, Bhupathiraju ShN, Wormser D, Gao P, Kaptoge S, et al. Body-mass index and all-cause mortality: individual-participant-data meta-analysis of 239 prospective studies in four continents. *Lancet*. 2016 Aug 20;388(10046):776–86.
- Garvey WT, Mechanick JI. Proposal for a Scientifically Correct and Medically Actionable Disease Classification System (ICD) for Obesity. *Obesity*. 2020 Mar;28(3):484–92.
- Sharma AM. M, M, M & M: a mnemonic for assessing obesity. *Obes Rev*. 2010 Nov;11(11):808–9.
- Tchernof A, Després JP. Pathophysiology of human visceral obesity: an update. *Physiol Rev*. 2013;93(1):359–404.
- Li J, Simon G, Castro MR, Kumar V, Steinbach MS, Caraballo PJ. Association of BMI, comorbidities and all-cause mortality by using a baseline mortality risk model. *PLoS One*. 2021;16(7):e0253696.
- Guh DP, Zhang W, Bansback N, Amarsi Z, Birmingham CL, Anis AH. The incidence of co-morbidities related to obesity and overweight: a systematic review and meta-analysis. *BMC Public Health*. 2009 Mar 25;9:88.
- Abdullah A, Peeters A, de Courten M, Stoelwinder J. The magnitude of association between overweight and obesity and the risk of diabetes: a meta-analysis of prospective cohort studies. *Diabetes Res Clin Pract*. 2010 Sep;89(3):309–19.
- Luppino FS, de Wit LM, Bouvy PF, Stijnen T, Cuijpers P, Penninx BWJH, et al. Overweight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. *Arch Gen Psychiatry*. 2010;67(3):220–9.
- Aune D, Norat T, Vatten LJ. Body mass index and the risk of gout: a systematic review and dose-response meta-analysis of prospective studies. *Eur J Nutr*. 2014 Dec;53(8):1591–601.
- Aune D, Norat T, Vatten LJ. Body mass index, abdominal fatness and the risk of gallbladder disease. *Eur J Epidemiol*. 2015 Sep;30(9):1009–19.
- Ackerman SE, Blackburn OA, Marchildon F, Cohen P. Insights into the link between obesity and cancer. *Curr Obes Rep*. 2017 Jun;6(2):195–203.
- MacLellan GA, Dunlevy C, O'Malley E, Blake C, Breen C, Gaynor K, et al. Musculoskeletal pain profile of obese individuals attending a multidisciplinary weight management service. *Pain*. 2017 Jul;158(7):1342–53.
- McCuen-Wurst C, Ruggieri M, Allison KC. Disordered eating and obesity: associations between binge-eating disorder, night-eating syndrome, and weight-related comorbidities. *Ann N Y Acad Sci*. 2018;1411(1):96–105.
- Longo M, Zatterale F, Naderi J, Parrillo L, Formisano P, Raciti GA, et al. Adipose tissue dysfunction as determinant of obesity-associated metabolic complications. *Int J Mol Sci*. 2019 May 13;20(9):2358.
- Hagovska M, Švihra J, Buková A, Horbacz A, Dračková D, Lupták J, et al. The relationship between overweight and overactive bladder symptoms. *Obes Facts*. 2020;13(3):297–306.
- Barber TM, Franks S. Obesity and polycystic ovary syndrome. *Clin Endocrinol*. 2021;95(4):531–41.
- Cholongitas E, Pavlopoulou I, Papatheodoridi M, Markakis GE, Bouras E, Haidich AB, et al. Epidemiology of nonalcoholic fatty liver disease in Europe: a systematic review and meta-analysis. *Ann Gastroenterol*. 2021;34(3):404–14.
- Fontaine KR, Redden DT, Wang C, Westfall AO, Allison DB. Years of life lost due to obesity. *JAMA*. 2003 Jan 8;289(2):187–93.
- Grover SA, Kaouache M, Rempel P, Joseph L, Dawes M, Lau DCW, et al. Years of life lost and healthy life-years lost from diabetes and cardiovascular disease in overweight and obese people: a modelling study. *Lancet Diabetes Endocrinol*. 2015 Feb;3(2):114–22.
- Hill JO. Understanding and addressing the epidemic of obesity: an energy balance perspective. *Endocr Rev*. 2006 Dec;27(7):750–61.
- Secher A, Jelsing J, Baquero AF, Hecksher-Sorensen J, Cowley MA, Dalboge LS, et al. The arcuate nucleus mediates GLP-1 receptor agonist liraglutide-dependent weight loss. *J Clin Invest*. 2014 Oct;124(10):4473–88.
- Fasshauer M, Bluher M. Adipokines in health and disease. *Trends Pharmacol Sci*. 2015 Jul;36(7):461–70.
- Sternson SM, Eisel AK. Three pillars for the neural control of appetite. *Annu Rev Physiol*. 2017 Feb 10;79:401–23.
- Cedernaes J, Huang W, Ramsey KM, Waldeck N, Cheng L, Marcheva B, et al. Transcriptional basis for rhythmic control of hunger and metabolism within the AgRP neuron. *Cell Metab*. 2019 May 7;29(5):1078–91.e5.
- Mebel DM, Wong JCY, Dong YJ, Borgland SL. Insulin in the ventral tegmental area reduces hedonic feeding and suppresses dopamine concentration via increased reuptake. *Eur J Neurosci*. 2012 Aug;36(3):2336–46.
- Bliss ES, Whiteside E. The gut-brain axis, the human gut microbiota and their integration in the development of obesity. *Front Physiol*. 2018;9:900.
- Aronne LJ, Hall KD, M Jakicic J, Leibel RL, Lowe MR, Rosenbaum M, et al. Describing the weight-reduced state: physiology, behavior, and interventions. *Obesity*. 2021;29(Suppl 1):S9–24.
- Swinburn BA, Sacks G, Hall KD, McPherson K, Finegood DT, Moodie ML, et al. The global obesity pandemic: shaped by global drivers and local environments. *Lancet*. 2011 Aug 27;378(9793):804–14.
- Kirk SF, Alberga A, Russell Mayhew S. Are we over weight yet? New guidelines aim to reduce obesity stigma in health care. *Conversation*. 2020.
- Loos RJF, Yeo GSH. The genetics of obesity: from discovery to biology. *Nat Rev Genet*. 2022 Feb;23(2):120–33.
- Collaboration NCDRF. Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults. *Lancet*. 2017 Dec 16;390(10113):2627–42.
- Janssen F, Bardoutsos A, Vidra N. Obesity prevalence in the long-term future in 18 European countries and in the USA. *Obesity Facts*. 2020;13(5):514–27.
- Irish Universities Nutrition A. National Adult Nutrition Survey (NANS) Methodology. 2011. Available from: <http://www.iuna.net/wp-content/uploads/2011/04/methods.pdf>.
- Sutin AR, Stephan Y, Terracciano A. Weight discrimination and risk of mortality. *Psychol Sci*. 2015 Nov;26(11):1803–11.
- Kirk SFL, Price SL, Penney TL, Rehman I, Lyons RF, Piccinini-Vallis H, et al. Blame, shame, and lack of support: a multilevel study on obesity management. *Qual Health Res*. 2014 Jun;24(6):790–800.

- 45 Alberga AS, Edache IY, Forhan M, Russell-Mayhew S. Weight bias and health care utilization: a scoping review. *Prim Health Care Res Dev*. 2019 Jun 22;20:e116.
- 46 O'Donoghue G, Cunningham C, King M, O'Keefe C, Rofaeil A, McMahon S. A qualitative exploration of obesity bias and stigma in Irish healthcare; the patients' voice. *PLoS One*. 2021;16(11):e0260075.
- 47 Obesity Canada. *Report card on access to obesity treatment for adults in Canada 2017*. Edmonton: Obesity Canada; 2017.
- 48 World Obesity. *World Obesity Report Card for Ireland*. 2020.
- 49 Health Service Executive (HSE). *Model of Care for the Management of Overweight and Obesity*. Dublin: Royal College of Physicians in Ireland; 2021.
- 50 Greener J, Douglas F, van Teijlingen E. More of the same? Conflicting perspectives of obesity causation and intervention amongst overweight people, health professionals and policy makers. *Soc Sci Med*. 2010 Apr;70(7):1042–9.
- 51 Janke EA, Ramirez ML, Haltzman B, Fritz M, Kozak AT. Patient's experience with comorbidity management in primary care: a qualitative study of comorbid pain and obesity. *Prim Health Care Res Dev*. 2016 Jan;17(1):33–41.
- 52 Irish National Taskforce on Obesity. *Obesity: the policy challenges. Report of the National Taskforce on Obesity*. Department of Health and Children; 2005.
- 53 Healthy Ireland (HI). *A healthy weight for Ireland: obesity policy and action plan*. Dublin: Department of Health; 2016.
- 54 Kuk JL, Ardern CI, Church TS, Sharma AM, Padwal R, Sui X, et al. Edmonton obesity staging system: association with weight history and mortality risk. *Appl Physiol Nutr Metab*. 2011 Aug;36(4):570–6.
- 55 Canning KL, Brown RE, Wharton S, Sharma AM, Kuk JL. Edmonton Obesity staging system prevalence and association with weight loss in a publicly funded referral-based obesity clinic. *J Obes*. 2015;2015:619734.
- 56 Ogunleye A, Osunlana A, Asselin J, Cave A, Sharma AM, Campbell-Scherer DL. The 5As team intervention: bridging the knowledge gap in obesity management among primary care practitioners. *BMC Res Notes*. 2015 Dec 22;8:810.
- 57 Vallis M, Piccinini-Vallis H, Sharma AM, Freedhoff Y. Clinical review: modified 5 As – minimal intervention for obesity counseling in primary care. *Can Fam Physician*. 2013 Jan;59(1):27–31.
- 58 Mechanick JI, Hurley DL, Garvey WT. Adiposity-based chronic disease as a new diagnostic term: the American Association of Clinical Endocrinologists and American College of Endocrinology Position Statement. *Endocr Pract*. 2017 Mar;23(3):372–8.
- 59 World Health Organization. *Obesity and overweight*. Geneva: World Health Organization; 2020.
- 60 Lee M, Ata RN, Brannick MT. Malleability of weight-biased attitudes and beliefs: a meta-analysis of weight bias reduction interventions. *Body Image*. 2014 Jun;11(3):251–9.
- 61 Harvard University. *Project implicit*. 2011.
- 62 Brand G, Sheers C, Wise S, Seubert L, Clifford R, Griffiths P, et al. A research approach for co-designing education with healthcare consumers. *Med Educ*. 2021;55(5):574–81.
- 63 Luig T, Anderson R, Sharma AM, Campbell-Scherer DL. Personalizing obesity assessment and care planning in primary care: patient experience and outcomes in everyday life and health. *Clin Obes*. 2018 Dec;8(6):411–23.
- 64 O'Shea D, Kahan S, Lennon L, Breen C. Correction to: practical approaches to treating obesity: patient and healthcare professional perspectives. *Adv Ther*. 2021 Jul;38(7):4151.
- 65 Camhi SM, Bray GA, Bouchard C, Greenway FL, Johnson WD, Newton RL, et al. The relationship of waist circumference and BMI to visceral, subcutaneous, and total body fat: sex and race differences. *Obesity*. 2011 Feb;19(2):402–8.
- 66 Sharma AM, Campbell-Scherer DL. Redefining obesity: beyond the numbers. *Obesity*. 2017 Apr;25(4):660–1.
- 67 National Institute for Clinical Excellence. *Obesity identification and classification of overweight and obesity: in development [GID-NG10284]*. 2022.
- 68 Sharma AM, Kushner RF. A proposed clinical staging system for obesity. *Int J Obes*. 2009 Mar;33(3):289–95.
- 69 Padwal RS, Pajewski NM, Allison DB, Sharma AM. Using the Edmonton obesity staging system to predict mortality in a population-representative cohort of people with overweight and obesity. *CMAJ*. 2011 Oct 4;183(14):E1059–66.
- 70 Rodríguez-Flores M, Goicochea-Turcott EW, Mancillas-Adame L, Garibay-Nieto N, López-Cervantes M, Rojas-Russell ME, et al. The utility of the Edmonton obesity staging system for the prediction of COVID-19 outcomes: a multi-centre study. *Int J Obes*. 2022 Mar;46(3):661–8.
- 71 Swaleh R, McGuckin T, Myroniuk TW, Manca D, Lee K, Sharma AM, et al. Using the Edmonton obesity staging system in the real world: a feasibility study based on cross-sectional data. *CMAJ Open*. 2021 Dec;9(4):E1141–8.
- 72 Vallis M. Are behavioural interventions doomed to fail? Challenges to self-management support in chronic diseases. *Can J Diabetes*. 2015 Aug;39(4):330–4.
- 73 Dragomir AI, Boucher VG, Bacon SL, Gemme C, Szczepanik G, Corace K, et al. An international Delphi consensus study to define motivational communication in the context of developing a training program for physicians. *Transl Behav Med*. 2021 Mar 16;11(2):642–52.
- 74 Look AHEAD Research Group. Eight-year weight losses with an intensive lifestyle intervention: The look AHEAD study. *Obesity*. 2014 Jan;22(1):5–13.
- 75 Hall KD, Kahan S. Maintenance of lost weight and long-term management of obesity. *Med Clin North Am*. 2018;102(1):183–97.
- 76 Dent R, McPherson R, Harper ME. Factors affecting weight loss variability in obesity. *Metabolism*. 2020 Dec;113:154388.
- 77 Freedhoff Y, Sharma, Weight AB. *A practical guide to office-based obesity management*. 1st ed. Canadian Obesity Network; 2010.
- 78 van Bloemendaal L, Veltman DJ, Ten Kulve JS, Groot PFC, Ruhe HG, Barkhof F, et al. Brain reward-system activation in response to anticipation and consumption of palatable food is altered by glucagon-like peptide-1 receptor activation in humans. *Diabetes Obes Metab*. 2015 Sep;17(9):878–86.
- 79 Koliaki C, Spinos T, Spinou M, Brinia ME, Mitsopoulou D, Katsilambros N. Defining the optimal dietary approach for safe, effective and sustainable weight loss in overweight and obese adults. *Healthcare*. 2018 Jun 28;6(3):73.
- 80 Williams LT, Barnes K, Ball L, Ross LJ, Sladdin I, Mitchell LJ. How effective are dietitians in weight management? A systematic review and meta-analysis of randomized controlled trials. *Healthcare*. 2019 Feb 1;7(1):20.
- 81 Raynor HA, Champagne CM. Position of the Academy of Nutrition and Dietetics: interventions for the treatment of overweight and obesity in adults. *J Acad Nutr Diet*. 2016 Jan;116(1):129–47.
- 82 Raynor HA, Davidson PG, Burns H, Nadelson MDH, Mesznik S, Uhley V, et al. Medical nutrition therapy and weight loss questions for the evidence analysis library prevention of type 2 diabetes project: systematic reviews. *J Acad Nutr Diet*. 2017 Oct;117(10):1578–611.
- 83 Rosenbaum M, Hirsch J, Gallagher DA, Leibel RL. Long-term persistence of adaptive thermogenesis in subjects who have maintained a reduced body weight. *Am J Clin Nutr*. 2008 Oct;88(4):906–12.
- 84 Sumithran P, Prendergast LA, Delbridge E, Purcell K, Shulkes A, Kriketos A, et al. Long-term persistence of hormonal adaptations to weight loss. *N Engl J Med*. 2011 Oct 27;365(17):1597–604.
- 85 Mabire L, Mani R, Liu L, Mulligan H, Baxter D. The influence of age, sex and body mass index on the effectiveness of brisk walking for obesity management in adults: a systematic review and meta-analysis. *J Phys Act Health*. 2017 May;14(5):389–407.
- 86 Burnet K, Kelsch E, Zieff G, Moore JB, Stoner L. How fitting is F.I.T.T.? A perspective on a transition from the sole use of frequency, intensity, time, and type in exercise prescription. *Physiol Behav*. 2019 Feb 1;199:33–4.



- 87 Richelsen B, Tonstad S, Rössner S, Toubro S, Niskanen L, Madsbad S, et al. Effect of orlistat on weight regain and cardiovascular risk factors following a very-low-energy diet in abdominally obese patients. *Diabetes Care*. 2007 Jan;30(1):27–32.
- 88 Rucker D, Padwal R, Li SK, Curioni C, Lau DCW. Long term pharmacotherapy for obesity and overweight: updated meta-analysis. *BMJ*. 2007 Dec;335(7631):1194–9.
- 89 Greenway FL, Fujioka K, Plodkowski RA, Mudaliar S, Guttadauria M, Erickson J, et al. Effect of naltrexone plus bupropion on weight loss in overweight and obese adults (COR-1): a multicentre, randomised, double-blind, placebo-controlled, phase 3 trial. *Lancet*. 2010 Aug 21;376(9741):595–605.
- 90 Wadden TA, Hollander P, Klein S, Niswender K, Woo V, Hale PM, et al. Weight maintenance and additional weight loss with liraglutide after low-calorie-diet-induced weight loss: the SCALE maintenance randomized study. *Int J Obes*. 2013 Nov;37(11):1443–51.
- 91 Pi-Sunyer X, Astrup A, Fujioka K, Greenway F, Halpern A, Krempf M, et al. A randomized, controlled trial of 3.0 mg of liraglutide in weight management. *N Engl J Med*. 2015 Jul 2;373(1):11–22.
- 92 Pareek M, Schauer PR, Kaplan LM, Leiter LA, Rubino F, Bhatt DL. Metabolic surgery: weight loss, diabetes, and beyond. *J Am Coll Cardiol*. 2018 Feb 13;71(6):670–87.
- 93 Kaly P, Orellana S, Torrella T, Takagishi C, Saff-Koche L, Murr MM. Unrealistic weight loss expectations in candidates for bariatric surgery. *Surg Obes Relat Dis*. 2008 Jan–Feb; 4(1):6–10.
- 94 American Association of Diabetes Educators. Addressing obesity via diabetes self-management education and training. *Diabetes Educ*. 2012 Jan–Feb;38(1):151–4.
- 95 Byrne NM, Meerkin JD, Laukkanen R, Ross R, Fogelholm M, Hills AP. Weight loss strategies for obese adults: personalized weight management program vs. standard care. *Obesity*. 2006 Oct;14(10):1777–88.
- 96 Kahan S, Look M, Fitch A. The benefit of telemedicine in obesity care. *Obesity*. 2022 Mar; 30(3):577–86.
- 97 Sharma M. Behavioural interventions for preventing and treating obesity in adults. *Obes Rev*. 2007 Sep;8(5):441–9.
- 98 O'Neill KN, Finucane FM, le Roux CW, Fitzgerald AP, Kearney PM. Unmet need for bariatric surgery. *Surg Obes Relat Dis*. 2017 Jun;13(6):1052–6.
- 99 Dietz WH, Baur LA, Hall K, Puhl RM, Taveras EM, Uauy R, et al. Management of obesity: improvement of health-care training and systems for prevention and care. *Lancet*. 2015 Jun 20;385(9986):2521–33.
- 100 Iqbal ABS, Tomas A, Meurling IJ, O'Shea D, Geoghegan J, Heneghan H. Clinical impact of delaying access to bariatric surgery in Ireland. *XLIIIRD Sir Peter Freyer Memorial Lecture and Surgical Symposium*. National University of Ireland Galway: Irish Journal of Medical Science; 2018. p. S115–71.
- 101 Shekelle PG, Woolf SH, Eccles M, Grimshaw J. Developing clinical guidelines. *West J Med*. 1999 Jun;170(6):348–51.
- 102 Guyatt GH, Oxman AD, Vist GE, Kunz R, Falck-Ytter Y, Alonso-Coello P, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ*. 2008 Apr 26;336(7650):924–6.
- 103 The ADAPTE Collaboration. The ADAPTE process: resource toolkit for guideline adaptation version 2.0. In: GIN, editor. 2009.