DHA TELEHEALTH CLINICAL GUIDELINES

FOR VIRTUAL MANAGEMENT

OF OBESITY – 42

Version 2

Issue date: 21/02/2024

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Health Policies and Standards Department

Health Regulation Sector (2024)

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INTRODUCTION

Health Regulation Sector (HRS) forms an integral part of Dubai Health Authority (DHA) and is mandated by DHA Law No. (14) of the year (2021) amending some clauses of law No. (6) of 2018 pertaining to the Dubai Health Authority (DHA), to undertake several functions including but not limited to:

- Developing regulation, policy, standards, guidelines to improve quality and patient safety and promote the growth and development of the health sector;

- Licensure and inspection of health facilities as well as healthcare professionals and ensuring compliance to best practice;

- Managing patient complaints and assuring patient and physician rights are upheld;

- Governing the use of narcotics, controlled and semi-controlled medications;

- Strengthening health tourism and assuring ongoing growth; and

- Assuring management of health informatics, e-health and promoting innovation.

The DHA Telehealth Clinical Guidelines aim to fulfil the following overarching DHA Strategic Priorities (2026):

- Pioneering Human-centered health system to promote trust, safety, quality and care for patients and their families.

- Make Dubai a lighthouse for healthcare governance, integration and regulation.

Clinical Guidelines for Virtual Management of Obesity

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- Leading global efforts to combat epidemics and infectious diseases and prepare for disasters.

- Pioneering prevention efforts against non-communicable diseases.

- Become a global digital health hub.

- Foster healthcare education, research and innovation.

ACKNOWLEDGMENT

The Health Policy and Standards Department (HPSD) developed this Guideline in collaboration with Subject Matter Experts and would like to acknowledge and thank these health professionals for their dedication toward improving quality and safety of healthcare services in the Emirate of Dubai.

Health Regulation Sector

Dubai Health Authority

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EXECUTIVE SUMMARY

Telehealth is based on Evidence Based Practice (EBP) which is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence and guidelines from systematic research

Obesity is a complex condition defined by the presence of an excessive amount of fat accumulation in the body.

Obesity has become one of the most important public health problems in the United States and many other resource-rich countries and transitional economies. The greatest concern with being overweight and obese are the significantly increased risk factors for many other conditions, such as cancer, heart disease, strokes, and diabetes.

There are several factors that may lead to obesity, and they include hereditary, dietary, and medical factors. An individual may be predisposed to obesity, consume more calories than the body can metabolize, or may develop obesity secondary to another medical condition, such as endocrine disorders.

This guideline is presented in the format comprising of clinical history/symptoms, differential diagnosis, investigations and management. Identification of 'Red Flags' or serious conditions associated with the disease is an essential part of this telehealth guideline as it aids the physician to manage patients safely and appropriately by referrals to ER, family physicians or specialists for a face to face management.

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DEFINITIONS/ABBREVIATIONS

Virtual Clinical Assessment: Is the evaluation of the patient's medical condition virtually via telephone or video call consultations, which may include one or more of the following: patient medical history, physical examination and diagnostic investigations.

Patient: The person who receives the healthcare services or the medical investigation or treatment provided by a DHA licensed healthcare professional.

ABBREVIATIONS

DHA	:	Dubai Health Authority
EBP	:	Evidence Based Practice
ER	:	Emergency Room
KPI	:	Key Performance Indicator

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1. BACKGROUND

1.1. Introduction

1.1.1. Obesity is a complex condition defined by the presence of an excessive amount of fat accumulation in the body.

1.1.2. Obesity has become one of the most important public health problems in the United States and many other resource-rich countries and transitional economies. The greatest concern with being overweight and obese are the significantly increased risk factors for many other conditions, such as cancer, heart disease, strokes, and diabetes.

1.1.3. There are several factors that may lead to obesity, and they include hereditary, dietary, and medical factors. An individual may be predisposed to obesity, consume more calories than the body can metabolize, or may develop obesity secondary to another medical condition, such as endocrine disorders.

1.2. Definitions

1.2.1. The term "obesity" refers to an excess of fat. However, the methods used to directly measure body fat are not available in daily practice. Considering this, the development of body mass index (BMI) can be used to screen patients for obesity by adjusted values comparing the

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individual's weight against their height. A BMI value provides an estimate of body fat that is sufficiently accurate for clinical purposes.

1.2.2. The body mass index (BMI) is the accepted standard measure of overweight and obesity for adult. BMI provides a guideline for weight in relation to height and is equal to the body weight (in kilograms) divided by the height (in meters) squared.

1.2.3. Refer to APPENDIX 1 for BMI Interpretations

1.3. Epidemiology

1.3.1. Overweight and obesity conditions were initially a concern in high income countries, but has become significantly prevalent in middle- and lower-income nations. Globally, there are a higher percentage of men that are overweight, but a higher percentage of women that present as obese. Obesity is more prevalent among Hispanics and African American communities. Obesity is becoming increasingly prevalent in low- and middle-income countries, where food that is low in cost, but high in fat, sugar, and salt content is abundant and easily accessible.

1.3.2. Children in these countries are more vulnerable to malnutrition, and along with the excessive exposure to high fat, sugar, salt, and calorie foods is resulting in an incline in childhood obesity rates.

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2. SCOPE

2.1. Telehealth services in DHA licensed Health Facilities.

3. PURPOSE

3.1. To support the implementation of Telehealth services for patients with Obesity in Dubai Health Authority (DHA) licensed Health Facilities

4. APPLICABILITY

4.1. DHA licensed physicians and health facilities providing Telehealth services.

4.2. Exclusion for Telehealth services are as follows

4.2.1. Emergency cases where immediate intervention or referral is required.

4.2.2. Prescribe Narcotics, Controlled or Semi-Controlled medications.

5. CAUSES

5.1. Refer to APPENDIX 2 for the Causes of Obesity

6. CLINICAL HISTORY

6.1. Assessing a patient's history, as well as family history, can assess the physician in establishing the possible causes of the patient's overweight or obese condition. Genetic factors play a permissive role and interact with environmental factors to produce obesity. Studies suggest that heritable factors are responsible for 40 to 85% of the variation in adiposity. Hereditary factors should also be assessed to determine that the risk factors that a patient faces as a consequence of obesity. A

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family history of diabetes, cardiovascular disease, strokes, and cancers should be assessed to determine any increased risk of these conditions due to obesity.

6.2. In most patients, the presentation of obesity is straightforward, with the patient indicating problems with weight or repeated failure in achieving sustained weight loss. In other cases, however, the patient may present with complications and/or associations of obesity.

6.3. A full history must include a dietary inventory and an analysis of the patient's activity level. Screening questions to exclude severe or untreated depression are vital because depression may be a consequence or a cause of excessive dietary intake and reduced activity.

6.4. Because almost 30% of patients who are obese have eating disorders, screen for these in the history. The possibility of bingeing, purging, lack of satiety, food-seeking behavior, night-eating syndrome, and other abnormal feeding habits must be identified because management of these habits is crucial to the success of any weight-management program.

6.5. When taking the history, the clinician should investigate whether other members of the patient's family have weight problems, inquire about the patient's expectations, and estimate the patient's level of motivation. The clinician should also determine whether the patient has had any of the comorbidities related to obesity, including the following

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6.5.1.   Respiratory: Obstructive sleep apnea, greater predisposition to respiratory infections, increased incidence of bronchial asthma

6.5.2.   Psychological: Social stigmatization and depression

6.5.3.   Cardiovascular: Coronary artery disease, essential hypertension, obesity-associated cardiomyopathy, accelerated atherosclerosis, and pulmonary hypertension of obesity

6.5.4.   Central nervous system (CNS): Stroke, idiopathic intracranial hypertension, and meralgia paresthetica

6.5.5.   Obstetric and perinatal: Pregnancy-related hypertension, fetal macrosomia

6.5.6.   Surgical: Increased surgical risk and postoperative complications, including wound infection, postoperative pneumonia, deep venous thrombosis, and pulmonary embolism

6.5.7.   Pelvic: Stress incontinence

6.5.8.   Gastrointestinal (GI): Gall bladder disease (cholecystitis, cholelithiasis), non-alcoholic steatohepatitis (NASH), fatty liver infiltration, and reflux esophagitis

6.5.9.   Orthopedic: Osteoarthritis, chronic lumbago

6.5.10. Metabolic: Type 2 diabetes mellitus, prediabetes, metabolic syndrome, and dyslipidemia

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6.5.11.   Reproductive: In women: Anovulation, early puberty, infertility, hyperandrogenism, and polycystic ovaries; in men: hypogonadotropic hypogonadism

6.5.12.   Cutaneous: Intertrigo (bacterial and/or fungal), acanthosis nigricans, hirsutism, and increased risk for cellulitis and carbuncles

6.5.13.   Extremity: Venous varicosities, lower extremity venous and/or lymphatic edema

6.5.14.   Miscellaneous: Reduced mobility and difficulty maintaining personal hygiene

6.6.   Physicians might ask the patient to take the following measurements:

6.6.1.   Waist and hip circumference - serial tracking of these measurements helps in estimating the clinical risk over time.

6.6.2.   Neck circumference is predictive of a risk of sleep apnea - serial measurement in the individual patient is clinically useful for risk stratification

6.7.   Physician might consider assessing the below through video call:

6.7.1.   Cutaneous - intertriginous rashes from skin-on-skin friction; for hirsutism in women, acanthosis nigricans, and skin tags, which are common with insulin resistance secondary to obesity

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6.7.2. Abdominal - Attempt to exclude tender hepatomegaly, which may suggest hepatic fatty infiltration or NASH, and distinguish the striae distensae from the pink and broad striae that suggest cortisol excess

6.7.3. Joint deformities (e.g., coxa vara), evidence of osteoarthritis, and any pressure ulcerations. Localized and lipodystrophic fat distribution should also be identified, because of their common association with insulin resistance.

7. DIAGNOSTIC CONSIDERATIONS

7.1. Mesomorphic body states, as seen in body builders and people in related occupations (e.g., professional wrestling), may be associated with elevated BMIs, but as a result of increased muscle mass rather than excess adiposity. In addition, generalized edema may be mistaken for obesity if not carefully evaluated clinically. Other conditions to consider while examining for obesity include the following:

7.1.1. Depression

7.1.2. Type 2 diabetes mellitus

7.1.3. Fatty liver

7.1.4. Gastroesophageal reflux disease (GERD)

7.1.5. Hirsutism

7.1.6. Polygenic hypercholesterolemia

7.1.7. Hypothyroidism

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7.1.8.   Insulinoma

7.1.9.   Hypogonadotropic hypogonadism

7.1.10.   Generalized lipodystrophy

7.1.11.   Polycystic ovarian disease (Stein-Leventhal syndrome)

7.1.12.   Cushing syndrome

8.   DIFFERENTIAL DIAGNOSIS

8.1.   Acromegaly

8.2.   Ascites

8.3.   Iatrogenic Cushing Syndrome

9.   EVALUATION AND INVESTIGATIONS

9.1.   In patients found to be overweight/obese (body mass index [BMI] ≥25 kg/m^2) or to have abdominal obesity (waist circumference greater than ≥35 in [88 cm] in women or ≥40 in [102 cm] in men), assessment of the etiology of the weight gain and its associated health risk should be undertaken.

9.1.1.   Investigating the cause — Many factors contribute to the development of obesity. However, most cases of obesity are related to behaviors such as a sedentary lifestyle and increased caloric intake. Although secondary causes of obesity are uncommon, they should be considered and ruled out.

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a. To determine etiology and plan future management strategies, additional medical history should include age at onset of weight gain, events associated with weight gain, previous weight loss attempts, change in dietary patterns, history of exercise, current and past medications, and history of smoking cessation. Medications are a common cause of weight gain, in particular insulin, sulfonylureas, thiazolidinediones, glucocorticoids, and antipsychotics.

b. Women have more body fat as a percent of body weight than men from puberty onward and tend to gain more fat during adult life than men. In addition, women may experience modest but adverse increases in body weight and fat distribution after a first pregnancy that persist.

c. Findings from physical evaluation that might point to a secondary or related cause of obesity include goiter (hypothyroidism); proximal muscle weakness, moon facies, and/or purple striae (Cushing's syndrome); and acne and/or hirsutism (polycystic ovary syndrome [PCOS]).

d. Additional testing may be required depending upon the findings on history, physical evaluation and initial blood tests. This could include laboratory tests to assess the hypothalamic-pituitary axis if there are

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signs of disorders such as Cushing's syndrome, growth hormone deficiency, or hypothalamic obesity or hypothyroid related obesity (measurement of thyroid-stimulating hormone [TSH]).

9.1.2. Assessing obesity-related health risk — Assessment of an individual's overall risk status includes determining the degree of overweight (BMI) and the presence of abdominal obesity (waist circumference), cardiovascular risk factors, sleep apnea, nonalcoholic fatty liver disease, symptomatic osteoarthritis, and other obesity-related comorbidities. The coexistence of several diseases, including established coronary heart disease (CHD), other atherosclerotic disease, type 2 diabetes mellitus (measurement of fasting glucose or glycated hemoglobin [HbA1c]), and sleep apnea, places patients in a very high-risk category for subsequent mortality. Assessment and management of these diseases is an important part of the evaluation and management of the adult who is overweight or obese. Further, the relationship between BMI and risk allows identification of BMI categories that can be used to guide selection of weight loss therapy

9.1.3. Weight history – The age of onset of obesity is of some importance in determining health risk. The risk for any given degree of obesity seems to be greater in patients whose obesity begins before the age of 40 years,

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probably because of the longer time period over which comorbid conditions, such as diabetes mellitus and hypertension, can develop. Weight gain after age 18 years is important. Even very modest weight gain (≥5 kg) after age 18 years in women and after age 20 years in men increases the risk of CHD and type 2 diabetes at all levels of initial BMI.

9.1.4. Cardiovascular risk factors – Cardiovascular risk factors should be identified, including hypertension, dyslipidemia (reduced levels of high-density lipoprotein [HDL] or elevated levels of low-density lipoprotein [LDL]), elevated triglycerides, impaired fasting glucose or diabetes, obstructive sleep apnea, and cigarette smoking. These risk factors should be managed to mitigate cardiovascular disease (CVD) risk independently of weight loss efforts.

9.1.5. Other comorbidities – Obesity is also associated with other disorders that do not increase cardiovascular risk but are associated with significant morbidity. Examples include symptomatic osteoarthritis, cholelithiasis, nonalcoholic fatty liver disease, PCOS, depression, and impaired quality of life.

9.2. Candidates for weight-loss interventions — Because of known health risks associated with excess body weight, people with BMI >25 kg/m^2 are candidates for

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weight-loss interventions. The goal of therapy is to prevent, treat, or reverse the complications of obesity, including decrements in quality of life.

9.2.1. For patients with BMI between 25 and 29.9 kg/m^2 who do not have risk factors for CVD or other obesity-related comorbidities, counseling regarding prevention of further weight gain is important. This includes advice on dietary habits and physical activity.

9.2.2. Patients with BMI ≥30 kg/m^2 or between 25 and 29.9 kg/m^2 and with one or more risk factors for CVD (diabetes, hypertension, dyslipidemia), or with obstructive sleep apnea or symptomatic osteoarthritis, should be counseled about weight-loss interventions (diet, physical activity, behavioral modification)

10. HEALTH CONSEQUENCES

10.1. People who have obesity, compared to those with a normal or healthy weight, are at increased risk for many serious diseases and health conditions, including the following:

10.1.1. All-causes of mortality

10.1.2. Hypertension

10.1.3. High LDL cholesterol, low HDL cholesterol, or high levels of triglycerides

10.1.4. Type 2 diabetes

10.1.5. Coronary heart disease

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10.1.6.   Stroke

10.1.7.   Gallbladder disease

10.1.8.   Osteoarthritis

10.1.9.   Sleep apnea

10.1.10. Cancers (endometrial, breast, colon, kidney, gallbladder, and liver)

10.1.11. Low quality of life

10.1.12. Mental illness such as clinical depression, anxiety, and other mental disorders

10.1.13. Body pain and difficulty with physical functioning

11. MANAGEMENT AND TREATMENT

11.1.   Refer to APPENDIX 3 for the Virtual Management of Obesity

11.2.   Goals of treatment

The goal of therapy is to prevent, treat, or reverse the complications of obesity and improve quality of life. Health benefits have been reported with weight loss of only 5% of body weight. Realistic and achievable weight loss goals should be individualized and agreed upon by patient and clinician.

11.3.   Identify candidates

11.3.1.   Assessment of an individual's overall risk status includes determining the degree of overweight (body mass index [BMI]), the presence of abdominal obesity (waist circumference), and the presence of

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cardiovascular risk factors (e.g., hypertension, diabetes, dyslipidaemia) or comorbidities (e.g., sleep apnea, non-alcoholic fatty liver disease). The relationship between BMI and risk allows identification of patients to target for weight loss intervention.

a. Little or no risk – A BMI of 18.5 to 24.9 kg/m2 is associated with little or no increased risk unless waist circumference is high (a marker of increased cardiometabolic risk) or the subject has gained more than 10 kg since age 18 years. Asians and Asian Americans start to incur risk, even in this low range.

b. Low risk – Individuals with a BMI of 25 to 29.9 kg/m2, who do not have risk factors for cardiovascular disease (CVD) or other obesity-related comorbidities, may be described as having low risk. They should receive counselling on prevention of weight gain. This includes advice on dietary habits and physical activity.

c. Moderate risk – Individuals with a BMI between 25 and 29.9 kg/m2 and with one or more risk factors for CVD (diabetes, hypertension, dyslipidaemia) or with a BMI of 30 to 34.9 kg/m2, are at moderate risk. Such patients should be offered or referred to intensive, multicomponent behavioural intervention. This includes tools and strategies to make dietary changes, increase physical activity, and

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support and maintain weight loss. Pharmacologic therapy may also be considered for some patients.

    d. High risk – Individuals with BMI of 30 to 34.9 kg/m2 with CVD risk factor or BMI of 35 to 39.9 kg/m2 with no CVD risk factor are at high risk. Those Individuals should receive the intensive, multicomponent behavioural intervention and pharmacologic therapy.

    e. Very high risk – Individuals with BMI of 35 to 39.9 kg/m2 with CVD risk factor or BMI ≥ 40 kg/m2 are at very high risk from their obesity. Individuals in the highest risk categories should receive the most aggressive treatment (intensive, multicomponent behavioural intervention, pharmacologic therapy, bariatric surgery).

11.3.2. Waist circumference is measured with a metal or plastic, non-distensible tape measure, placed around the abdomen parallel to the floor at the level of the iliac crest with the patient standing. A waist circumference of ≥40 inches (102 cm) for men and ≥35 inches (88 cm) for women is considered elevated and indicative of increased cardiometabolic risk and the need for more aggressive treatment.

11.3.3. There is ethnic variability in waist circumference values that predict increased risk. As an example, Japanese Americans and Indians from South Asia have more total fat and visceral fat and therefore may be at

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higher risk of developing type 2 diabetes for a given BMI than whites. In Asian females, waist circumference >80 cm (31.5 inches) and in Asian males a value >90 cm (35.4 inches) are considered abnormal.

11.4. Initial treatment

11.4.1. The initial management of individuals who would benefit from weight loss is a comprehensive lifestyle intervention: a combination of

   a. Dietary therapy

   b. Exercise

   c. Behavioural modification

11.4.2. All patients who would benefit from weight loss should receive counselling on diet, exercise, and goals for weight loss. It includes regular self-monitoring of food intake, physical activity, and body weight.

11.5. Dietary therapy

11.5.1. Many types of diets produce modest weight loss. Options include balanced low-calorie, low-fat/low-calorie, moderate-fat/low-calorie, and low-carbohydrate diets, as well as the Mediterranean diet. Dietary adherence is an important predictor of weight loss, regardless of the type of diet. Thus, we suggest tailoring a diet that reduces energy intake below energy expenditure to individual patient preferences, rather than focusing on the macronutrient composition of the diet. The addition of

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dietary counselling may facilitate weight loss, particularly during the first year.

11.5.2.   Continued surveillance by both clinician and patient are essential for treatment success. Return calls with the clinician or dietician should be scheduled at regular intervals to assess barriers, discuss next steps, and offer encouragement. If weight loss is less than 5% in the first 6 months, something else should be tried.

11.6.   Exercise

11.6.1.   Although less potent than dietary restriction in promoting weight loss, increasing energy expenditure through physical activity is a strong predictor of weight loss maintenance. Physical activity should be performed for approximately 30 minutes or more, 5 to 7 days a week, to prevent weight gain and to improve cardiovascular health. There appears to be a dose effect for physical activity and weight loss, and much greater amounts of exercise are necessary to produce significant weight loss in the absence of a calorically restricted diet. Therefore, when weight loss is the desired goal, a diet should be combined with physical activity and the activity should be gradually increased over time as tolerated by the patient. A multicomponent program that includes aerobic and resistance

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training is preferred. Existing medical conditions, age, and preferences for types of exercise should all be considered in the decisions.

11.7. Behaviour modification

11.7.1. Behaviour modification or behaviour therapy is one cornerstone in the treatment for obesity. The goal of behavioural therapy is to help patients make long-term changes in their eating behaviour by modifying and monitoring their food intake, modifying their physical activity, and controlling cues and stimuli in the environment that trigger eating. These concepts are usually included in programs conducted by psychologists or other trained personnel as well as many self-help groups.

11.8. Subsequent treatment

11.8.1. For patients who are unable to achieve weight loss goals with a comprehensive lifestyle intervention alone, options include pharmacologic therapy, the use of medical devices, or, in some cases, bariatric surgery.

11.9. Drug therapy

11.9.1. Drug therapy may be a helpful component of the treatment regimen for people with obesity; it can be considered for those with a BMI > 30 kg/m2, or a BMI of 27 to 29.9 kg/m2 with comorbidities, who have not met weight loss goals (loss of at least 5% of total body weight at 3 to 6

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months) with a comprehensive lifestyle intervention. The decision to initiate drug therapy should be individualized and made after a careful evaluation of the risks.

11.9.2. For patients who are candidates for pharmacologic therapy, the choice of anti-obesity drugs is often governed by the comorbidities and relative contraindications present in the individual patient. As an example, although metformin does not produce enough weight loss (5%) to qualify as a "weight loss drug", it is a good choice for overweight individuals at high risk for diabetes.

11.9.3. When a decision has been made to initiate pharmacologic therapy, consider patient comorbidities, patient preferences, insurance coverage and cost, and potential adverse effects. Single agents are preferred over combination medications as initial pharmacotherapy.

11.9.4. Choice of agent

   a. Orlistat - 120mg taken immediately before, during, or up to 1 hour after each main meal (max. 120mg 3 times daily); continue treatment beyond 12 weeks only if weight loss since start of treatment exceeds 5%.

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11.10. Devices

11.10.1. There are several types of devices approved for use in the treatment of obesity. The use of one of these devices may be considered for use in those patients in whom medications are ineffective or not tolerated, for those patients who are unable or unwilling to undergo bariatric surgery, or as a bridging therapy prior to bariatric surgery.

11.10.2. In referring a patient to receive one of these devices, it is important to note that the BMI indication for each device is different, with a BMI range between 25 to 55 kg/m2. In addition, the majority of insurance companies do not cover the costs of these devices; the financial burden to the patient may be significant depending upon which device is used. In addition to cost, recommendations for the use of any of these devices is dependent upon many other factors, including patient comorbidities, preferences, and weight loss goals.

a. Laparoscopic adjustable gastric banding (LAGB) – utilizes a surgically placed band around the top portion of the stomach, leaving only a small portion available for food and a narrow opening to enter the rest of the gut. The system helps the patient eat less by limiting the amount of food that can be eaten at one time and increasing the time it takes for food to be digested. The system is used for weight

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loss in severe obesity in those who have been obese for at least 5 years and for whom nonsurgical weight loss methods have not been successful. They must be willing to make major changes in their eating habits and lifestyle. Patients must have a BMI of >40 kg/m2, BMI >35 kg/m2 with one or more weight-related complications or be at least 100 pounds over their estimated ideal weight.

b. Electrical stimulation (vagal blockade) systems – These systems deliver small electrical pulses to block transmission of nerve signals in the vagus nerve. The vagus nerve is involved in regulating stomach emptying and signalling to the brain that the stomach feels empty or full. Vagal blockade is intended to promote weight loss by suppressing neural communication between the brain and the stomach. The precise mechanism of weight loss related to the use of the device is not clear. Electrical stimulator systems are indicated for individuals who are at least 18 years old, with a BMI of 40-44.9 kg/m2, or BMI of 35-39.9 kg/m2 with one or more weight-related complications, and who have been unsuccessful with weight loss attempts by diet and exercise in a supervised program within the last 5 years.

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c. Intragastric balloon systems – With these techniques, saline filled balloons are placed in the stomach to take up space and produce a sensation of satiety. They are indicated for weight reduction in conjunction with diet and exercise in adult patients with a BMI of 30 to 40 kg/m2 and one or more obesity-related comorbid conditions, or for adult patients with obesity who have failed weight reduction with diet and exercise alone.

d. Gastric emptying (aspiration) systems – A surgically placed gastrostomy tube is used to drain a portion of the stomach contents after every meal, decreasing the calories absorbed. These are intended to assist in weight loss in patients aged 22 and older with a BMI of 35 to 55 kg/m2, and who have failed to achieve and maintain weight loss through non-surgical weight-loss therapy. These devices are contraindicated in patients with eating disorders.

11.11. Bariatric surgery

11.11.1. Candidates for bariatric surgery include adults with a BMI ≥40 kg/m2, or a BMI of 35 to 39.9 kg/m2 with at least one serious comorbidity, who have not met weight loss goals with diet, exercise, and drug therapy.

11.12. Risks of treatment

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11.12.1. Treatments for obesity can be divided according to the risk of side effects. Most of the available drugs have minor side effects that diminish with treatment; however, a few serious side effects have been identified that should preclude short-term use in subjects who wish to lose small amounts of weight (the majority of overweight people). Chronic treatment may be needed when the magnitude of the obesity carries larger risks, e.g., a BMI above 30 kg/m2, or a BMI between 27 and 30 kg/m2 with complicating factors such as diabetes mellitus or hypertension.

11.12.2. Significant weight loss achieved via any modality may increase the likelihood of cholelithiasis because the flux of cholesterol through the biliary system increases. Diets with moderate amounts of fat that trigger gallbladder contraction may reduce this risk. Similarly, therapy with a bile acid (e.g., ursodeoxycholic acid) may be advisable in selected subjects, such as those who are losing weight rapidly (>1 to 1.5 kg/week)

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APPENDICES

APPENDIX 1 – BMI INTERPRETATIONS

Underweight	BMI <18.5
Normal	BMI 18.5 – 24.9
Overweight	BMI 25 – 29.9
Obese i	BMI 30 – 34.9
Obese ii	BMI 35 – 39.9
Obese iii	BMI 40 or more

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APPENDIX 2 – CAUSES OF OBESITY

Iatrogenic Causes	
Drugs that cause weight gain	Hypothalamic surgery
Dietrary Obesity	
Progressive hyperplastic obesity	Frequency of eating
High-fat diets	Overeating
Neuroendocrine Obesities	
Hypothalamic obesity	Hypothyroidism
Seasonal affective disorder	Cushing's syndrome
Polycycstic ovary syndrome	Hypogonadism
Growth hormone deficiency	Pseudohypoparathyroidism
Social and Behavioral Factors	
Socoeconomic status	Ethnicity
Restrained eaters	Night eating syndrome
Binge eating	Enforced inactivity (postoperative)
Aging	
Psychological Factors	
Genetic (dysmorphic) obesities	
Autosomal recessive traits	Autosomal dominant traits
X-linked traits	Chromosomal abnormalities
Other	
Low birth weight	

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APPENDIX 3 – VIRTUAL MANAGEMENT OF OBESITY ALGORITHM

Virtual Management of Obesity Algorithm

Does the patient have any of the following

- Type 2 diabetes mellitus
- Hypertension
- Fatty liver
- Gastroesophageal reflux disease
- Hirsutism
- Polygenic hypercholesterolemia
- Hypothyroidism
- Insulinoma
- Hypogonadotropic hypogonadism
- Generalized lipodystrophy

- Polycystic ovarian disease
- Cushing syndrome
- Coronary heart disease, Stroke
- Gallbladder disease
- Osteoarthritis
- Sleep apnea
- Low quality of life
- Mental illness such as clinical depression, anxiety, and other mental disorders
- Body pain and difficulty with physical functioning

Yes → **Refer to Family Medicine/ Specialist for face-to-face consultation**

No

Identify the risk category

Low Risk - Overweight	Moderate Risk	High Risk	Very High Risk
BMI of 25 to 29.9 kg/m2 with no CVD risk factor	• BMI between 25 and 29.9 kg/m2 and with CVD risk factors • BMI of 30 to 34.9 kg/m2 with no CVD risk factor	• BMI of 30 to 34.9 kg/m2 with CVD risk factor • BMI of 35 to 39.9 kg/m2 with no CVD risk factor	• BMI of 35 to 39.9 kg/m2 with CVD risk factor • BMI ≥ 40 kg/m2

Treatment	Treatment	Treatment	Treatment
Counselling on prevention of weight gain. (advice on dietary habits and physical activity)	Intensive, multicomponent behavioural intervention	• Intensive, multicomponent behavioural intervention • Pharmacologic therapy • Refer for Intragastric balloon systems	• Intensive, multicomponent behavioural intervention • Pharmacologic therapy • Refer for bariatric surgery or LAGB or Electrical stimulation

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