PRACTICE MANUAL:

Addressing Health Disparities for Patients With Obesity

AAFP
AMERICAN ACADEMY OF FAMILY PHYSICIANS

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1. Introduction

The American Academy of Family Physicians (AAFP) represents 130,000 physicians and medical students nationwide and is the largest medical society devoted solely to primary care. Its vision is to transform health care to achieve optimal health for everyone, and its mission is to improve the health of patients, families and communities by serving its members' needs with professionalism and creativity. To support this vision and mission, the AAFP has developed a practice manual for family physicians that outlines best practices for caring for patients with overweight and obesity while also promoting health equity and reducing stigma and bias among all members of the clinical care team.

Systemic factors (e.g., inadequate access to health care, affordable healthy food options and safe opportunities for physical activity) often compound health disparities related to overweight and obesity. These factors are even more apparent in historically marginalized populations that are disproportionally affected by overweight and obesity, such as certain racial and ethnic minority groups and populations with lower socioeconomic status.

People with overweight or obesity often experience weight stigma and bias, which can manifest in a clinical setting as negative perceptions, assumptions and stereotypes about patients based on their weight. Negative attitudes and beliefs among health care professionals can lead to discrimination, suboptimal care and worse health outcomes for people with overweight or obesity. People of color with obesity may face additional stigma related to their cultural identity and race when seeking care, resulting in an even greater negative impact on health care access and health outcomes.

Many physicians recognize these disparities and the importance of managing overweight and obesity but face significant challenges (e.g., inadequate training, limited time, insufficient resources) in providing effective care for their patients. Writing on the topic of teaching about obesity and social justice in medical schools, Varney and Hauck noted, "The traditional medical education system is failing to adequately prepare doctors to address the obesity epidemic and its impact on social justice. Obesity affects nearly half of the [U.S.] minority population and is associated with over 200 chronic diseases and 13 cancers. Physicians are given little knowledge, resources, and autonomy to treat the disease of obesity that, within a decade, will adversely affect three-quarters the [U.S.] population."[1]

For example, many physicians receive limited training on nutrition education and are left to ponder the differences among seemingly endless lists of dietary recommendations on their own. Because traditional medical education tends to prioritize individual patient care over population health, physicians may lack the skills and knowledge to engage in community-based interventions that address the broader social determinants of obesity (e.g., environment, socioeconomic status). Cultural factors also play a significant role in obesity and its management. If physicians are not given broader training in cultural competency, they may have narrow viewpoints that limit their ability to individualize treatment in diverse patient populations.

This practice manual is not a substitute for the comprehensive obesity medicine curriculum that the AAFP hopes to see for all physicians in the future. It is intended as an overview of the topic that can serve as a starting point for establishing a broader knowledge base. It serves as a practical, evidence-based guide that is readily applicable for family physicians as they prevent and treat obesity while promoting health equity.

Resources From the AAFP

- Online continuing medical education (CME) courses to provide information about weight bias and proven strategies for treating and managing obesity and associated comorbidities:
  - Weight Bias: How Is It Affecting Your Practice?
  - Weight Bias
  - Obesity CME for the Family Physician
- Implicit Bias Training Guide – Promotes awareness of implicit bias and provides resources for instructing health care professionals on how to reduce its negative effects on patients
- Action guides to give family physicians concrete steps they can take to advance health equity while providing high-quality, individualized care that improves health outcomes:
  - The Anti-Racist Family Physician: A Guide to Making a Difference
  - Beyond the Surface: A Proactive Guide Series on Screening for Social Determinants of Health

1.1. The Prevalence and Impact of Obesity

Obesity is arguably the greatest health care-related crisis that the United States is currently facing. Rates of obesity have been rising steadily over the years. National Health and Nutrition Examination Survey (NHANES) data showed that the prevalence of obesity in the United States increased from 30.5% in 1999-2000 to 41.9% in 2017-March 2020.[2] Even more concerning, the prevalence of severe obesity nearly doubled in that time frame. Black adults had the highest obesity rate (49.9%) for people ages 20 and older, followed by Latino adults (45.6%), white adults (41.4%) and Asian adults (16.1%).[2]

In general, evidence indicates that obesity is more prevalent among adults who have lower education levels and lower incomes. NHANES data showed the obesity rate was 40.1% among adults who had less than a high school education compared with a rate of 34.1% among college graduates.[2] Researchers have found that wealth is inversely correlated with obesity rates at the county level,[3] and people who are at or below the poverty level have the highest rates of obesity. From 2017 to March 2020, adults with household incomes below 130% of the federal poverty level had an obesity rate of 43.9%, and adults with household incomes at 130% to 350% of the federal poverty level had an obesity rate of 46.5%.[2] By contrast, 39% of adults with household incomes above 350% of the federal poverty level had obesity.

Although weight and body mass index (BMI) do not always correlate with health outcomes, it is irrefutable that obesity is directly associated with heart disease, stroke, type 2 diabetes and 13 types of cancer.[4,5] These conditions, which are the leading causes of preventable and premature death, cause a serious disease burden and place a huge financial strain on the health care and insurance systems. In a 2018 report, the Milken Institute estimated that chronic diseases caused by obesity and excess weight cost $1.72 trillion annually.[6]

Health care disparities related to obesity disproportionately impact people from racial and ethnic minority groups and people who have been socially disadvantaged. These disparities result from the interaction of social, economic, environmental and cultural factors that include the following:

- Income level
- Educational level
- Health literacy
- Employment opportunities and conditions
- Insurance status and access to health care
- Neighborhood characteristics
- Psychosocial stress level

Varney and Hauck noted, "The prevalence of obesity in the U.S. is a significant public health issue that disproportionately affects minorities, and it is crucial that doctors are trained to understand and address this issue. Research consistently demonstrates that minorities are provided lower standards of care regarding obesity treatment, resulting in poorer health outcomes and exacerbating health disparities. As physicians, we are ethically obligated to provide equal obesity treatment to minorities to address health care disparities and promote equitable access to care."[1]

1.2. The Role of Family Physicians in Obesity Management

Obesity is a chronic, relapsing disease, and family physicians play a crucial role in treating it due to the continuity of their relationships with patients. They are the first point of contact for many people seeking care, and they have a unique opportunity to build long-term relationships with patients and understand their social and cultural contexts. After performing an accurate obesity assessment, they can develop an individual treatment plan based on each patient's health-related goals, abilities, resources and readiness to change. This plan should take a comprehensive, holistic approach that includes dietary changes, physical activity recommendations and behavioral counseling. If lifestyle interventions are ineffective for preventing or treating obesity, it is well within family physicians' scope to prescribe and monitor antiobesity medications (AOMs) or refer the patient for metabolic/bariatric surgery when appropriate.

It is important for family physicians not only to have adequate training and tools to treat obesity but also to clearly recognize risk factors and implement preventive treatment before a patient develops this disease. Doing so requires an understanding of the multifactorial causes of obesity, which include genetics, comorbidities, medications, metabolism, legislative policy, changes in food consumption over the past three decades and social determinants of health. Family physicians should also consider cultural influences on dietary habits, physical activity and health beliefs when assessing risk factors for obesity and implementing preventive measures. In addition, family physicians play a vital role in promoting health equity and improving health outcomes for patients

with overweight and obesity. They are the first point of contact for many people seeking care, and they have a unique opportunity to build long-term relationships with patients and understand their social and cultural contexts.

This practice manual starts with the basics of understanding and diagnosing obesity and then reviews evidence-based treatment options, including lifestyle interventions, AOMs and surgery. It reviews best practices for building an empathetic, compassionate relationship with patients who have overweight and obesity and discusses systemic barriers to obesity care. In addition, it explores how family physicians can extend their collaborative efforts beyond the confines of the clinic by engaging with fellow health care professionals who can provide valuable support.

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2. Understanding Obesity

The Obesity Medicine Association (OMA) defines obesity as a "chronic, relapsing, multi-factorial, neurobehavioral disease, wherein an increase in body fat promotes adipose tissue dysfunction and abnormal fat mass physical forces, resulting in adverse metabolic, biomechanical, and psychosocial health consequences."[1] It is a complex medical condition that results from the interplay of various networks within the human body, including metabolic pathways, hormonal responses and neural signaling systems. These networks contribute to the development and progression of obesity, so it is essential to have a comprehensive understanding of them in order to effectively prevent and treat the condition.

Obesity is typically diagnosed by measuring a person's body mass index (BMI), which is calculated by dividing the weight in kilograms by the height in square meters. For adults, the World Health Organization (WHO) defines obesity as a BMI greater than or equal to 30 kg/m^2,and it is frequently subdivided into three classes[3]:

- **Class I:** BMI of 30 to 34.9 kg/m^2
- **Class II:** BMI of 35 to 39.9 kg/m^2
- **Class III:** BMI of 40 kg/m^2 or greater (sometimes categorized as "severe" obesity)

BMI has traditionally been used as a marker of obesity because it is a simple measurement that is reproducible and easy to administer.[4] However, the OMA cautions that "different BMI cut-off points may be more appropriate based upon gender, race, ethnicity, and menopausal status."[5] In addition, BMI does not differentiate between a person's body fat content and their lean mass.

Obesity can also be defined on the basis of body fat percentage, waist circumference or waist-to-hip ratio. (See *Table 3.2* in Chapter 3. Obesity Assessment and Diagnosis for more information.) It is important to note that people can meet the criteria for obesity based on these other definitions even if their BMI is less than 30 kg/m^2. Therefore, it is essential to consider these alternative definitions of obesity and not rely solely on BMI. Early interventions may be necessary to manage a patient's increased body fat.

2.1. Contributing Factors

Processed Foods

The increasing prevalence of obesity can be attributed to a number of factors, including changes in dietary patterns, genetic predisposition, sedentary lifestyles and environmental influences. An increase in the consumption of high-calorie and ultra-processed foods has been identified as a key contributor. Ultra-processed foods, which are produced by chemically modifying food substances and assembling them into ready-to-consume food products, accounted for nearly 60% of calories consumed in the United States from 2007 to 2012.[6]

Food Apartheid

The term "food apartheid" describes "the racist structures, systems, and institutions that have led to an inadequate, inequitable, and unjust food environment" for communities that have been historically marginalized and disinvested.[7] People experiencing food apartheid who have limited access to affordable healthy food may have a poor diet, which increases their risk of obesity and other health issues. For example, proximity to a supermarket is reported to affect diet quality, body weight and other health outcomes.[8] In addition, one study found that the obesity rate was higher among patrons of low-price supermarkets (27%), who were more likely to have lower education and income levels, than among patrons of high-price supermarkets (9%), who were more likely to have higher education and income levels. It is important to consider how the local food environment (e.g., the existence of food apartheid) impacts patients' health outcomes and recognize the need for interventions that address disparities in access to healthy food options.

Technological Advances

Technological innovations (e.g., the development of the internet and its accessibility on mobile devices) and a shift toward predominantly deskbound jobs have caused a drastic reduction in the level of incidental physical activity across populations.[9] Incidental physical activity refers to spontaneous or unplanned movements that occur during daily activities (e.g., climbing stairs, carrying groceries, doing household chores). These activities are not structured exercise sessions, but they still contribute to overall energy expenditure and can have health benefits.

A sedentary lifestyle has become increasingly linked with enjoyment and fulfillment, as many people find it appealing to relax and unwind by watching movies, playing video games or scrolling through social media.[9] By contrast, exercise is often associated with hard work and sacrifice despite its well-established benefits for physical and mental health. While many people know exercise is important, they may struggle to prioritize it over less active pastimes that offer more immediate pleasure or relaxation. There are established associations between leisure-time internet and computer use and overweight and obesity in adults.[10]

Genetics

Obesity can have genetic roots in people who are genetically susceptible to storing excess fat. Several genes that influence energy expenditure, lipid metabolism, appetite regulation and adipogenesis have been identified. The heritability of obesity is estimated to be around 40% to 70%, indicating that genetic factors play a significant role in the development of obesity.[11]

Epigenetics

Epigenetics refers to a set of mechanisms regulating gene expression without alteration of the DNA sequence. It involves DNA methylation, histone modifications and the microRNA's role in gene expression. Smith et al. stated that "altered DNA methylation patterns can shift the body's weight set point by influencing appetite control by virtue of DNA methylation influencing the expression of genes related to appetite and energy balance."[12] They also note, "While continued research is required to strengthen direct cause-effect relationships, substantial evidence links post-translational modifications such as DNA methylation and histone modifications of several candidate 'obesity' genes to the predilection for obesity. Additional evidence supports the influence of maternal diet during the gestational period, individual diet, and other lifestyle and genetic factors in obesity."[12]

2.2. Obesity-Related Conditions

Obesity is associated with various health consequences that can significantly impact an person's quality of life and health outcomes. It is a chronic disease and a risk factor for other diseases. Obesity increases the risk of type 2 diabetes, cardiovascular diseases, certain types of cancer, musculoskeletal disorders, respiratory problems, mental health issues and premature death, all of which not only impact people's quality of life but also put a significant burden on health care systems.

Insulin Resistance/Diabetes

Excess fat and insulin resistance share a close relationship. Adipose tissue expansion beyond capacity results in ectopic lipid deposition in nonadipose tissues such as skeletal muscle and liver. This ectopic lipid accumulation leads to lipotoxicity, oxidative stress and mitochondrial dysfunction, which are all contributing factors in the development of insulin resistance.[13]

Insulin resistance can also contribute to obesity. When cells become resistant to insulin's actions, glucose uptake is impaired. As a result, more glucose remains in circulation instead of being taken up by cells for energy production. The body compensates by producing more insulin (i.e., hyperinsulinemia) to overcome this resistance. High circulating insulin levels promote fat storage and

inhibit lipolysis (i.e., breakdown of stored fats), thereby promoting weight gain. Insulin resistance is the precursor to type 2 diabetes mellitus.

Cardiovascular Disease/Dysrhythmia

Multiple studies have confirmed obesity as an independent risk factor for cardiovascular disease and dysrhythmia.[14] For example, the Framingham Heart Study, an influential longitudinal study, provided valuable insights into the association of obesity with cardiovascular disease and atrial fibrillation.

According to Csige et al., "Atherosclerotic vascular lesions of patients with higher BMI values are more frequent and advanced compared to subjects with normal body weight."[14] There are many complex mechanisms by which obesity can lead to coronary artery disease (CAD). CAD typically develops as a result of endothelial dysfunction and atherosclerosis secondary to insulin resistance and chronic inflammation, as well as dysregulation of adipokines, which are bioactive molecules secreted by adipose tissue that play a significant role in regulating several physiological processes, including inflammation, metabolism and cardiovascular function. Obesity also leads to other conditions that are risk factors for CAD, such as hypertension, dyslipidemia and insulin resistance.

The risk of hypertension is increased two- to threefold in people with a BMI greater than 26 kg/m^2 compared with those whose BMI is 21 to 22 kg/m^2, and the risk is increased even more in people with a BMI greater than 29 kg/m^2.[15] One mechanism for hypertension is an increase in blood volume secondary to an increase in the body's physiological demands associated with obesity. This puts extra stress on the cardiovascular system. In addition, adipokine dysregulation leads to vasoconstriction, endothelial dysfunction and vascular smooth muscle cell proliferation, resulting in elevated blood pressure.

The increased circulating blood volume that is typical in people with obesity can lead to an increased left ventricular stroke volume, which increases the cardiac output. Ortega et al. noted, "These changes place an extra burden on the heart resulting in ventricular (both left and right) alterations that ultimately lead to ventricular (both left and right) hypertrophy and enlargement, predisposing [people with obesity] to heart failure."[16] The compensatory dilation of the left atrium increases the risk of atrial fibrillation.

Chronic Kidney Disease

Obesity-related factors such as insulin resistance, hypertension, dyslipidemia and inflammation contribute to the pathogenesis of chronic kidney disease (CKD). As an independent risk factor, obesity increases the risk for CKD and its progression to end-stage renal disease. Evidence indicates that obesity with central fat distribution is associated with a greater risk of microalbuminuria and that a high BMI is a risk factor for new-onset kidney disease.[17,18] Writing about obesity in CKD, Stenvinkel et al. stated, "Increased fat mass leads to mesangial expansion and increased renal metabolic demand that may promote glomerular hyperfiltration, glomerular hypertrophy, decreased podocyte density, increased foot processes, and increased filtration fraction (i.e., alterations that promote proteinuria and glomerulosclerosis). These sequences of events stimulate a cascade of growth factors, such as the renin-angiotensin system and TGF-β, that further promote kidney damage."[19]

Nonalcoholic Fatty Liver Disease

Nonalcoholic fatty liver disease (NAFLD) is the most common cause of liver disease worldwide, with an overall global prevalence of 30.1% from 1990 to 2019.[20] It is defined as the presence of 5% or greater hepatic steatosis without other liver disease etiologies.[21] Presentation of the disease ranges from nonalcoholic fatty liver to nonalcoholic steatohepatitis (NASH). NASH is distinguished from NAFLD by the presence of hepatocellular injury with or without fibrosis. The presence and severity of fibrosis predict the likelihood that a patient will progress to cirrhosis and the development of hepatocellular cancer.

Suspicion for NAFLD should be high in patients with persistently elevated alanine transaminase, patients with metabolic disorders and patients with obesity. Writing about NAFLD, Pang et al. stated, "Visceral adipose tissue generates multiple signals that alter lipid and glucose metabolism, which lead to hepatic fat accumulation, and creates a proinflammatory milieu that triggers cellular injury in the liver and other tissues. The inability to quell injurious processes, such as oxidative stress, dysregulation of the unfolded protein response (leading to endoplasmic reticulum stress), lipotoxicity, and apoptotic pathways, contribute to liver damage, progressive fibrosis that can lead to cirrhosis, and the development of hepatocellular cancer in some patients."[22]

Infertility

Explaining the association between infertility and obesity can be challenging due to its multifaceted nature. Obesity can cause male factor infertility via endocrine abnormalities, comorbidities and effects on spermatogenesis. It can increase estrogen and decrease testosterone production, leading to impaired sperm quality and quantity. Obesity is also linked to other comorbidities that can worsen male infertility. In women, obesity can disrupt hormone regulation, leading to irregular menstrual cycles and reduced oocyte quality. Excess adipose tissue aggravates polycystic ovary syndrome and may cause hypothalamic hypogonadism, leading to infertility.

Obstructive Sleep Apnea/Obesity Hypoventilation Syndrome/Asthma

Obesity can affect pulmonary function, exercise capacity and respiratory health. It can lead to a restrictive type of lung disease and is associated with respiratory symptoms and conditions that include dyspnea, sleep apnea and pulmonary embolism. Zammit et al. noted, "[The] buildup of adipose tissue in the anterior abdominal wall and in the intra-abdominal visceral tissue hinders diaphragmatic movement, diminishes basal lung expansion during inspiration, and with the closure of peripheral lung units, causes ventilation-perfusion abnormalities and arterial hypoxemia."[23]

Obstructive sleep apnea (OSA) is a sleep disorder characterized by recurring episodes of complete or partial obstruction of the upper airway during sleep. A person who has obesity, a neck circumference greater than 17 inches, and abnormal craniofacial and upper airway structures may develop a small retropharyngeal space, resulting in repetitive episodes of apnea and hypopnea. However, researchers have found that abdominal circumference is more effective for predicting OSA than neck circumference or BMI.[23]

Obesity hypoventilation syndrome (OHS) is a condition characterized by obesity, daytime hypoxemia and diurnal hypoventilation. Studies have shown that it is present in 31% of patients with severe obesity and 19% of patients with obesity and OSA.[24,25] The only effective treatment is weight loss.

Asthma is more common in patients with overweight and obesity. Excessive body weight, particularly abdominal fat, can lead to reduced functional residual capacity and perpetuate asthma. Patients with obesity who lose weight can see improvements in lung function and asthma symptoms.

Mental Health

Obesity can affect mental well-being, leading to conditions including depression and anxiety. Studies have shown that obesity and depression have a bidirectional association.[26] The stigma attached to obesity may exacerbate mental health challenges. Emotional factors like stress, boredom, depression and anxiety can lead to overeating and emotional eating, further contributing to weight gain. In addition, medications used to treat mental health conditions are commonly linked to weight gain.

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3. Obesity Assessment and Diagnosis

Obesity is a complex disease, and family physicians must develop an individualized evaluation and management plan for each patient. History, physical examination and appropriate laboratory and diagnostic testing are the key elements of a comprehensive obesity assessment.[1] In addition to its medical consequences, excess body weight can affect patients physically, functionally, emotionally and socially. Establishing the complications of obesity during a patient's initial visit can help the physician determine sources of motivation and appropriate weight loss goals.

3.1. History

Asking patients about their nutrition, behavior and medication use is an important first step in formulating individualized weight management plans that are appropriate and effective.

Weight history can be taken using a questionnaire during the initial office visit. It should include the following:

- Socioeconomic status
- Occupation
- Work schedule
- Eating patterns
- Changes in body weight throughout the patient's life, especially changes associated with life factors such as family, marriage, children, work, moving, finances or abuse[1]

Detailed nutritional history should include the following[1]:

- Meal and snack timing, frequency, nutritional content and amount
- Food allergies
- Planning and preparation of food
- Location of food consumption (e.g., workplace, proximity of eating area to TV)
- Family, cultural and community influences

It is common for people with obesity to have a history of excessive intake of ultra-processed food, fast food, sugary drinks, alcoholic beverages, excess carbohydrates and excess fats; frequent snacking; and low intake of healthy proteins, fruits and vegetables. However, it may be difficult to get this information from the patient at the initial visit. Asking open-ended questions (e.g., "What are your worst food habits?") may help clinicians focus on specific areas of difficulty. In addition, asking about a patient's past successes or challenges with certain types of "diets," dietary styles and meal replacement systems can help inform future weight management interventions.

Medical history should include the following:

- Exposure to weight-promoting medications
- Periods of inactivity due to surgery or injury
- Previous use of antiobesity medications and effectiveness or intolerances
- Medication allergies

Behavior history should include the following:

- Triggers (e.g., hunger, cravings, anxiety, boredom, reward)[1]
- Nighttime eating
- Emotional eating
- Readiness for change
- Uncontrolled hunger
- Frequent need for "second helpings"

- Screening for disordered eating that asks about the patient's history of the following:
  - Having portion control issues
  - Skipping meals
  - Binge eating
  - Exhibiting grazing behaviors
  - Eating too fast
  - Eating until uncomfortably full
  - Eating large amounts of food when not hungry
  - Eating alone due to embarrassment over the large amount of food consumed
  - Feeling self-disgust or guilt after a meal
  - Feeling a lack of control over eating
  - Having other perceived barriers to weight loss or a lack of motivation to continue with a "diet"

Baseline physical activity status can be classified as one of the following:

- Inactive: No regular physical activity (e.g., has a sit-down job)
- Light activity: No organized physical activity during leisure time
- Moderate activity: Occasional involvement in planned activities (e.g., weekend golf or jogging)
- Heavy activity: Consistent lifting, stair climbing or heavy construction; participation in jogging, gym activity, swimming, cycling or active sports three times a week
- Vigorous activity: Participation in continuous, extensive physical exercise for at least 60 minutes per session four times a week

Asking a patient about their past successes or challenges with physical activity and exercise can help inform future physical activity goals.

3.2. Physical Examination

The components of a physical examination to assess and classify overweight and obesity are biometrics, vital signs, and examination and laboratory testing to evaluate comorbid conditions while ruling out potential genetic and hormonal conditions.

The physical examination should include the following biometrics and vital signs:

- Height
- Weight
- Blood pressure
- Pulse
- Waist circumference
- Hip circumference
- Body composition analysis: Body composition can be assessed with a dual-energy x-ray absorptiometry (DEXA) scan, but this technology is not readily available in the outpatient setting. Weight management centers commonly use a body composition scale that utilizes bioelectric impedance to estimate body fat percentage and skeletal muscle mass. Measurement with skinfold calipers is another option for assessing a patient's body fat percentage.

In addition to these elements, the physical examination should include special emphasis on examining the patient's nose, throat, neck, lungs, heart, abdomen, body shape, neuromusculoskeletal system and integumentary system (*Table 3.1*).

Table 3.1. Diagnostic Clues in Physical Examination to Assess Overweight and Obesity

Feature	Finding	Possible Feature of:
Body shape	Waist >Hip	Abdominal adiposity Metabolic syndrome Insulin resistance
Eyes, Face	Facial rounding Papilledema	Cushing syndrome
	Periorbital edema Lateral thinning of eyebrows	Hypothyroidism
Teeth	Swollen parotid glands Teeth erosion	Bulimia
Skin	Acanthosis nigricans Acne Hirsutism Skin tags	Insulin resistance PCOS
	Xanthelasmas	Hyperlipidemia
Legs	Edema	CHF Hepatic pathology Renal pathology
	Varicose vein	Venous stasis
Joints	Deformity Redness Swelling Tenderness	Arthritis Gout
Neck	Men: Circumference >17 in Women: Circumference >16 in	Elevated risk for OSA

CHF = chronic heart failure; OSA = obstructive sleep apnea; PCOS = polycystic ovary syndrome.

Clinicians can use a number of different criteria to assess and classify overweight and obesity (*Table 3.2*). Body mass index (BMI) has traditionally been used as a marker of obesity. However, BMI may not be a reliable measure of obesity for individual patients. As previously noted, the Obesity Medicine Association cautions that "different BMI cut-off points may be more appropriate based upon gender, race, ethnicity, and menopausal status."[1] For example, a BMI greater than 23 kg/m^2 may indicate overweight or obesity in an Asian adult.

Table 3.2. Criteria of Overweight and Obesity

	Normal	Overweight	Obesity
BMI	18.5 to 24.9 kg/m^2	25 to 29.9 kg/m^2	≥30 kg/m^2 Class I: 30 to 34.9 kg/m^2 Class II: 35 to 39.9 kg/m^2 Class III: ≥40 kg/m^2
BMI in Asian adult	<23 kg/m^2	≥23 kg/m^2	
Percent body fat	Men: <25% Women: <32%		Men: ≥25% Women: ≥32%
Waist circumference	Men: <40 in (102 cm) Women: <35 in (88 cm)		Men: ≥40 in (102 cm) Women: ≥35 in (88 cm)
Waist circumference in Asian adult	Men: <35.4 in (90 cm) Women: <31.4 in (80 cm)		Men: ≥35.4 in (90 cm) Women: ≥31.4 in (80 cm)
Waist-to-hip ratio			Men: >0.9 Women: >0.85
EOSS		Stage 0,1,2,3,4	Stage 0,1,2,3,4

BMI = body mass index; EOSS = Edmonton Obesity Staging System.

Information from references 1 and 2.

3.3. Identification of Coexisting Conditions

Routine laboratory studies for people with overweight or obesity focus on the identification and assessment of coexisting conditions and complications (*Table 3.3*).

In addition to the routine tests listed in *Table 3.3*, family physicians may order other tests that are appropriate for patients who have specific conditions or indications for testing (*Table 3.4*).

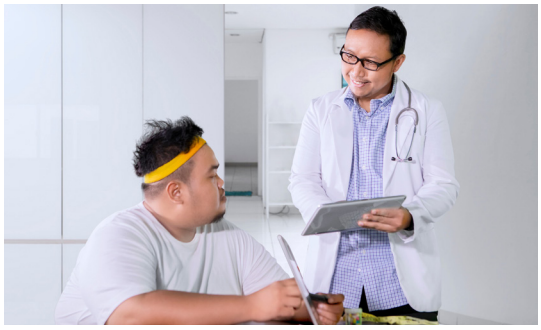

Table 3.3. Routine Tests for People With Overweight or Obesity

Test	Condition — Rule In or Rule Out
Comprehensive metabolic panel:	
– Fasting blood glucose – Hepatic panel – Renal panel*	Fasting blood glucose elevation Fatty liver disease Renal disease
A1C	Prediabetes Diabetes
Lipids (TC, TG, HDL, LDL)	Elevated TG Hyperlipidemia Low HDL Metabolic syndrome
TSH	Hypothyroidism
Vitamin D	Vitamin D deficiency
Complete blood count	Anemia

HDL = high-density lipoprotein; LDL = low-density lipoprotein; TC = total cholesterol; TG = triglycerides; TSH = thyroid-stimulating hormone.

**A renal panel is useful for calculating a safe amount of protein intake for a patient with overweight or obesity.*

Information from reference 1.

Table 3.4. Individualized Tests for People With Overweight or Obesity

Indication for Testing	Test	Condition – Rule In or Rule Out	Notes
Acanthosis nigricans	HOMA-IR score Insulin level	Insulin resistance	Patients with an elevated insulin resistance score may benefit from carbohydrate restriction and use of metformin.
Diabetes treated with insulin	C-peptide	Beta cell dysfunction Insulinoma	
Signs/symptoms of type 1 diabetes	GAD65 antibody Insulin antibody	Type 1 diabetes	
Signs/symptoms of leptin resistance	Leptin	Leptin resistance	Leptin resistance can affect appetite and energy metabolism.
Diabetes Hypertension Renal complication	Microalbumin Urinalysis	Proteinuria	
History of gout	Uric acid	Gout	
History of malabsorptive bariatric surgery	Copper Folate Iron studies Thiamine (vitamin B1) Vitamin B12 Vitamin D Zinc		These tests should be performed annually.
Menstrual irregularities (amenorrhea, oligomenorrhea) PCOS	DHEAS Estradiol FSH Pregnancy test Prolactin Testosterone		
Signs/symptoms of androgen deficiency	FSH LH Testosterone	Androgen deficiency	
High cardiovascular risk*	Apolipoprotein B hs-CRP LDL direct		
Signs/symptoms of Cushing syndrome†	Dexamethasone suppression test	Cushing syndrome	
High score on STOP-Bang questionnaire	Sleep study	OSA	

DHEAS = dehydroepiandrosterone sulfate; FSH = follicle-stimulating hormone; GAD65 = glutamic acid decarboxylase 65; HOMA-IR = homeostatic model assessment for insulin resistance; hs-CRP = high-sensitivity C-reactive protein; LDL = low-density lipoprotein; LH = luteinizing hormone; OSA = obstructive sleep apnea; PCOS = polycystic ovary syndrome.

** Cardiovascular risk can be calculated initially using the Framingham Risk Calculator. Comparing an annual Framingham Risk Score to a patient's initial score may show the benefit of weight loss.*

†Signs/symptoms of Cushing syndrome include thin arms and legs, round face, increased fat around the base of the neck, a fatty hump between the shoulders, elevated blood pressure, easy bruising, and wide purple stretch marks that are mainly on the abdomen, breasts, hips and under the arms.[3]

Information from references 1 and 4.

3.4. Obesity Severity Staging

Following the patient history, physical examination and appropriate routine and individualized testing, initial clinical staging may be useful in guiding treatment priorities and establishing a goal to reverse the stage of obesity. Family physicians can assess the severity of obesity using the Edmonton Obesity Staging System (EOSS).[5] It classifies comorbidities of obesity based on their impact on a patient's medical, mental and functional health and rates them as absent, mild, moderate, severe or end-stage.[6] The following is an example of using the EEOS to classify obesity-related medical comorbidities.

Stage 0:	Absent = Normal blood glucose (no clinical risk factor)
Stage 1:	Mild = Impaired fasting glucose (preclinical risk factor)
Stage 2:	Moderate = Type 2 diabetes (established disease)
Stage 3:	Severe = Microvascular/macrovascular disease
Stage 4:	End-stage = Blindness, end-stage renal disease

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4. Evidence-Based Lifestyle Interventions

4.1. Behavioral Therapy and Counseling

Eating behaviors are modulated by brain and gut neurotransmitters, especially dopamine, serotonin and gut hormones, that can override individual willpower. Successful weight management begins with positive behavioral changes and proceeds with appropriate nutrition, physical activity and medication strategies. The most commonly used approaches to behavioral modification for obesity management are stages of change, the 5 A's model, motivational interviewing and cognitive behavioral therapy.[1]

Stages of Change

Clinicians using the stages of change approach to behavioral modification emphasize different processes in each stage (*Table 4.1*). The goal is to support and motivate patients with obesity so they can make and maintain changes. It is important not to assume all patients are in the action stage. For example, a patient with obesity who is in the precontemplation stage may become defensive when asked about their weight. They need to be treated with respect so that they do not lose motivation. In addition, patients may move between stages from one office visit to the next. Realistic goals should be set for each patient based on their actual stage of change.

Table 4.1. Stages of Change

Stage	Process of Change
Precontemplation – Not ready to change or unaware of the problem	Consciousness raising
Contemplation – Thinking of change in the next 6 months but not yet ready to change	Self-reevaluation Resolution of ambivalence
Preparation – Ready to change and making a plan to change now	Problem-solving Social support
Action – Implementation of change to achieve goal	Reinforcement Self-efficacy support
Maintenance – Continuation of favorable behavior	Stimulus control Continued reinforcement Relapse prevention
Relapse – Restart unfavorable behavior	Reengagement Development of coping skills

Information from reference 2.

The 5 A's Framework

The 5 A's framework was created by the Department of Health and Human Services (HHS) as an approach to behavioral counseling for smoking cessation. Over the years, it has been adapted to various conditions. The U.S. Preventive Services Task Force recommended a modified 5 A's framework to help patients with obesity-related behavioral changes (*Table 4.2*).[3]

Table 4.2. The 5 A's of Obesity Management

Component	Description	Clinical Example
Assess/Ask	Ask for permission to discuss weight	"Could we talk about your weight?" "Do you have any concerns about your weight today?"
	Explore readiness to make changes	"Is your weight something you're ready to take action on or have time to commit to right now?"
	Assess metabolic risk factors, waist-to-hip ratio, BMI, body composition, weight trends and obesity stage	– Review current, past and family medical history to identify metabolic risk factors associated with obesity – Review current medication list to identify weight-promoting medications – Review sleep patterns and psychosocial elements
Advise	– Advise about the health risks of obesity – Discuss the health benefits of 5%-10% weight loss – Review comprehensive treatment options	"Although a heavier weight is not always correlated with poor health, we can see here that your blood sugar is rising. That puts you at a high risk for developing type 2 diabetes, which can lead to heart disease and kidney disease. Research has consistently shown that even a 5% weight loss — which would be [X amount] of weight for you — can dramatically decrease your risk of developing type 2 diabetes. There are many treatment options that we can discuss if you'd like to. They include making dietary changes and adding more movement into your day, if that would be safe, as well as working on getting 7 hours of sleep or more per night. Medicine may even be an option."
Agree	Agree on what intervention the patient would like to start with and set realistic, attainable short- and long-term goals	"Since you're currently working 2 jobs that take up a lot of your time, do you think that you could walk for 5 minutes during your 20-minute breaks?" "Could you set an alarm on your phone that reminds you to start getting ready for bed 30 minutes earlier than you usually go to bed?"
Assist	- Assist in identifying and addressing barriers that make weight management challenging - Provide resources - Assist in finding and consulting with appropriate health care professionals	"I know gym memberships are expensive, but here is a list of community gyms and programs that are based on a sliding scale fee schedule."
Arrange	Set follow-up appointment within 1-3 months to review progress	"Let's follow up in 6 weeks to see how you are doing on this. I know it can be hard to stick to a program, so I want you to know that I'm here for you to support and cheer you on."

BMI = body mass index.

Information from references 1 and 3.

This framework is intended to be the minimal behavioral counseling intervention for obesity and does not represent a comprehensive treatment plan.

The Centers for Medicare & Medicaid Services requires documentation of the 5 A's to bill for behavioral counseling related to obesity.[4]

It is worth noting that the first "A" is Assess/Ask, which involves asking a patient for permission to discuss their weight. It also involves assessing the patient's perception of the problem and their readiness to change. This is a useful approach because there is no point in spending time discussing a behavioral change if the patient is not ready to implement it.

Motivational Interviewing

Motivational interviewing (MI) is a collaborative conversation style in which the family physician functions as an explorer of their patient's motivation rather than as a motivator. It can be used to investigate and strengthen the patient's own motivation and commitment to change. There are four processes in MI: engaging, focusing, evoking and planning.

- **ENGAGING** involves establishing a trusting, respectful relationship with the patient and expressing empathy. A good start for patient engagement is to acknowledge that weight loss is not an easy task and show support for the patient's journey. Instead of directing the patient what to do, the clinician functions as a partner or coach.
- **FOCUSING** involves setting clear objectives and goals with the patient during office visits so that they are on board with the obesity management plan.
- **EVOKING** is a key component of MI that involves identifying the patient's motivation for change through open-ended questions (e.g., "What do you hope to accomplish today? What are your challenges for weight loss?"), affirmations that reinforce past successes and reflections that move the discussion forward in a positive direction (e.g., "It sounds like you are ready to get started."). Evoking also involves listening for "change talk" and "sustain talk."
  - **Change talk** describes things a patient says that favor movement in the direction of positive change, such as "I know I will feel better if I lose weight" or "I know my blood pressure, blood sugar level and knee pain will be better if I lose weight." Physicians should encourage change talk.
  - **Sustain talk** describes things a patient says that reinforce the status quo and an inability to change, such as "Every time I lose weight, I gain back more" or "Losing weight is going to be too difficult. I have never been successful." Physicians should try to minimize sustain talk.
- **PLANNING** involves developing SMART (specific, measurable, achievable, relevant and timed) goals that the patient agrees with and is willing to work toward.

Cognitive Behavioral Therapy

The core concept of cognitive behavioral therapy (CBT) is that thoughts, emotions and behaviors are interconnected in a cyclical fashion. Thoughts can lead to emotional responses, which in turn affect behaviors. CBT involves eliciting positive reinforcement in a situation instead of negative reinforcement and employs techniques including reframing, rehearsing/role-playing and utilizing alternative choices.

Components of CBT for Obesity Management

- Self-monitoring: check weight regularly, keep daily records of food intake and physical activity
- Stimulus control: avoid/reduce triggers that prompt eating
- Problem-solving: define the problem, brainstorm solutions, implement strategies
- Goal-setting: keep it simple to avoid feeling overwhelmed
- Contingency management: reward positive behavior
- Social support: recruit family, friends and coworkers to help sustain lifestyle changes
- Relapse prevention: expect setbacks, be prepared, view as temporary
- Stress management: minimize the negative impact of stress through physical activity, yoga, breathing exercises, relaxation apps, counseling, etc.

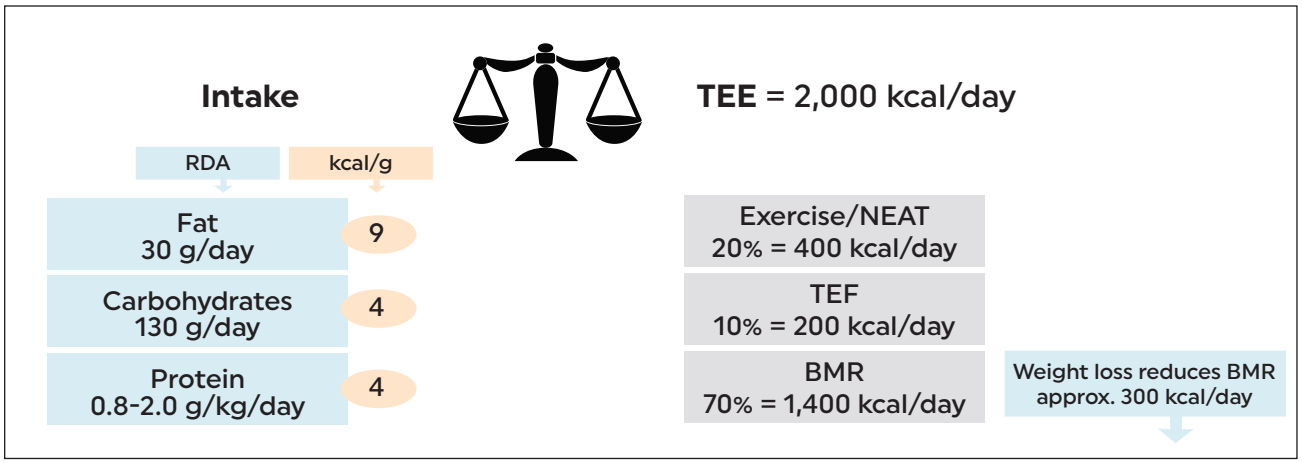
4.2. Nutritional Therapy and Physical Activity

The fundamentals of energy metabolism deal with energy intake and expenditure. A person's intake of macronutrients (protein, carbohydrates and fat) adds up to their total calorie intake. Total calorie expenditure can be divided into the following components:

- **Basal metabolic rate** (BMR) accounts for approximately 70% of total calorie expenditure. BMR is the number of calories burned for normal bodily functions. It is regulated by the brain and is usually affected by multiple factors. When a patient loses weight, the body goes into metabolic adaptation and reduces its BMR, which will affect the patient's efforts to create a sustained energy deficit.
- **Thermic effect of food** (TEF) accounts for approximately 10% of total calorie expenditure. TEF is the number of calories burned to digest, absorb and store nutrients from food. Protein has a higher thermic effect than fat and carbohydrates, so protein intake increases energy expenditure.
- **Exercise and nonexercise activity thermogenesis** (NEAT) account for approximately 20% of total calorie expenditure. Increasing exercise/NEAT creates a sustainable energy deficit.

Figure 4.1 shows an example of calorie intake and expenditure for a person with a total energy expenditure (TEE) of 2,000 kcal/day. However, it is important to note that TEE varies widely from patient to patient.

Figure 4.1. Energy Balance



BMR = basal metabolic rate; NEAT = nonexercise activity thermogenesis; RDA = recommended dietary allowance; TEE = total energy expenditure; TEF = thermic effect of food.

Information from reference 1.

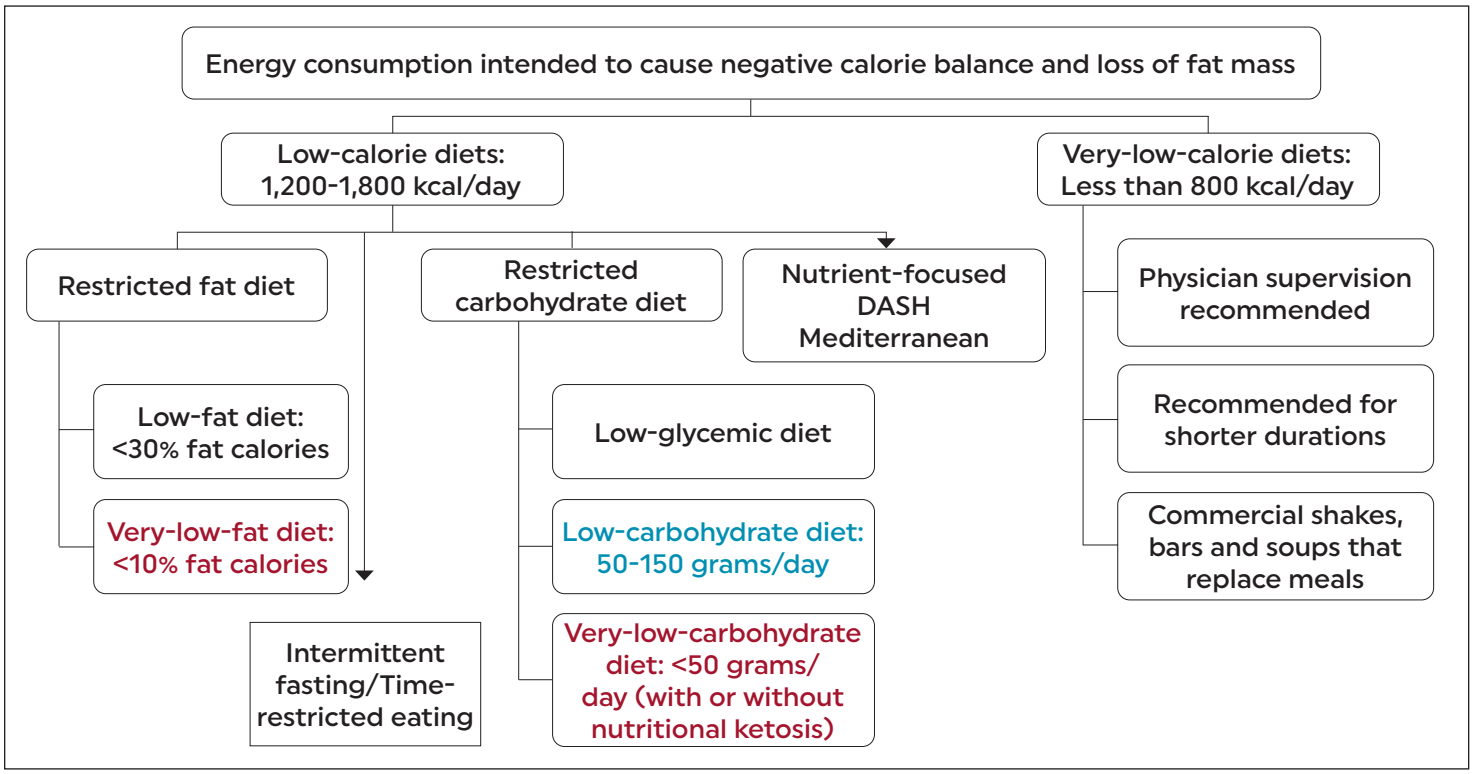
According to traditional thinking, energy balance is a function of "energy in" versus "energy out," and the difference between calorie intake and expenditure determines the amount of fat mass. However, this concept is flawed because it does not account for the metabolic rate and hormonal influences that also affect energy balance and weight. An alternative view is the carbohydrate-insulin model, which posits that energy storage is controlled by hormonal signals that regulate fat synthesis (lipogenesis) versus fat burning (lipolysis).

Lifestyle interventions to optimize weight loss and improve overall health parameters include nutrition, physical activity and behavioral modification. Patients can create an energy deficit through nutrition alone, through nutrition with physical activity, or through a combination of nutrition, physical activity and medication use. The family physician's goal is to individualize a plan that uses available interventions to optimize weight management for each patient.

Nutrition

Nutrition plays a pivotal role in successful weight management. The goal of nutritional therapy is to create a negative calorie balance to achieve fat loss (*Figure 4.2*).[1] Eating a nutrient-focused diet, fasting, and restricting the consumption of calories, fats and carbohydrates can create an energy deficit. People who have a daily 500-calorie deficit may lose up to one pound per week on average. Based on a patient's history and lifestyle, clinicians can recommend either a low-calorie diet of 1,200 to 1,800 kcal/day or a very-low-calorie diet of less than 800 kcal/day.

Figure 4.2. Nutritional Therapy



DASH = Dietary Approaches to Stop Hypertension.
Reprinted with permission from Tondt J, Freshwater M, Christensen S, Iliakova M, Weaver E, Benson-Davies S, Younglove C, Afreen S, Karjoo S, Khan N, Thiara D, Whittle C. Obesity Algorithm eBook, presented by the Obesity Medicine Association. 2023. www.obesityalgorithm.org

A **LOW-CALORIE DIET** (LCD) can use the patient's own food, packaged meals or meal replacements. Examples of LCDs include commercial programs such as Weight Watchers, Nutrisystem, Jenny Craig and the Therapeutic Lifestyle Changes (TLC) diet. Portion control is a crucial element of this type of diet. Patients often benefit from clinician supervision to start these programs safely. One benefit of LCDs is that they provide many food choices without any restriction of mealtime. A drawback of LCDs is that they may result in increased hunger.

A **VERY-LOW-CALORIE DIET** (VLCD) is a medically supervised program that uses commercially prepared food products (e.g., bars, soups, shakes). These meal replacements usually meet standard nutritional needs for most patients, but vitamin and mineral supplementation is essential. The daily protein intake goal is 1.2 to 1.5 grams per kilogram of ideal body weight. A VLCD is low in both carbohydrates and fats and usually produces more weight loss than a standard carbohydrate- or fat-restricted dietary plan. A patient on a VLCD will go into nutritional ketosis and start burning fat.

People with obesity who need to lose weight within a short period of time (e.g., before a surgical procedure) may benefit from a VLCD. Clinician supervision is essential to minimize the risks of rapid weight loss and side effects that may include fatigue, nausea, diarrhea, hair loss, brittle nails, cold intolerance, dysmenorrhea, gallstones, kidney stones and gout. Insufficient mineral intake may predispose patients to palpitations, cardiac arrythmias, muscle cramps, tooth decay and increased risk of osteoporosis.

Another option is a **LOW-FAT DIET**, such as the American Heart Association Diet or the Ornish Diet. This type of diet may reduce low-density lipoprotein cholesterol. Patients on a low-fat diet need to be cautious about consuming processed carbohydrates and sugary foods because doing so will diminish the diet's metabolic health benefits. Data indicate that there is no significant difference in weight loss produced by low-fat diets and low-carbohydrate diets at 12 months.[5]

CARBOHYDRATE-RESTRICTED DIETARY OPTIONS include the low-glycemic index diet, low-carbohydrate diet and very-low-carbohydrate diet. Ketogenic diets (e.g., the Atkins diet, the keto diet) restrict a person's carbohydrate intake to no more than 20 grams per day to produce nutritional ketosis. Initially, the body depletes its glycogen supply, loses water and slowly starts burning fat as fuel. The paleo diet is a way of eating based on the presumed dietary pattern in the Paleolithic period. It excludes grains, legumes, dairy and ultra-processed foods. For weight management, people need to add calorie restriction to this diet. Low-carbohydrate diets usually cause fewer cravings than other dietary interventions. However, patients may experience headache, fatigue, constipation, carbohydrate craving and gout flares in the first few days and hair loss in the long term.

NUTRIENT-FOCUSED DIETS involve eating specific foods without restricting calorie or macronutrient intake. The Dietary Approaches to Stop Hypertension (DASH) diet and the Mediterranean diet are in this category. The DASH diet consists of low sugar, salt, alcohol and saturated fat; a moderate level of total fat; and an elevated level of monounsaturated fats, with added minerals and antioxidants that may lower blood pressure. The Mediterranean diet consists of whole grains, fruits, vegetables, beans and lentils, seafood and healthy fats such as olive oil and nuts. It also includes a moderate amount of chicken, turkey, eggs and fermented dairy (e.g., yogurt) while limiting red meat, sweets and processed foods. The DASH diet and the Mediterranean diet are both healthy options for people who have hypertension and cardiovascular conditions. However, people with obesity need to add calorie deficit to these diets to optimize weight loss.

VEGETARIAN AND SEMI-VEGETARIAN DIETS include the following:

- Vegan: No animal products or by-products
- Lacto: No animal products except dairy products
- Ovo: No animal products except eggs
- Lacto-ovo: No animal products except dairy products and eggs
- Pescatarian: No animal products except fish/seafood, dairy products and eggs
- Pollotarian: Meat consumption restricted to poultry only
- Flexitarian: Plant-based diet with an occasional wmeat item

These diets support metabolic health. To optimize weight loss with a vegetarian or semi-vegetarian diet, people with obesity need to create a deficit by lowering carbohydrates and calories.

INTERMITTENT FASTING/TIME-RESTRICTED EATING is a dietary approach that limits calorie consumption to prescribed periods of time during the day. This eating pattern creates energy deficits over time and helps improve metabolic health. Intermittent fasting can follow a daily fasting-to-feeding ratio of 16:8 hours, 18:6 hours or 20:4 hours. Alternate-day fasting is a form of intermittent fasting that involves alternating between a day restricted to a 500-calorie diet and a day of ad libitum eating. It is important for clinicians to be aware that patients with eating disorders may have adverse effects from this type of eating plan.

MEAL REPLACEMENTS are portion- and calorie-controlled nutritional supplements that can be used in place of three meals per day or as substitutes for one or two meals per day. They could be an added option with any other dietary approach. Low-calorie meal replacement results in greater weight loss for participants than isocaloric conventional food.[6] During the weight maintenance phase, meal replacement improves weight management compared to traditional dietary plans.[7]

Patients may be looking for the "best diet" for weight management. Family physicians can help their patients understand that the best diet for an individual patient is one that they can follow to create an energy deficit over the long term. In a study that compared the Atkins, Ornish, Zone and Weight Watchers diets, researchers found that all of these dietary plans modestly reduced participants' body weight and cardiovascular risk factors after one year, and

they noted that "increased adherence was associated with greater weight loss and cardiac risk factor reductions for each diet group."[8]

No dietary plan is permanent. Nutritional therapy will evolve according to the patient's metabolism and preferences. For example, one patient might start with a low-carbohydrate, adequate protein diet for a few months and then switch to a portion-controlled, low-calorie diet. Another patient might start off with meal replacement and later switch to intermittent fasting to optimize their energy deficit.

Physical Activity

Patients are often confused about the role of physical activity/exercise in weight management. It may be helpful for family physicians to start discussions of this topic by defining physical activity, physical fitness and exercise.

- **Physical activity:** Any bodily movement produced by the skeletal muscles that increases energy expenditure beyond resting metabolic rate[9]
- **Physical fitness:** A component of physical activity that relates to the performance of the heart, lungs and muscles. Cardiopulmonary capacity is measured in maximal oxygen consumption, or V02 max.
- **Exercise:** Planned, structured, repetitive physical activity undertaken to improve or maintain physical fitness[9]

The components of physical activity are cardio, strength, flexibility, balance and nonexercise activity thermogenesis. NEAT is the energy expended for movements other than sleeping, eating or structured exercise.[10] Examples include fidgeting, standing, climbing stairs, walking the dog, pacing, cleaning the house and working in a factory. Writing about NEAT in obesity management, Villablanca et al. stated, "These additive activities are associated with energy expenditure beyond the basal metabolic activity and account for significant thermogenesis and energy consumption."[11]

Clinicians should start with a baseline evaluation of a patient's physical activity intensity in units of metabolic equivalent of task (MET). One MET equals the amount of energy a person expends by sitting quietly.[12] Physical activities fall into one of three basic categories[12]:

- **Light physical activity (less than 3.0 METs)**: Examples include short bouts of activity, walking slowly, sitting at a desk, standing to cook, washing dishes, fishing and playing a musical instrument.
- **Moderate physical activity (3.0 to 6.0 METs)**: Examples include walking at a moderate pace (i.e., less than 4 mph), washing windows, vacuuming, mopping, mowing the lawn with a power mower, bicycling at 10 to 12 mph, playing badminton or doubles tennis, swimming, dancing and gardening.
- **Vigorous physical activity (greater than 6.0 METs)**: Examples include fast walking, bicycling (14 to 16 mph), jogging at 6 mph, shoveling, carrying a heavy load, swimming, doing a vigorous aerobic dance, and playing basketball, soccer or singles tennis.

A physical activity prescription for a patient with obesity must take their mobility status into account.

- **Unable to walk:** Seated exercise program, arm exercise, swimming, aquatic exercise, gravity-mediated exercise; physical therapy evaluation; assessment of special equipment needs
- **Limited mobility/able to walk:** Walking, swimming, aquatic exercise; physical therapy; assessment of special equipment needs
- **No substantial limitations to mobility:** Exercise/physical activity prescription; assessment of special equipment needs

Case Study: Using the FITTE Framework

Clinicians can use FITTE — frequency, intensity, time, type and enjoyment — as a framework to individualize physical activity plans for patients who have obesity. For example, consider a patient who is a 48-year-old man with class III obesity, metabolic syndrome and knee degenerative joint disease. He was an athlete throughout high school and college. Currently, he works as a sales manager and travels frequently for his job. During his spare time, he enjoys watching TV and walking his dog. Although he has exercise equipment in his basement, he is not able to do any strenuous exercise due to chronic knee pain. In addition, he feels tired at the end of the day and is not ready to start a structured exercise program. *Table 4.3* shows physical activity prescriptions for this patient that use the FITTE framework.

Table 4.3. Physical Activity Prescriptions That Use the FITTE Framework

FITTE Element	Initial Visit Prescription	Subsequent Visit Prescription
Frequency (number of days per week)	2 times per week	3 to 5 times per week
Intensity (low, moderate, vigorous)	As tolerated	Low to moderate
Time (time of day, duration)	20 minutes per day	– For general health: 30 minutes per day, 5 times per week – For weight loss: 300 minutes per week
Type (walking, biking, etc.)	Walking	Stationary bike, treadmill, weights
Enjoyment (ways to make it fun by involving partner, music, pets, nature, etc.)	Walking the dog	Watching TV while exercising

Table 4.4 shows the expected weight loss associated with different types of exercise. Aerobic exercise alone is not as effective for weight loss as calorie restriction with aerobic exercise.[13]

Table 4.4. Expected Weight Loss by Exercise Type

Exercise Type	Expected Weight Loss
Aerobic exercise only	0-2 kg
Resistance training only	No weight loss
Aerobic exercise and resistance training	0-2 kg
Calorie restriction and aerobic exercise	9-13 kg
Aerobic Physical Activity per Week	**Expected Weight Loss**
<150 minutes	No or minimal weight loss
150-224 minutes	2-3 kg
225-420 minutes	5-7.5 kg
200-300 minutes	Weight maintenance after weight loss

Information from references 13 and 14.

The 2018 *Physical Activity Guidelines for Americans* state the following recommendation from HHS: "For substantial health benefits, adults should do at least 150 minutes (2 hours and 30 minutes) to 300 minutes (5 hours) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) to 150 minutes (2 hours and 30 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. Preferably, aerobic activity should be spread throughout the week."[15] Evidence indicates that engaging in aerobic physical activity for 150 to 224 minutes per week can result in approximately 2 to 3 kg of weight loss (*Table 4.4*).[14]

For many people with obesity, the HHS-recommended level of exercise may not be achievable. NEAT may be an option to create an energy deficit for patients who are unable or unwilling to exercise. It can increase energy expenditure by as much as 2,000 calories per day. Increasing NEAT can also improve fat loss, overall health and mood. Ultimately, the goal is to determine a patient's baseline physical activity level and then increase their NEAT and MET levels as tolerated. Their physical activity goal should be individualized and realistic based on their abilities and comorbid conditions.

Patients often associate the benefits of exercise primarily with weight loss, so it may be helpful for their family physician to explain that physical activity also has benefits independent of weight loss that include the following:

- Improves physical function, cardiovascular function, metabolic health and immune function
- Reduces inflammation
- Improves cognitive and executive function
- Provides stress reduction
- Promotes musculoskeletal health
- Improves blood glucose regulation
- Lowers blood pressure
- Improves lipid status
- Increases high-density lipoprotein
- Decreases anxiety and depression
- Lowers the risk of some cancers and all-cause mortality
- Improves sexual function

Setting Realistic Goals

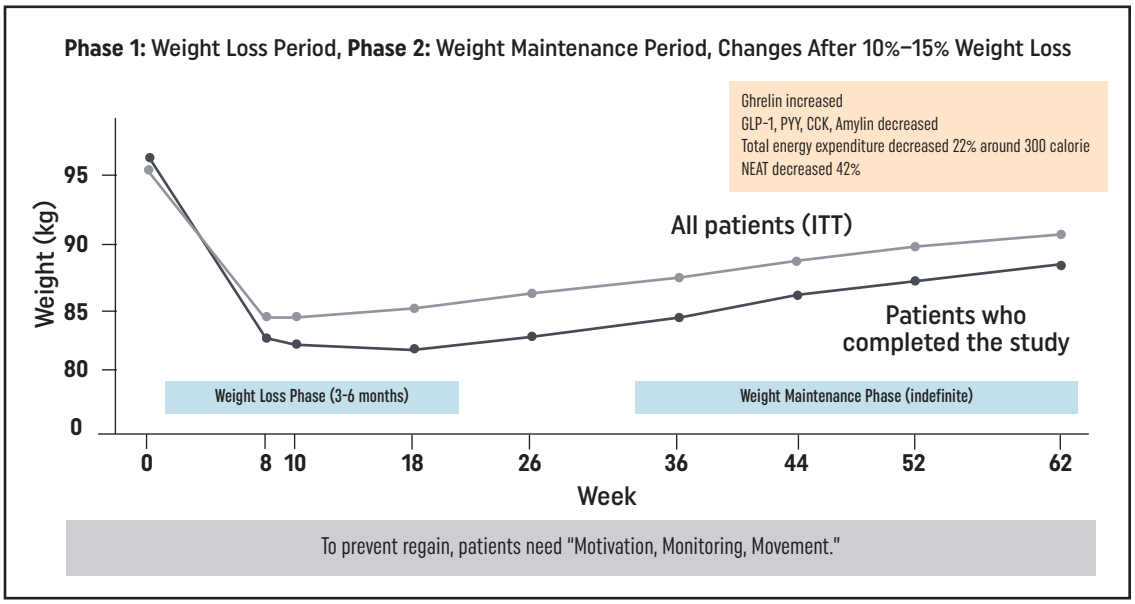
The reason a patient wants to lose weight can be an important factor in their motivation and success. They may want to be healthier, feel better, become more active, have more energy, experience a perceived better lifestyle, live longer, reduce cardiovascular risk, reduce their medication use, prevent or reverse diabetes, or reduce the risk of cancer or dementia. People may want to lose weight before a life event (e.g., wedding, reunion, anniversary, start of a new year) or after a pregnancy. Some patients may need to lose weight before a planned surgical procedure. For example, a patient with severe degenerative joint disease of the knee may be required to have a body mass index (BMI) less than 40 kg/m^2 to reduce the risks associated with surgery. If patients have unrealistic, extreme weight loss goals, clinicians should provide obesity education and work with them to formulate specific, achievable, evidence-based weight loss goals. Setting a goal for 5% to 10% weight loss in a three- to six-month period might be a good starting point. This amount of weight loss helps to improve the metabolic profile and prevent diabetes.[16,17]

Like other chronic diseases, obesity requires routine follow-up to revisit and adjust the patient's treatment plan. For patients who achieve their weight loss goal in the first three to six months, clinicians can shift the treatment plan's focus to preventing weight regain, with follow-up appointments after three, six, nine and 12 months, as needed. The accountability provided by scheduled office visits can help motivate patients to keep working to accomplish their goal. Patients who want to set a new goal to lose additional weight after the initial three to six months may require adjustment of their energy-deficit diet, physical activity prescription and/or medication.

Addressing Plateaus and Setbacks

Figure 4.3 shows the two phases of obesity treatment. The weight loss phase typically lasts for approximately three to six months. The weight maintenance phase continues indefinitely. Patients who reach a weight loss plateau or experience setbacks may benefit from education about metabolic adaptations that happen after the weight loss phase. For example, increases in levels of ghrelin (hunger hormone) and decreases in levels of glucagon-like peptide-1, peptide YY, cholecystokinin and amylin (satiety hormones) can increase appetite.[18] Metabolic adaptations in the weight maintenance phase lead to a reduction of energy expenditure and NEAT.[19]

Figure 4.3. Phases of Obesity Treatment



CCK = cholecystokinin; GLP-1 = glucagon-like peptide-1; ITT = intention to treat; NEAT = nonexercise activity thermogenesis; PYY = peptide YY.

Adapted with permission from Sumithran P, Prendergast LA, Delbridge E, et al. Long-term persistence of hormonal adaptations to weight loss. *N Engl J Med.* 2011;365(17):1597-1604.

To compensate for metabolic adaptation, maintaining weight loss may require disciplined self-monitoring, appetite control with nutritional and behavioral modification, medication and increased physical activity/exercise. Rather than focusing solely on body weight during the weight maintenance phase, family physicians may want to help their patient set an achievable goal with a different focus, such as improving physical fitness level, increasing frequency of physical activity/exercise, increasing fat-free mass, reducing fat mass, or improving biometrics, metabolic test results and overall health.

Evidence for the Effectiveness of Lifestyle Interventions

Diabetes Prevention Program (DPP)

- The DPP study involved more than 3,200 participants from diverse ethnicities and backgrounds at 27 centers in the United States.[17]
- All participants had a goal to lose 7% of initial body weight and a goal to participate in at least 150 minutes of moderate physical activity (e.g., brisk walking) per week.
- The study intervention was "designed to be intensive and included features such as individual case management, frequent contact over the entire trial, a structured 16-session initial core curriculum and more individualized maintenance programming, and a 'toolbox' of strategies for dealing with nonadherent participants."[17]
- After 24 weeks, 50% of participants in the lifestyle intervention group had achieved weight loss of 7% or greater.[20] The DPP lifestyle interventions also decreased the incidence of type 2 diabetes in adults at high risk by 58%.

Look AHEAD (Action for Health in Diabetes)

- Look AHEAD was an eight-year study of an intensive lifestyle intervention for weight management. It had 5,145 participants who had overweight/obesity and type 2 diabetes.[21]
- The goal was a study-wide weight loss of 7% or greater and individual weight loss of 10% or greater followed by prevention of weight regain. The physical activity goal was at least 175 minutes of moderate physical activity per week.
- Lifestyle interventions included structured, portion-controlled meal plans and meal replacements, regular individual and group treatment sessions, increased lifestyle and physical activities, and a toolbox of weight loss strategies.
- Key findings from this study indicate that behavior modifications did work. Self-monitoring and awareness were keys to success. Individual and group sessions were effective in addressing lapses and relapses. Participants were able to reverse small weight regains and developed skills for maintaining long-term weight loss.
- Participants in the intensive lifestyle intervention group lost 4.7% of initial body weight after eight years, with 50% losing 5% or more and 27% losing 10% or more.

National Weight Control Registry (NWCR)

- The NWCR tracks more than 10,000 people who have lost a significant amount of weight and successfully maintained their weight loss.[22]
- Participants report using lifestyle tools such as self-monitoring, goal-setting, problem-solving skills, stimulus control and behavior contracting.
- Findings from the NWCR include the following[22]:
  - Average weight loss among registry participants is 66 lb, and average duration of weight maintenance is 5.5 years.
  - 98% of participants modified their food intake (i.e., changed eating habits) to lose weight.
  - 94% increased their physical activity (i.e., changed sedentary lifestyle) to lose weight.
  - 90% exercise for 60 minutes per day on average.
  - 78% eat breakfast daily.
  - 75% self-weigh weekly (i.e., engage in self-monitoring).
  - 62% watch less than 10 hours of TV per week.

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5. Pharmacotherapy and Surgery

5.1. Antiobesity Medications

Pharmacotherapy is a key component of successful weight management for many patients. Antiobesity medications (AOMs) are indicated only as an adjunct to a calorie-deficit diet and increased physical activity with a specific weight loss goal. For patients who are not able to achieve their goal through nutrition, physical activity and behavioral changes alone, physicians can add AOMs to address specific challenges and symptoms (e.g., issues with portion control, grazing behaviors, sugar cravings). The following are the primary purposes of these medications:

- Impact the appetite dysregulation of obesity
- Support adherence to a calorie-deficit diet
- Change the patient's relationship with food
- Facilitate weight loss and improvement of health parameters

The Food and Drug Administration (FDA) has approved AOMs for use in adults with a body mass index (BMI) of 30 kg/m^2 or greater or patients with a BMI of 27 to 29.9 kg/m^2 who have a weight-related comorbid condition (e.g., diabetes, hypertension, dyslipidemia). People who do not achieve weight loss of 5% or more with lifestyle changes alone within three to six months are also candidates for AOMs.

Benefits and potential adverse effects of the AOM(s) prescribed to a patient should be documented at each follow-up visit. If there is no clinical improvement after 12 weeks of using one AOM, the physician should reevaluate for either discontinuation of the medication or addition of another AOM. They should carefully document the rationale for continuing or adding a medication for weight management. Since obesity is a chronic, treatable condition, successful pharmacotherapy may continue indefinitely.

The two categories for FDA-approved AOMs are short-term use and long-term use.[1] Medications approved for short-term use are the sympathomimetics phentermine, diethylpropion, phendimetrazine and benzphetamine (*Table 5.1*). It is important for physicians to be familiar with state medical and pharmacy laws about these scheduled AOMs. Medications approved for long-term use include orlistat (Xenical), phentermine/topiramate ER (Qsymia) and naltrexone/bupropion ER (Contrave) (*Table 5.2*), as well as the glucagon-like peptide-1 (GLP-1) receptor agonists (RAs) liraglutide (Saxenda) and semaglutide (Wegovy) and the dual glucose-dependent insulinotropic polypeptide (GIP)/GLP-1 RA tirzepatide (Zepbound) (*Table 5.3*). Another AOM approved by the FDA for long-term use is setmelanotide (Imcivree), a melanocortin-4 receptor agonist. It is indicated for people ages 6 years and older who have monogenic or syndromic obesity due to either Bardet-Biedl syndrome or pro-opiomelanocortin (POMC), proprotein convertase subtilisin/kexin type 1 (PCSK1) or leptin receptor (LEPR) deficiency (per FDA-approved genetic testing).[2]

The FDA has also cleared a prescription device called Gelesis100 (Plenity) for use in adults with a BMI of 25 to 40 kg/m^2. It is an orally administered superabsorbent hydrogel that is a nonstimulant, nonsystemic weight management aid. The Gelesis Loss Of Weight (GLOW) study found that Gelesis100 treatment doubled the odds of achieving 5% or greater weight loss compared with placebo.[3] Among participants treated with Gelesis100, 59% achieved weight loss of 5% or greater and 27% achieved weight loss of 10% or greater.

Best Practices for Using Sympathomimetic Medications

After proper patient selection, physicians should discuss the potential adverse effects and risks versus benefits of sympathomimetic medications. Although it is not mandatory, it is a safe practice to evaluate the patient's cardiac status with an electrocardiogram (ECG) before prescribing one of these medications if cardiac symptoms or risk factors exist. If the ECG is normal, the physician should be comfortable starting the patient on a sympathomimetic. An abnormal ECG can prompt a workup for cardiac conditions.

Physicians can have patients check their blood pressure and heart rate while taking sympathomimetic medications and recommend optional blood pressure and heart rate goals. Routine follow-up protocols should be in place. These medications can be started at the lowest dose and gradually increased as needed and as tolerated. Clinicians should monitor and manage the adverse effects of sympathomimetics. For example, constipation can be managed with increased amounts of water, fiber and nonstimulant over-the-counter medication (e.g., polyethylene glycol, docusate). Dosing phentermine in the morning and at lunchtime may reduce the risk of insomnia.

Table 5.1. Antiobesity Medications Approved for Short-Term Use

Drug	Phentermine	Diethylpropion	Phendimetrazine	Benzphetamine
Classification	Schedule IV controlled substance	Schedule IV controlled substance	Schedule III controlled substance	Schedule III controlled substance
Dosage	Common dosage is 4 mg, 1 to 3 times daily. Extended-release forms are available in 15 mg, 30 mg and 37.5 mg tablets. Phentermine can be started with a low dose and then titrated up as needed for optimal effect on both appetite control and side effects.	Can be used as 1 immediate-release 25 mg tablet up to 3 times daily or as 1 sustained-release 75 mg tablet daily	Can be used as a 35 mg capsule up to 3 times daily or as a 105 mg sustained-release capsule daily	Can be used at 25 mg to 50 mg, 1 to 3 times daily
Indication	Indicated for short-term use (approximately 12 weeks)			
Mechanism of action	Typically causes release of norepinephrine, decreases norepinephrine reuptake and reduces appetite			
Contraindications	Sympathomimetics are contraindicated during or within 14 days following the administration of MAOIs. Other contraindications include pregnancy, nursing, glaucoma, agitated states, history of drug abuse, history of cardiovascular disease and hyperthyroidism.			
Precautions	Pulmonary hypertension, cardiac valvular disease, concomitant alcohol use, hypertension, renal impairment May impair the patient's ability to engage in potentially hazardous activity such as operating machinery or driving a motor vehicle When used with concomitant dietary restrictions, sympathomimetics may affect insulin and oral hypoglycemic medication requirements. Therefore, patients need to be aware of signs and symptoms of hypoglycemia.			
Potential adverse effects	Headache, dizziness, fatigue, hypoglycemia, back pain, cough, nausea, dry mouth, constipation			

MAOIs = monoamine oxidase inhibitors.

Information from references 4-7.

Phentermine is in the phenethylamine drug class, which also includes amphetamine, methamphetamine, diethylpropion, epinephrine and dopamine. It has been widely as an AOM in the United States since it was approved by the FDA for weight management in 1959.[8] At that time, there was a U.S. epidemic of amphetamine addiction. However, phentermine is not an amphetamine, and there is no evidence of addiction potential or amphetamine-like withdrawal effect with phentermine use in the clinical setting. In addition, an established relationship between phentermine and cardiac valvulopathy or pulmonary hypertension has not been found.[9]

Table 5.2. Antiobesity Medications Approved for Long-Term Use

Drug	Orlistat*	Phentermine/topiramate ER	Naltrexone/bupropion ER
Description	Gastric lipase inhibitor and pancreatic lipase inhibitor that reduces the absorption of calories and fat from ingested food.	Phentermine is a sympathomimetic that causes release of norepinephrine, decreases norepinephrine reuptake and reduces appetite. Topiramate increases GABA, a major inhibitory neurotransmitter in the brain, and decreases carbonic anhydrase IX. It usually causes taste aversion. Using ER forms and combining phentermine and topiramate can effectively manage the side effects of each of these drugs.	Naltrexone is an opioid antagonist that works in the pleasure center; therefore, it may be effective for people who have cravings or use food for pleasure. Bupropion decreases norepinephrine and dopamine reuptake and provides increased energy and appetite control.
Dosage	120 mg capsule 3 times daily with meals	- Can be started at 1 capsule phentermine 3.75 mg/topiramate 23 mg ER daily for 14 days, then increased to 7.5 mg/46 mg daily. - If ≥3% weight loss is not achieved after 12 weeks, the dose may be increased to 11.25 mg/69 mg daily for 14 days. - Maximum dose is 15 mg/92 mg daily.	- Week 1: 1 tablet naltrexone 8 mg/ bupropion 90 mg tablet daily in the morning - Week 2: 1 tablet BID - Week 3: 2 tablets in the morning, 1 tablet in the evening - Week 4 and beyond: 2 tablets BID
Average weight loss	5% of BW	A 56-week RCT found that completers on 3.75 mg/23 mg lost 6.7% of BW and completers on 15 mg/92 mg lost 14.4% of BW.	Clinical trial data showed participants lost 5% to 15% of BW.
Indication	Adults: BMI ≥30 kg/m² or BMI ≥27 kg/m² with at least one weight-related comorbid condition (e.g., diabetes, hypertension, dyslipidemia)		
Contraindications	Pregnancy, chronic malabsorption syndrome, cholestasis	- Pregnancy, glaucoma, hyperthyroidism - Contraindicated during or within 14 days following the administration of MAOIs	- Pregnancy, uncontrolled hypertension, seizure disorder or history of seizures, anorexia nervosa or bulimia - Contraindicated in patients on chronic opioid therapy because naltrexone will block the effect of opiates - Contraindicated in patients who are undergoing abrupt discontinuation of alcohol, benzodiazepines, barbiturates and antiepileptic medications - Contraindicated during or within 14 days following the administration of MAOIs
Precautions	- History of hyperoxaluria or calcium oxalate nephrolithiasis - Supplementation is required because orlistat can lower the absorption of fat-soluble vitamins A, D, E and K.	- Increased heart rate, mood and sleep disorders, cognitive impairment, hepatic impairment, kidney stones - Monitor for depression and suicidal behavior and ideation - Inform patients who could become pregnant about fetal toxicity. Pregnancy testing is recommended before initiating treatment and monthly during treatment.	- Risk of seizure, hepatotoxicity, elevated blood pressure, elevated heart rate, hypoglycemia when combined with antidiabetic medication, acute angle-closure glaucoma - Monitor for depression and suicidal behavior and ideation - Elevated circulating norepinephrine can lead to increased blood pressure. Therefore, patients need to monitor their blood pressure while taking naltrexone/bupropion ER.
Potential adverse effects	Increased defecation, oily stool, fecal incontinence	Headache, dizziness, fatigue, paresthesia, nausea, dry mouth, constipation, dysgeusia, hypoglycemia, back pain, cough	Headache, dizziness, insomnia, nausea, dry mouth, constipation, diarrhea

BID = twice a day; BMI = body mass index; BW = body weight; ER = extended-release; GABA = gamma-aminobutyric acid; MAOIs = monoamine oxidase inhibitors; RCT = randomized controlled trial.

**Available over the counter as Alli (60 mg).*

Information from references 1 and 10-13.

Best Practices for Using GLP-1 and GIP/GLP-1 Receptor Agonists

Proper patient selection is important prior to initiation of GLP-1 and GIP/GLP-1 RAs. Clinicians should communicate to patients that these medications are effective for controlling appetite and creating the sensation of fullness. However, to get the optimal effect of the medication and reduce adverse effects, patients must make proper nutrition and behavior choices. Patients starting a GLP-1 or GIP/GLP-1 RA may have nausea as the predominant symptom during the first month, but this usually improves with time.

Effective appetite control may cause decreased water intake, which can lead to dehydration and renal impairment. Clinicians should emphasize the importance of hydration to reduce adverse effects and prevent a potential emergency department visit. Patients using GLP-1 or GIP/GLP-1 RAs should seek immediate medical attention if they have any signs or symptoms of pancreatitis, which has been observed in patients treated with these medications. However, a meta-analysis of data from 43 clinical trials did not find clear evidence of a causal association between GLP-1 RAs and pancreatitis.[20] If a patient develops a thyroid nodule while using a GLP-1 or GIP/GLP-1 RA, they should discontinue the medication until a workup for the nodule is completed. It is recommended that semaglutide be discontinued at least two months before a planned pregnancy.[15] Patients who become pregnant while using GLP-1 or GIP/GLP-1 RAs should stop taking their medication immediately. Higher doses of these medications can produce significant weight loss, but the dosage should be individualized to the patient's tolerance. If these medications are effective for significant weight loss, they should be continued to prevent weight regain.

Table 5.3. GLP-1 and GIP/GLP-1 Receptor Agonists Approved for Long-Term Obesity Treatment

Drug	Liraglutide	Semaglutide	Tirzepatide
Dosage	Daily SQ injection increased every 7 days. Available in doses of 0.6 mg, 1.2 mg, 1.8 mg, 2.4 mg and 3 mg.	Weekly SQ injection increased every 4 weeks. Available in doses of 0.25 mg, 0.5 mg, 1 mg, 1.7 mg and 2.4 mg.	Weekly SQ injection increased every 4 weeks. Available in doses of 2.5 mg, 5 mg, 7.5 mg, 10 mg, 12.5 mg and 15 mg.
Average weight loss	9.2% of BW compared with 3.5% in placebo group	14.9% of BW compared with 2.4% in placebo group	20.9% of BW compared with 3.1% in placebo group
Indication	Adults: BMI ≥30 kg/m² or BMI ≥27 kg/m² with at least one weight-related comorbid condition (e.g., diabetes, hypertension, dyslipidemia)		
Mechanism of action	Affects central satiety and delays gastric emptying		
Contraindications	Pregnancy, personal or family history of medullary thyroid cancer, multiple endocrine neoplasia type 2		
Precautions	Serious hypoglycemia when used with insulin or other secretagogues, acute pancreatitis, acute gallbladder disease, heart rate increase, renal impairment associated with dehydration Monitor for depression and suicidal behavior and ideation		
Potential adverse effects	Nausea, vomiting, dyspepsia, diarrhea, constipation, GERD, headache, dizziness, fatigue, hypoglycemia, abdominal pain, increased lipase		

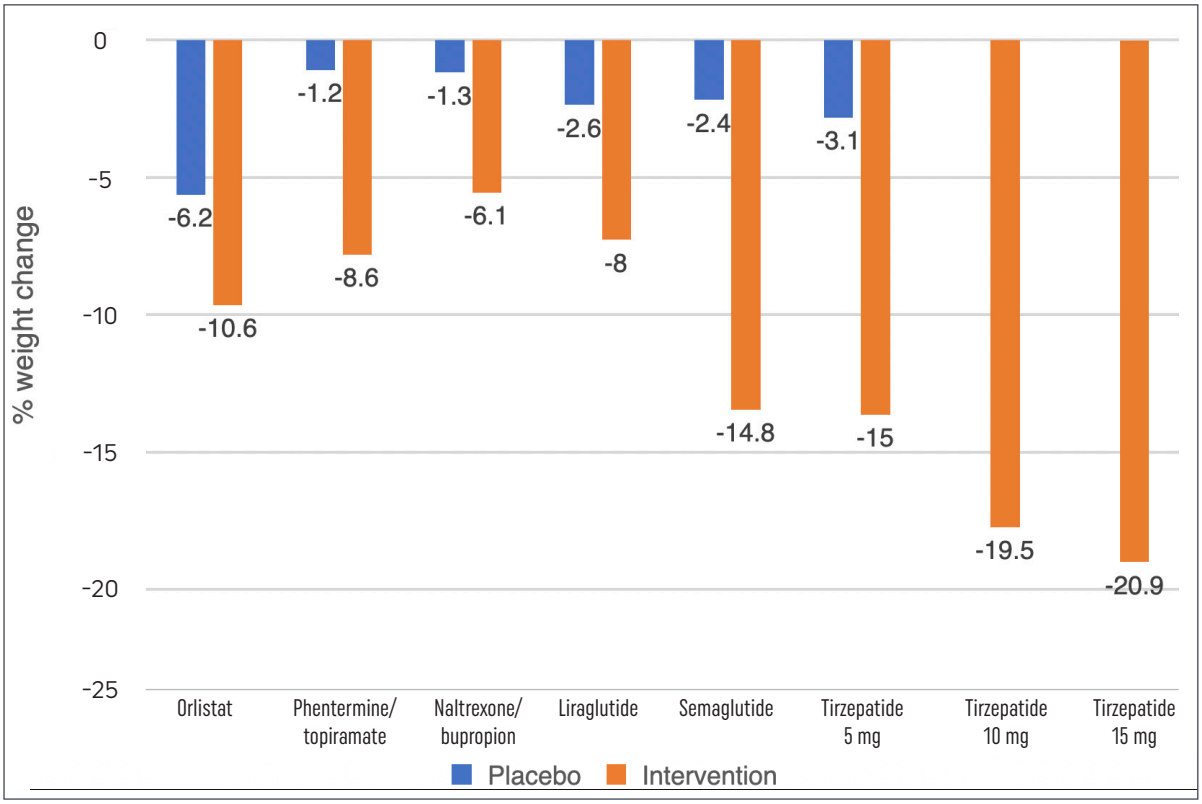
BMI = body mass index; BW = body weight; GERD = gastroesophageal reflux disease; GIP = glucose-dependent insulinotropic polypeptide; GLP-1 = glucagon-like peptide-1; SQ = subcutaneous.

Information from references 14-19.

Effects of AOMs on Weight and Cardiometabolic Parameters

Figure 5.1 shows the mean percent weight change reported in trials of a number of FDA-approved AOMs. Tirzepatide and semaglutide produced the highest percentage of weight loss. In certain patients, use of these medications coupled with lifestyle interventions can result in weight loss comparable to the weight loss resulting from metabolic/bariatric surgery.

Figure 5.1. Mean Percent Weight Change With Antiobesity Medications



Adapted with permission from Chakhtoura M, Haber R, Ghezzawi M, et al. Pharmacotherapy of obesity: an update on the available medications and drugs under investigation. *EclinicalMedicine*. 2023;58:101882.

Table 5.4 shows how various FDA-approved AOMs affect certain cardiometabolic parameters. All of the listed medications have been shown to reduce A1C and elevate high-density lipoprotein levels.[10, 21-23] In addition, evidence indicates that all but phentermine/topiramate ER reduce low-density lipoprotein levels, all but orlistat reduce triglycerides and all but naltrexone/bupropion reduce systolic blood pressure.

In March of 2024, semaglutide was approved by the FDA to reduce the risk of cardiovascular death, heart attack and stroke in adults with cardiovascular disease and either obesity or overweight.[24] One study of semaglutide treatment in patients who had cardiovascular disease without diabetes showed that it reduced major adverse cardiac event (MACE) scores by 20%.[25] In another study, use of semaglutide led to improvements in cardiomyopathy score and six-minute walk distance.[26]

Table 5.4. Effects of Antiobesity Medications on Cardiometabolic Parameters

Medication	LDL	TG	HDL	A1C	SBP
Orlistat	↓	↑	↑	↓	↓
Phentermine/topiramate ER	Neutral	↓	↑	↓	↓
Naltrexone/bupropion	↓	↓	↑	↓	↑
Liraglutide 3 mg	↓	↓	↑	↓	↓
Semaglutide 2.4 mg	↓	↓	↑	↓	↓
Tirzepatide 5 mg, 10 mg, 15 mg	↓	↓	↑	↓	↓

HDL = high-density lipoprotein; LDL = low-density lipoprotein; SBP = systolic blood pressure; TG = triglycerides.

Information from references 10 and 21-23.

Strategies to Avoid Medication-Associated Weight Gain

Medications for various clinical conditions can be categorized as weight-promoting medications, weight-neutral medications and weight-friendly medications (*Table 5.5*).[27] Family physicians can use the following strategies to help their patients avoid medication-associated weight gain:

- Select medications that are weight neutral or less likely to cause weight gain when initiating pharmacotherapy.
- Change weight-promoting medications to weight-neutral or weight-friendly medications, if possible. The patient and prescribing physicians should agree on any medication changes. In addition, physicians should not discontinue critical medications (e.g., atypical antipsychotic medications for patients with bipolar disorder, beta blockers for patients with heart failure) unless an effective alternative is available.
- Use medications that have a dual benefit for weight loss and disease management (e.g., metformin and GLP-1 RA for diabetes and obesity, topiramate for migraine and obesity, bupropion for depression and obesity).
- Avoid using steroids for patients with obesity and obesity-related conditions, if possible.

Table 5.5. Effects of Medications on Body Weight

Clinical Condition	Weight-Promoting Medications	Weight-Neutral Medications	Weight-Friendly Medications
Diabetes	Insulin Meglitinides Sulfonylureas Thiazolidinediones	DPP-4 inhibitors Metformin	Acarbose GLP-1 RA injectable and oral (exenatide, liraglutide, semaglutide, tirzepatide) Pramlintide SGLT2 inhibitors
Blood pressure	Beta blockers	ACE inhibitors Carvedilol CCBs	Chlorthalidone HCTZ
Migraine	Atenolol Propranolol	Cardizem Verapamil	Topiramate
Depression	Most SSRIs Some TCAs Some MAOIs Lithium Mirtazapine Mood stabilizers	Venlafaxine	Bupropion
BED ADHD/ADD			Lisdexamfetamine Methylphenidate
Seizure	Carbamazepine Gabapentin Valproate	Lamotrigine Levetiracetam Phenytoin	Topiramate Zonisamide

ACE = angiotensin-converting enzyme; ADD = attention-deficit disorder; ADHD = attention-deficit/hyperactivity disorder; BED = binge eating disorder; CCB = calcium channel blocker; DPP-4 = dipeptidyl peptidase-4; GLP-1 RA = glucagon-like peptide-1 receptor agonists; HCTZ = hydrochlorothiazide; MAOIs = monoamine oxidase inhibitors; SGLT2 = sodium-glucose cotransporter 2; SSRIs = selective serotonin reuptake inhibitors; TCAs = tricyclic antidepressants.

Information from references 1 and 27.

Best Practices for Pharmacotherapy for Patients With Obesity

Avoid weight-promoting medications.

Substitute weight-friendly alternatives.

Pursue sequential trials of different medications.

Achieve a minimum threshold of 5% weight loss for long-term use.

Use two to three medications, as necessary.

Aim for significant weight loss and anticipate lifelong use of a successful regimen.

5.2. Metabolic/Bariatric Surgery

Metabolic/bariatric surgery can lead to significant fat loss and metabolic profile improvement by altering the connection between a person's brain and their gut hormones. Commonly performed procedures are minimally invasive. They include sleeve gastrectomy, Roux-en-Y gastric bypass, biliopancreatic diversion with duodenal switch and adjustable gastric banding.

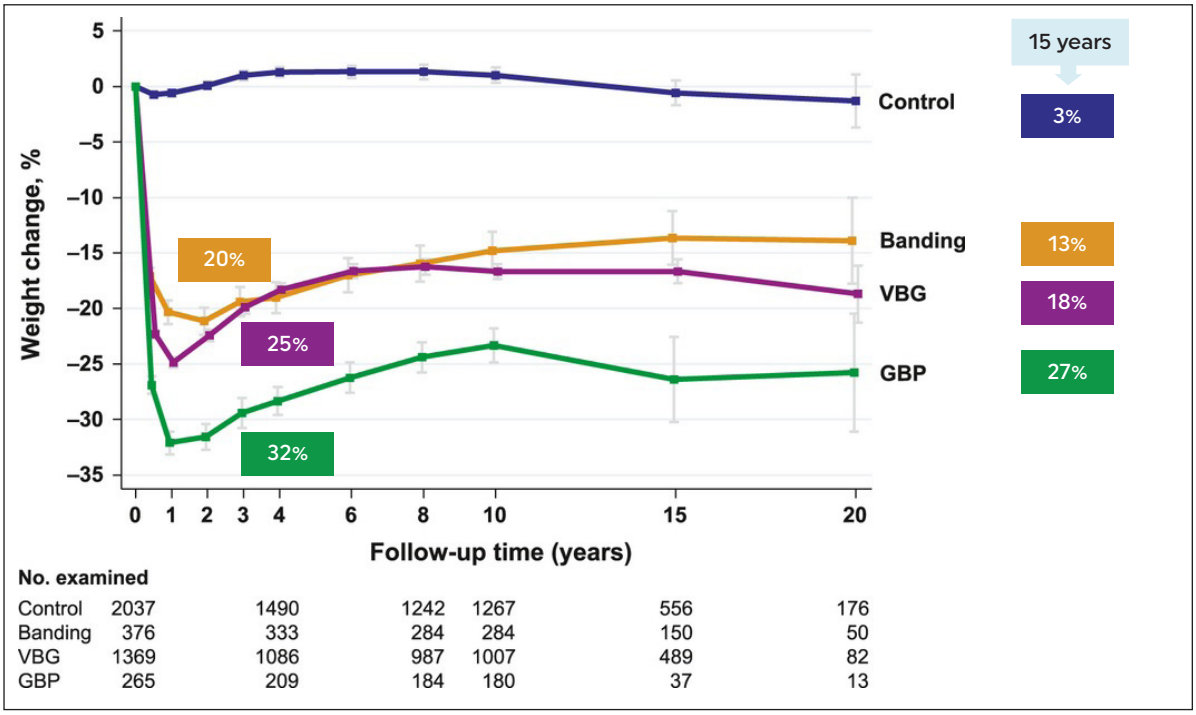
Candidates for metabolic/bariatric surgery include people with class III obesity who have a BMI of 40 kg/m^2 or greater and people with a BMI of 35 kg/m^2 or greater with at least one weight-related comorbid condition (e.g., type 2 diabetes, hypertension, obstructive sleep apnea). Other criteria for surgery are a body weight that is greater than 45 kg (100 lb) above a person's ideal body weight. Physicians should discuss the risks and benefits of metabolic/bariatric surgery with patients who are candidates.

There are no absolute contraindications to metabolic/bariatric surgery. Relative contraindications include severe heart failure, unstable coronary artery disease, end-stage lung disease, active cancer treatment, portal hypertension, drug/alcohol dependency and impaired intellectual capacity. People preparing for metabolic/bariatric surgery must adhere to pre- and postoperative behavioral and dietary/nutritional changes to qualify for the surgery.

Although there is a myth that metabolic/bariatric surgery is the "last resort," it is considered the most effective long-term treatment for class III obesity.[28] Another myth is that surgery is the "easy way out" for patients with obesity, but it is a valuable intervention that can enable people to maintain lifestyle changes that result in sustained weight loss. Patients who do not achieve adequate weight loss after trying a nonsurgical treatment plan for three to six months may decide to pursue metabolic/bariatric surgery.

Figure 5.2 shows data from the Swedish Obese Subjects trial of weight change resulting from banding, vertical banded gastroplasty (VBG) and gastric bypass (GBP). Two years after surgery, patients' weight loss was 20% with banding, 25% with VBG and 32% with GBP.[29] After 15 years, weight loss was 13% with banding, 18% with VBG and 27% with GBP. Clinicians and patients can take these data into consideration when determining weight loss goals.

Figure 5.2. Results From the Swedish Obese Subjects Trial



GBP = gastric bypass; VBG = vertical banded gastroplasty.

Adapted with permission from Sjöström L. Review of the key results from the Swedish Obese Subjects (SOS) trial – a prospective controlled intervention study of bariatric surgery. *J Intern Med.* 2013;273(3):219-234.

Weight loss resulting from metabolic/bariatric surgery can benefit patients with chronic conditions such as diabetes, high blood pressure, obstructive sleep apnea, reflux, arthritis and hyperlipidemia. For example, one study involving patients with type 2 diabetes and a BMI of 27 to 43 kg/m^2 found that surgery plus intensive medical therapy was more effective than intensive medical therapy alone in decreasing hyperglycemia.[30]

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6. Cultural Sensitivity and Humility: Providing Inclusive Care

Treatment of patients with obesity requires a nuanced, culturally sensitive approach to promoting healthy lifestyles. It is important for family physicians to recognize that beauty standards vary among different cultures. A clinician's goal should not be to enforce a certain "ideal" body size but to assess how weight affects their patients' functioning and encourage healthy habits that support their well-being.

Culture plays a significant role in shaping people's experiences with health and illness, as well as their expectations and preferences regarding health care services. Cultural competency in health care is defined as "the ability of systems to provide care to patients with diverse values, beliefs, and behaviors, including tailoring delivery to meet patients' social, cultural, and linguistic needs. The ultimate goal is a health care system and workforce that can deliver the highest quality of care to every patient, regardless of race, ethnicity, cultural background, or English proficiency."[1]

One key aspect of cultural competency is acknowledging that different cultures have distinct beliefs about health and healing. These beliefs can affect obesity care. For example, a study by Lynch et al. highlighted various sociocultural factors that influenced perceptions of weight loss and bariatric surgery among African American women with obesity.[2] Participants faced challenges related to body image acceptance within communities in which having a larger body size was deemed more desirable. This cultural norm sometimes discouraged them from seeking surgical interventions or pursuing weight loss efforts.

Cultural humility, a concept rooted in respect, open-mindedness and self-reflection, is crucial for addressing obesity in diverse populations. It emphasizes the recognition of power imbalances between health care professionals and patients and a willingness to challenge personal biases and assumptions. In the context of caring for patients with obesity, cultural humility encourages clinicians to listen to patients' perspectives and incorporate their cultural beliefs into personalized treatment plans.

Incorporating cultural humility into obesity treatment helps build trust and rapport between health care professionals and their patients from diverse backgrounds. Patients who feel understood and respected are more likely to engage in open dialogue about their struggles, concerns and values. This trust-building process is a critical part of developing effective treatment plans that align with patients' cultural beliefs, preferences and goals.

Considerations for Patients With Limited English Proficiency

In many cases, the people who help patients with limited English proficiency (LEP) communicate with health care professionals are not trained interpreters. The reliance on ad hoc services from fellow patients, family members, friends or clinic staff members has negative clinical consequences for patients with LEP, such as longer hospital stays and a higher risk of surgical complications compared with English-speaking patients.[3-5] Patients with LEP also have a higher risk of experiencing adverse effects from medication complications, misunderstanding diagnoses, having low health literacy and being misunderstood by their physicians.

Despite evidence of the benefits of using a professional interpreter to communicate with patients with LEP, research suggests that physicians underuse interpreters, even when such services are readily available.[6] For example, in a large national study, fewer than one-third of outpatient physicians reported regularly using a trained professional interpreter.[7] To facilitate timely access to health care and services for patients with LEP, the National Standards for Culturally and Linguistically Appropriate Services (CLAS) in Health and Heath Care mandate that these patients must be offered language assistance at no cost.[8] Using a telephone interpretation service (e.g., Language Line Solutions, CyraCom Language Solutions) might be an option for some practices. Easy-to-understand print materials and signage must be provided in the languages that are commonly used in a practice's service area.

The CLAS standards also mandate that patients should be informed verbally and in writing of the availability of language assistance services in their preferred language.[8] In addition, the competence of people providing these services should be ensured, and the use of minors or untrained people as interpreters should be avoided. If multilingual staff members help patients with LEP, it is imperative for them to receive additional training in interpretation techniques because fluency alone does not always make them effective interpreters.

It is particularly important to ask about and consider a person's cultural background when discussing nutrition. Different cultures have unique preferences, traditions and taboos related to certain ingredients or dishes. Rather than recommending the same diet plan for every patient, it is better for clinicians to inquire about each person's eating habits and cultural norms related to diet. It may be possible to make small modifications that allow them to consume foods that are part of their culture without compromising their health. Patients are more likely to comply with recommended changes if they can still enjoy elements of their customary diet.

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7. Building a Compassionate Physician-Patient Relationship

Compassionate physician-patient relationships are a crucial aspect of improving outcomes for patients and supporting long-term patient engagement in health care. Gone are the days of paternalistic medicine in which the relationship between patient and physician was cold and direct. Patients want to be heard, respected and trusted to participate in decision-making for their health care choices. Evidence indicates that favorable physician-patient communication is linked to higher levels of patient satisfaction and treatment adherence and better quality of care and physical outcomes.[1] Furthermore, behavioral studies have identified willing collaboration with health professionals as one of the key attributes of patient compliance.[2] Patients are more likely to seek ongoing care, attend follow-up appointments and maintain a relationship with their family physician when they feel valued and supported.

In the United States, weight discrimination is reported at rates comparable to the reported rates of racial discrimination.[3] The societal stigma and bias patients with overweight and obesity face often extends into health care settings. Although health care professionals are trained and ethically obligated to treat every patient without discrimination, they have been cited as one of the most common sources of weight stigma and bias. For example, more than two-thirds of women with overweight or obesity self-reported experiencing stigmatization about their weight from physicians.[4] Whether bias is implicit or explicit, it puts patients with obesity at a disadvantage when it comes to building positive relationships with clinicians and negatively impacts their outcomes.

7.1. Physician-Patient Rapport

Physician-patient rapport is a harmonious relationship characterized by mutual understanding that can have a positive effect on a patient's satisfaction, compliance with treatment and clinical outcomes.[5] To establish a solid rapport with patients, family physicians must take a mindful approach to communication. For example, clinicians can reassure patients that they are being heard and their concerns are being acknowledged by actively listening to them and establishing a sense of connection and empathy through verbal and nonverbal cues. Writing about a method for establishing rapport with patients, Barksdale noted,

> ***"[It] is imperative to become increasingly aware of what the patient 'hears' beyond our words. Patients 'hear' our tone, posture, facial expressions, and most importantly our care and concern. In essence, patients hear our heart."***[6]

A strong physician-patient relationship is also built on fair patient expectations and the physician's ability to fulfill them. Physicians must be capable of explaining medical concepts in a way that patients can understand. They must also be able to answer questions and address any concerns. If necessary care is outside of the physician's

area of expertise, an appropriate referral should be made. Fostering trust and bidirectional communication throughout the process is critical for patient safety because patients are more likely to report any concerns or adverse events when they feel comfortable communicating with their physician.

7.2. Patient-Centeredness

A patient-centered approach creates a foundation for effective communication, trust and collaborative decision-making in the pursuit of improved health outcomes. The Institute of Medicine's *Crossing the Quality Chasm: A New Health System for the 21st Century* report defines patient-centeredness as "providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions."[7] The duty of health care professionals is to provide education and information to help patients make informed decisions about their health and weight. Patients have the right to choose what is best for them and should be supported in achieving their goals.

In obesity care, patient-centeredness involves acknowledging that every patient's experience with obesity is unique and requires personalized treatment and management strategies. A clinician providing patient-centered care focuses on the patient as a whole person and takes their general health picture into consideration instead of putting the disease at the center of the patient's care. For example, focusing solely on the weight of patients who have overweight or moderate obesity can hinder the goal of achieving optimal health. It is crucial to prioritize the overall health of such patients, especially when they exhibit good health.

Recognition that weight loss does not solely define success is an essential element of patient-centered obesity treatment. Health improvements such as improved blood pressure control, reduced cholesterol levels and enhanced mobility are equally significant outcomes. In addition, family physicians should be attentive to their patient's psychological well-being during the weight loss journey by addressing body image concerns and helping them build confidence.

7.3. Trust

Trust is a key element of a positive, effective physician-patient relationship. It promotes collaboration, reduces barriers to care and contributes to overall well-being. Inconsistent or unpleasant interactions with health care professionals can make patients with obesity feel unsure if a clinician will address them in a respectful, sensitive and appropriate manner. Other factors that can contribute to mistrust among patients with obesity include past experiences of weight bias and stigma, inequitable access to weight management programs and antiobesity medications, and historical weight loss interventions that promoted extreme diets and harmful medications.

Physicians must be honest and transparent to build trust with their patients with obesity. For example, they should be honest and transparent when explaining the consequences of obesity and setting realistic expectations for weight loss and improved health. They must also keep in mind that a trusting relationship extends beyond the confines of the office. It is crucial for health care professionals to exercise caution in any public discussions about obesity outside the office, particularly as physicians have a growing presence on social media.

Implicit Bias Resources

The following resources can help health care professionals identify and address implicit bias.

Implicit Association Test (IAT) – A series of free, publicly available computer-based exercises that ask participants to associate words with images to assess their automatic associations between concepts. The IAT was developed by Project Implicit®, a long-term research project based at Harvard University.

Implicit Bias Training Guide – Developed by the American Academy of Family Physicians (AAFP) to promote awareness of implicit bias and provide resources for instructing health care professionals on how to reduce its negative effects on patients

Obesity Medicine Association (OMA) Speakers Bureau – Access to health care professionals with advanced obesity medicine training who can speak on a range of obesity-related topics

Weight Bias Resources and Guides – Developed by the Obesity Action Coalition to raise awareness of weight bias and its impact on people with obesity and to combat weight stigma

7.4. Safe, Nonjudgmental Environment

Creating a safe, nonjudgmental environment for patients with overweight and obesity includes both the emotional and physical environment of the office. Recognizing implicit bias and its impact on patient care is the first step to creating a safe emotional environment. Implicit bias is (AAdefined as "the attitudes or stereotypes that affect our understanding, actions, and decisions in an unconscious manner."[8] It is important to understand that having implicit biases does not make someone inherently bad or morally flawed. These biases, which are often ingrained from a young age by societal influences, are unintentional. The key is to acknowledge and actively work to overcome an implicit bias once it is identified. It is imperative for health care professionals to reflect on the origins of their implicit biases and how these biases may influence their perception and treatment of patients with overweight and obesity.

Currently, there are no federal laws that recognize obesity as a disability, so it is not covered by accessibility standards issued under the Americans with Disabilities Act. However, family physicians can create a more inclusive physical environment for patients with obesity by focusing on comfort, dignity and accessibility. Signage and visual aids throughout the clinic and in exam rooms should show a wide range of body types and sizes to help counteract stigma and emphasize that body size alone is not an indicator of health. The waiting area should offer comfortable seating for people of a range of body sizes, including sturdy chairs that do not have armrests. Hallways and doorways should accommodate mobility aids and larger body sizes. Restrooms should be easily accessible and spacious enough to allow for maneuverability inside. They should also have sturdy, supportive handrails for added safety when a patient is transferring on and off the toilet. Exam rooms should have wide tables designed to have a higher weight capacity. Medical equipment (e.g., scales, blood pressure cuffs, gowns, specula) should be available in appropriate sizes for all patients, and it should be easily accessible within the room so that patients with obesity do not get the impression that their needs are outside of the norm.

7.5. Effective Communication

To communicate with their patients effectively, family physicians must practice active listening. This involves fully concentrating on the patient to ensure a comprehensive understanding of the information they are conveying. A physician can show that they are actively engaged by summarizing what the patient says and asking clarifying questions. It is also important for physicians to approach patient conversations with an open mind and avoid forming opinions prematurely.

Because language plays a crucial role in shaping attitudes and perceptions, respectful language is fundamental to effective communication with patients who have overweight and obesity. Obesity has been recognized as a disease by the World Health Organization and the American Medical Association since 1948 and 2013, respectively. Nonetheless, evidence has shown that many health care professionals hold negative opinions about people who have obesity and frequently use stigmatizing language when describing them.[9]

Health care professionals should use nonstigmatizing, person-centered language that promotes inclusivity and respect when discussing weight-related issues with their patients. People-first language should be adopted and promoted in the clinic and within documentation. This communication approach emphasizes a person's humanity rather than reducing them to their medical condition or diagnosis. It also supports dignity in treatment. Examples of using people-first language include the following:

- Say "a patient with obesity" instead of "an obese patient"
- Say "a patient with overweight" instead of "a patient who is overweight"
- Say "a patient with diabetes" instead of "a diabetic"

The Obesity Action Coalition offers more information on people-first language.

Sample Physician-Patient Conversation 1

The following conversation is an example of an approach that does not follow best practices for effective communication with a patient who has obesity. The physician is immediately dismissive of the patient's primary complaint of knee pain and shifts to talking about a completely different issue: the patient's weight. Obesity can worsen knee pain but so can a number of other conditions and factors that should be considered. In addition, physicians should not discuss a patient's weight without first asking for their permission to do so. This is the first "A" in the modified 5 A's framework for obesity. (See *Table 4.2* in Chapter 4. Evidence-Based Lifestyle Interventions). Dr. Smith also incorrectly assumes that the patient has not tried making dietary changes to lose weight.

PATIENT: Dr. Smith, my knees have really been hurting me recently. I've started walking more, and I think I may have twisted my right knee a little when I was walking on an uneven surface the other day.

PHYSICIAN: I see that you've gained 15 pounds in the past year. That probably isn't helping your knees.

PATIENT: I know I've gained some weight, but I have tried to walk every day like you recommended. It has been tough because it seems like the more I walk, the more my knees hurt. Do you think that my osteoarthritis is getting worse? Or could I have hurt something else when I twisted my knee?

PHYSICIAN: Well, if walking more isn't working well, have you tried cutting back on your calories? You really need to start doing at least one of these things to be successful in losing weight.

PATIENT: I've cut back on eating out and snacking after dinner, but it seems like the more I cut back, the hungrier I get.

PHYSICIAN: Of course, you're going to get hungry, but you just need to fight through those feelings. You need to make losing weight a priority or your health is going to continue to suffer.

Sample Physician-Patient Conversation 2

The following example shows how the same conversation might go if the physician used a more effective approach to communicating with their patient. Framing discussions around health and well-being rather than solely focusing on weight encourages positive behavior change and enhances patient engagement.

PATIENT: Dr. Smith, my knees have really been hurting me recently. I've started walking more, and I think I may have twisted my right knee a little when I was walking on an uneven surface the other day.

PHYSICIAN: I'm sorry you're hurting, especially since you've been working so hard to increase your walking.

PATIENT: I know I've gained some weight in the past year, but I have tried to walk every day like you recommended. It has been tough because it seems like the more I walk, the more my knees hurt. Do you think that my osteoarthritis is getting worse? Or could I have hurt something else when I twisted my knee?

PHYSICIAN: First of all, it's great that you're walking more! It is possible that your osteoarthritis is worsening, or you could have a new injury. I'll need to examine you to get a better idea. You mentioned your weight, and people are at higher risk for an injury when their weight is higher. Do you want to talk about other ways to help reduce your weight?

PATIENT: Yes, I'd like to talk about that. I've cut back on eating out and snacking after dinner, but it seems like the more I cut back, the hungrier I get.

PHYSICIAN: That's a completely normal feeling. It takes a lot more work for your body to lose weight, so the more you cut your calories, the more your body is going to resist that action by increasing your hunger hormones. There are dietary approaches and even medicines that can help regulate this to make it easier for you while you're working hard to lose weight. How can I help and support you?

7.6. Shared Decision-Making

In a health care setting, shared decision-making is a collaborative approach that begins with the physician sharing information with the patient. The physician and patient then discuss all treatment options and develop an individualized treatment plan that aligns with the patient's preferences, values and goals. Patient decision aids are interventions that facilitate effective communication and support shared decision-making by providing information on options, benefits and harms and helping patients clarify their values related to health outcomes.[10]

A patient who is encouraged to participate in making decisions about their treatment plan is more likely to be satisfied and compliant with their physician's recommendations. However, even with the best efforts of the clinician, patients may face challenges in adhering to a prescribed treatment plan for a variety of reasons related to social determinants of health (e.g., limited access to healthy food, economic challenges, environmental factors). By identifying these factors, a clinician can adjust their patient's treatment plan accordingly to optimize outcomes. Family physicians may also find it helpful to take a multidisciplinary team approach to obesity care that includes other health care professionals, such as a registered dietitian, a psychologist and a physical therapist, if possible. A collaborative effort that leverages the expertise of various health care professionals ensures a more comprehensive treatment plan.

See Chapter 9. Collaborative Care for Patients With Obesity for more information about the role of other health care professionals in obesity care.

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8. Identifying Systemic Barriers to Care

Obesity has a profound effect on groups that have been socially marginalized, and people who have this chronic disease often encounter challenges in accessing appropriate care due to a number of existing systemic barriers. Systemic barriers are the structural and institutional factors that prevent people from receiving appropriate care and support for obesity management. They can include socioeconomic challenges, limited health care resources, lack of education and awareness, stigma, discrimination and inadequate insurance coverage. Systemic barriers increase the prevalence of obesity in groups that have been marginalized and exacerbate its impact.

8.1. Lower Socioeconomic Status

Lower socioeconomic status is a significant systemic barrier to obesity care. Patients with a low income often face difficulties accessing affordable healthy food, and they may have limited opportunities for physical activity because they lack resources or a safe environment. A study examining the effects of neighborhood poverty and psychosocial stress on central adiposity demonstrated that people living in neighborhoods with "higher concentrations of poverty and exposure to everyday unfair treatment" were at an increased risk of central adiposity over time.[1] Evidence also indicates that neighborhood poverty and exposure to stressors may play a role in racial and ethnic disparities in obesity, particularly among Black and U.S.-born Hispanic people.[1,2] Kwarteng et al. concluded, "Future interventions and policies to reduce central adiposity should consider improvements in neighborhood physical environments, access to employment opportunities, quality education, increased wages, and mixed income housing to reduce concentrations of poverty. Further, interventions should work to reduce experiences of discrimination and unfair treatment."[1]

8.2. Health Care Disparities

Health care disparities related to obesity affect both mental and physical health. Furthermore, these disparities disproportionately impact people from racial and ethnic minority groups and people who have been socially disadvantaged. Patients with obesity are less likely to seek out and receive medical care, and they have worse outcomes from obesity-related chronic diseases. The high prevalence of stigma and bias experienced by patients with obesity has been cited as a reason they avoid interactions with health care professionals for fear that they will be judged and their medical concerns will not be taken seriously.[3]

Evidence has shown that primary care clinicians spend less time with patients with obesity, order fewer diagnostic tests for them and often do not consider treatment options beyond advising them to lose weight.[4] For example, only 2% of U.S. adults who meet the criteria for use of antiobesity medications (AOMs) are treated with them; by contrast, 86% of U.S. adults diagnosed with type 2 diabetes receive medication therapy for the disease.[5] Surgical interventions for obesity are also underutilized. In particular, evidence indicates that Black people are less likely to be diagnosed with obesity and, therefore, less likely to be referred to metabolic/bariatric surgery centers.[6,7]

Writing about obesity treatment in population groups that have been socioeconomically disadvantaged, Anekwe et al. stated, "In addition to having increased baseline risk and burden of obesity, black, Hispanic, and low-income individuals are underrepresented in existing treatment literature; the few published trials have demonstrated drawbacks such as high attrition rates and weight loss outcomes lower than expected."[8] Researchers have noted that disparities in weight loss outcomes from AOM treatment may be "by-products of the different negative factors and challenges faced by minority populations."[7] For example, research on disparities in access to obesity care led Washington et al. to conclude that "many treatment facilities fail to account for discrepancies in transportation access, food insecurity, and temporal restrictions ([e.g.,] the constraints of a full-time work schedule), which complicate patient adherence."[6]

The unequal distribution of physicians in the United States contributes to disparities in access to obesity care. Patients with obesity who cannot access timely, appropriate care may experience delays in treatment, leading to poorer health outcomes and higher health care costs in the long run. Inadequate insurance coverage for obesity-related treatments also poses a significant barrier to care by limiting the affordability and accessibility of treatment options. Many insurance plans do not fully cover evidence-based interventions for obesity management such as behavioral counseling, medications or metabolic/bariatric surgery. For example, federal health insurance programs do not offer adequate coverage for AOMs, thereby inhibiting access to this treatment option for patients who have a low income.

8.3. Lack of Health Literacy

Education and awareness play a crucial role in addressing the issue of inadequate care for people with obesity. Obesity is a complex, multifactorial chronic disease. Given the complexity of obesity-related information and the rapidly changing evidence being reported in the literature, many people may not have accurate information about healthy lifestyle practices or the harmful effects of obesity on overall health.

The World Health Organization's definition of health literacy states, "Health literacy represents the personal knowledge and competencies that accumulate through daily activities, social interactions and across generations. Personal knowledge and competencies are mediated by the organizational structures and availability of resources that enable people to access, understand, appraise and use information and services in ways that promote and maintain good health and well-being for themselves and those around them."[9] Studies have shown that 54% of people between the ages of 16 and 74 lack proficiency in literacy that is equivalent to reading below the sixth-grade level.[10] Writing about the relationship between health literacy and body weight, Michou et al. noted, "There is evidence that low [health literacy] could be implicated in the aetiology of obesity and could be an important reason behind obese people's inability to succeed in losing excess body weight or maintaining normal weight status."[11]

Physicians must have a clear understanding of each patient's level of comprehension so they can help patients with obesity understand this complex disease. They can empower their patients by using simple language and analogies that make it easier to understand how obesity impacts health. When patients comprehend information about obesity, they are more likely to actively participate in their care. Better comprehension can also decrease patients' feelings that they have no control over what is happening to their bodies and motivate them to take positive steps toward lifestyle changes.

In addition to using clear, simple language and analogies, clinicians may find visual aids and handouts useful for patient education. Most large health care organizations provide resources for creating patient education materials suited to average literacy levels. Free patient information on obesity is also available from the **Obesity Action Coalition** (OAC), the **American Academy of Family Physicians** (AAFP) and other organizations. Providing handouts and visual aids that include foods from a range of cultures also promotes an environment of inclusiveness.

8.4. Social Determinants of Health

People with obesity face a higher burden of unfavorable social determinants of health (SDOH), including unemployment, low income, low education level, psychological distress and food insecurity. SDOH screening and management approaches may help identify populations that have been made socially vulnerable and have a high burden of traditional cardiovascular risk factors. Doing so can ultimately reduce the overall burden of obesity and improve cardiovascular health in these populations.

Writing about disparities in obesity prevalence in the United States, Kumanyika stated, "Structural racism contributes to poor health through neighborhood or [ZIP] code effects, that is, limitations on access to high-quality

schools or childcare opportunities and other services and opportunities, and lack of political voice associated with residential segregation."[12] They noted that housing discrimination perpetuates segregation by limiting Black people's ability to buy homes and affecting the value of their homes. Because owning a home contributes to wealth building, this discrimination can perpetuate lower socioeconomic status from one generation to the next.

Having a health equity perspective on obesity involves recognizing the ways in which contemporary and historical injustices, limited resources and lack of opportunities can impact health-related behaviors and outcomes.[12] An equity lens helps to highlight contextual factors that can influence obesity-related behaviors but may be overlooked or taken for granted as the norm. It also draws attention to SDOH and societal forces that impact patients with obesity, such as power dynamics, community involvement and access to people who have the power to foster positive change.

The AAFP's Beyond the Surface: A Proactive Guide Series on Screening for Social Determinants of Health equips primary care physicians with useful strategies and tools to effectively screen for SDOH in their practice.

8.5. Weight Bias

The OAC's definition of weight bias states, "Weight bias is negative attitudes, beliefs, judgments, stereotypes, and discriminatory acts aimed at individuals simply because of their weight. It can be overt or subtle and occur in any setting, including employment, healthcare, education, mass media, and relationships with family and friends."[13] One study found that the rate of weight discrimination among U.S. adults increased by 66% between 1995 and 2006.[14]

Weight bias arises from certain beliefs that are prevalent in U.S. society. One of these beliefs is that stigma and shame will motivate people to take action and lose weight. Another belief underlying weight bias is that people are solely responsible for their own weight. Instead of addressing the environmental conditions that contribute to obesity (e.g., limited access to healthy food options and safe places to be physically active), society often blames people who do not lose weight for lacking self-discipline or willpower.

In addition to these individual-level beliefs, weight bias also exists due to cultural factors. In cultures that highly value thinness, society perpetuates messages that equate having obesity with being defective or flawed as a person. In the United States, open expression of weight bias is often tolerated, if not reinforced, by society and the media. Social media has been instrumental in perpetuating negative stereotypes about people with obesity, unjustly labeling them as inactive, lazy or gluttonous and criticizing them for purportedly "not doing enough" in terms of diet and exercise. In addition, weight bias can be perpetuated by public health policies that focus only on people's weight and fail to consider factors related to overall health and well-being (e.g., body mass index [BMI]-based health initiatives and employee wellness programs).

Researchers have found that people with obesity face discrimination and negative judgments in the workplace, where they are perceived as having worse hygiene, lower potential and less self-discipline.[15] They are less likely to be considered for sales positions and have lower promotion prospects. Studies have also suggested that there is a wage penalty associated with obesity, especially for women. The Institute for Employment Studies estimates that women with obesity earn up to 20% less than those without obesity.[16] Since 1964, the United States has had laws that protect employees from discrimination based on race, color, religion, sex and national origin, but only one U.S. state — Michigan — currently has a law that bans body size discrimination and makes height and weight protected classes.[17]

Weight bias can have severe, lasting physical and psychological consequences for people with obesity.[18] It can reduce confidence and increase the risk of depression, anxiety, suicidal thoughts and low self-esteem. Research has shown that patients who experience weight-based discrimination in a health care setting are more likely to cancel appointments and avoid preventive care, which results in a greater risk of morbidity and mortality due to health conditions (e.g., cardiovascular disease, diabetes) and increased health care costs.

Several studies have shown a significant and positive association between weight bias internalization (WBI) and disordered eating, including binge eating, other eating disorder pathology and symptoms of food addiction. A systematic literature review on the relationship between WBI and health found that the correlation between WBI and binge eating symptoms was consistently moderate

to strong, and the association remained significant even after controlling for BMI and other weight- and eating-related variables.[19] The review's authors also stated, "WBI has been found to predict eating psychopathology (including purging behaviors), above and beyond measures of depression and self-esteem."[19]

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9. Collaborative Care for Patients With Obesity

Obesity poses complex challenges, and collaboration among various health care professionals may be required to provide comprehensive, evidence-based treatment. Although some family physicians may not have the resources to engage other professionals due to limited funding, rural location, lack of health system support or other factors, a multidisciplinary team approach to obesity care is a best-case scenario, if possible. Physicians, nurses, registered dietitians (RDs), psychologists and physical therapists (PTs) have unique skills, expertise and perspectives that can be leveraged to address the physical aspects of obesity and the emotional and social factors that influence obesity management.

Creating a supportive, cohesive health care team for patients with obesity involves more than simply assembling a group of health care professionals who can address the various aspects of obesity treatment. Effective collaboration hinges on regular communication, interdisciplinary meetings and shared decision-making to facilitate comprehensive, coordinated care delivery. Building a culture of mutual respect and appreciation creates a positive work environment that is conducive to optimal patient outcomes. It is also important for family physicians to prioritize ongoing education on best practices in obesity management and address weight bias with the team.

The American Academy of Family Physicians (AAFP) offers the following online continuing medical education (CME) courses to provide information about weight bias and proven strategies for treating and managing obesity and associated comorbidities:

- Weight Bias: How Is It Affecting Your Practice?
- Weight Bias
- Obesity CME for the Family Physician

9.1. The Role of Registered Dietitians, Psychologists and Physical Therapists

Registered Dietitians

Diet plays a central role in obesity management, but there is no one "best diet" for patients with obesity. A diet that maximizes nutrition and promotes weight loss for one patient may cause metabolic disarray, be financially unsustainable or violate religious practices for another. RDs can tailor dietary recommendations and create personalized nutrition plans for individual patients based on multiple considerations (e.g., needs, preferences, medical conditions) (*Table 9.1*). Through dietary counseling and education, they empower people with obesity to make healthier food choices and adopt better eating habits that are sustainable without feeling restrictive.

Table 9.1. Considerations for Individual Dietary Recommendations

Consideration	Examples
Past medical history	Type 2 diabetes, alpha-gal allergy, vitamin deficiency, malabsorption due to metabolic/bariatric surgery, nephrolithiasis, pancreatitis, chronic kidney disease, eating disorder
Family history	Coronary artery disease, type 2 diabetes, gallstones
Social history	Alcohol use, religious/cultural/moral beliefs, access to food resources
Lifestyle factors	Work schedule, family commitments
Behavioral patterns	Meal timing, cooking skills, portion sizes, snacking habits, emotional eating triggers, frequency of eating out
Nutrition and hydration requirements	Age, sex, weight, height, activity level
Health goals	Weight loss, weight maintenance, increase of muscle mass, management of type 2 diabetes

The cost of having direct access to an RD may be a concern for some outpatient practices, but there are options for billing to support RD services. According to one coding and documentation expert, "Medicare allows [an RD] to provide most services in continuation of a physician's plan of care as incident to the physician's service as long as all other incident-to requirements are met."[1]

An RD may be the sole provider of medical nutrition counseling (MNT). Under current regulations, Medicare Part B only covers this counseling for people who have diabetes or renal disease or have had a kidney transplant in the last 36 months.[2] The Medical Nutrition Therapy Act — which was introduced in Congress in November 2023 but had not passed as of May 2024 — would extend Medicare Part B coverage of outpatient MNT to people with a number of other diseases and conditions, including obesity.[3] It would also allow nurse practitioners, physician assistants, clinical nurse specialists and clinical psychologists to refer patients for MNT.

Psychologists

Obesity is often intertwined with complex psychological factors such as stress, depression and low self-esteem. For example, National Health and Nutrition Examination Survey (NHANES) data from 2005-2010 showed that 43% of U.S. adults with depression had obesity, and adults with depression were more likely to have obesity than adults without depression.[4] In light of the numerous demands placed on family physicians, they may find it helpful to optimize their limited time and resources by delegating this aspect of obesity care to a psychologist. Psychologists can help patients identify emotional barriers to weight loss that may take months or years to fully uncover and address. Cognitive behavioral therapy may be an option to help patients develop coping mechanisms to deal with their challenges.

In addition, psychologists perform the clearance evaluations that are required by insurance companies as part of the prior authorization process for metabolic/bariatric surgery. These evaluations help screen for underlying mental health conditions (e.g., depression, anxiety, eating disorders) that, if untreated, could negatively impact a patient's ability to cope with surgery and its aftermath.

Family physicians who do not have a psychologist immediately accessible within their clinic or health system should consider proactively seeking out local psychologists who have a specialization or background in treating patients with obesity. By fostering relationships with local psychologists, physicians can facilitate timely referrals, enhance continuity of care and broaden the support network available to patients as they navigate the challenges of obesity management.

Physical Therapists

An exercise prescription can optimize movement and function and reduce pain, resulting in an overall improvement in a patient's quality of life. In addition to its well-established benefits for cardiovascular health and mental well-being, physical activity is vital for weight management. The synergistic effect of combining exercise with dietary changes results in greater weight loss. Physical activity can also increase or preserve lean muscle mass and prevent weight regain. Increasing or maintaining lean muscle mass improves both body composition and overall function.

PTs utilize exercise therapy and manual techniques to promote mobility, strength and independence. In the context of obesity management, they can design and implement tailored exercise programs that support weight loss and improve physical function. Patients with overweight and obesity have a higher risk of injury than patients with a normal body mass index (BMI) classification.[5] A PT can design an exercise program suited to the patient's abilities and risk level so that their workouts are safe and effective.

It is rare to have a physical therapist located within a primary care clinic, and legal counsel and compliance experts should be consulted to ensure any such arrangements adhere to applicable laws and regulations. It is more common for family physicians to refer patients to an external physical therapy clinic. Before doing so, it is advisable to thoroughly research and visit potential clinics to confirm that they can effectively treat patients of diverse body sizes, have facilities and equipment suitable for people with obesity and are free from behaviors that perpetuate weight bias or stigma.

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