OBESITY MANAGEMENT FUNDAMENTALS:

Essential Clinical Tools
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A complete adiposity history includes:
- Personal weight history
- Family weight history
- Nutrition history
- History of weight-promoting medications

PERSONAL ADIPOSEITY HISTORY

The personal adiposity history includes the patient’s highest weight, the patient’s attempts at weight reduction (successes) and how the patient reduced weight. The patient should also be asked about any previous use of anti-obesity medications and any herbal or over-the-counter weight loss supplements.

FAMILY HISTORY

The family history should include both a history of family members who have had overweight or obesity and family members who have had adiposity-associated diseases. A focused family history may look like the following:

Does anyone in your family have a history of...
- Overweight or obesity?
- Diabetes?
- Coronary heart disease?
- Hypertension?
- Dyslipidemia?
- Cancers?
- Genetic disorders?

NUTRITION HISTORY

The nutrition history can help clinicians pinpoint both positive and problematic eating patterns, learn about the patient’s food preferences and identify challenges. The nutrition history can also be used to ask about the patient’s access to healthy, affordable food.
### OBESITY CLASSIFICATION

<table>
<thead>
<tr>
<th>BMI</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-24.9</td>
<td>Normal weight</td>
</tr>
<tr>
<td>25.0-29.9</td>
<td>Overweight/pre-obesity</td>
</tr>
<tr>
<td>30.0-34.9</td>
<td>Class 1 obesity</td>
</tr>
<tr>
<td>35.0-39.9</td>
<td>Class 2 obesity</td>
</tr>
<tr>
<td>40.0-49.9</td>
<td>Class 3 obesity</td>
</tr>
<tr>
<td>&gt;50.0</td>
<td>Super obesity</td>
</tr>
</tbody>
</table>

### BEYOND BMI

The **amount, distribution and health** of body fat are more important measures of obesity and health risk than BMI alone.

**Abdominal Obesity—Men**
- WC > 40 inches (102 centimeters)
- Asian >90 centimeters

**Abdominal Obesity—Women**
- WC > 35 inches (88 centimeters)
- Asian >80 centimeters

**Percent Body Fat—Obesity**
- Men: >=25%
- Women: >=32%
## OPQRST Mnemonic Sample Questions

| **Onset** | • When do you think you first began to gain weight?  
• What did you weigh at age 21? 30? 40?  
• What was your highest weight? |
|-----------|---------------------------------------------------------------------|
| **Precipitating Events** | • What circumstances or behaviors contributed to your weight gain?  
• How do you handle stressful situations? Boredom? Sadness? Tiredness?  
• Have any medications or health conditions contributed to your weight gain?  
• If you have been pregnant, how much weight did you gain in pregnancy? |
| **Quality of Life** | • How would you describe your overall health?  
• What are your biggest health concerns?  
• How is your weight affecting you emotionally?  
• What are you unable to do, or what do you avoid doing, because of your weight?  
• What was your weight when you felt your best?  
• Have you ever discussed your weight with a health care professional? |
| **Remedy** | • What have been your experiences trying to lose weight in the past?  
• Can you describe the type of plan you followed? How long did you stay engaged?  
• Which aspects were most successful for you? What didn’t work for you?  
• Did you regain any of the weight you lost?  
• What has triggered your past weight-loss efforts? |
| **Setting** | • Are there currently any barriers or challenges preventing you from beginning an obesity treatment program?  
• Do you have a support system? If so, who?  
• Is there anyone who might sabotage your weight-loss efforts? If so, who?  
• How do your current habits compare to your past efforts with weight loss?  
• What strategies have you used to change your health habits, such as eating, physical activity, stress reduction and sleep schedule? |
| **Temporal Pattern** | • What has been the pattern of your weight gain?  
• Has your weight gain occurred gradually over the years?  
• Has your weight gain happened suddenly over months? |

## NUTRITION HISTORY TOOLS

<table>
<thead>
<tr>
<th>History</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-hour Diet Recall</td>
<td>• Detailed intake data. &lt;br&gt;• Small burden to patient. &lt;br&gt;• Literacy not required.</td>
<td>• Requires recall. &lt;br&gt;• Requires trained interviewer. &lt;br&gt;• Possible interviewer bias. &lt;br&gt;• Can be time-consuming. &lt;br&gt;• Need more than one day to get usual intake.</td>
</tr>
<tr>
<td>Three-day Diary</td>
<td>• Self-administered. &lt;br&gt;• No interview required. &lt;br&gt;• No recall bias.</td>
<td>• Large respondent burden. &lt;br&gt;• Literacy and motivation. &lt;br&gt;• Possible under or over reporting.</td>
</tr>
<tr>
<td>Food Frequency Questionnaire</td>
<td>• Cost effective. &lt;br&gt;• Assess usual dietary intake simply.</td>
<td>• Uses closed-ended questionnaire. &lt;br&gt;• Low accuracy due to recall bias.</td>
</tr>
<tr>
<td>(FFQ)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-week Application</td>
<td>• Detailed intake data. &lt;br&gt;• No interview required. &lt;br&gt;• No recall bias.</td>
<td>• Literacy. &lt;br&gt;• Smart phone or computer requirement. &lt;br&gt;• Later data for provider.</td>
</tr>
</tbody>
</table>

### Several websites that supply useful dietary assessment tools include:

- U.S. Department of Agriculture Food and Nutrition Information Center.
- The Mediterranean Diet Quick Assessment Tool.
- National Cancer Institute Dietary Assessment Primer.
- U.S. Department of Agriculture Individual Dietary Assessment.

### HISTORY OF WEIGHT-PROMOTING MEDICATIONS

Some medications may promote weight gain, including diabetes drugs such as thiazolidinediones, insulin and sulfonylureas; antidepressants; antipsychotics; beta-blockers; antihistamines; and antiseizure medications.

Review the patient’s medication history and current medications to determine if any might be contributing to weight gain.

After a diagnosis of overweight or obesity is made, it is important to identify any adiposity-related complications. These complications are identified through a personal and family history, physical examination and diagnostic testing.

**HISTORY AND PHYSICAL EXAMINATION**

People with overweight or obesity should receive a comprehensive history and physical examination to identify adiposity-related complications.¹ The specific diagnostics and referrals depend on the individual patient’s findings. Following is a list of the most common adiposity-related complications that may be flagged while doing a history and physical examination.
<table>
<thead>
<tr>
<th>Complication</th>
<th>Findings</th>
<th>Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prediabetes</td>
<td>Based on family history, patient review of systems (ROS) and lab results.</td>
<td>Fasting plasma glucose (FPG), glycated hemoglobin (HbA1c) and two-hour oral glucose tolerance test (OGTT). Repeat FPG if elevated (100-125 mg/dL). If initial FPG is normal and A1C is elevated, perform FPG and two-hour OGTT.</td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>Based on exam and lab results.</td>
<td>FPG, HbA1c and two-hour OGTT. Overtly elevated (i.e., greater than or equal to 200 mg/dL) or a repeat fasting glucose greater than or equal to 126 mg/dL completes diagnosis. If fasting glucose and/or HbA1c is &gt;=6.5%, the two-hour OGTT should be performed to test for diabetes. HbA1c should be performed to help guide therapy.</td>
</tr>
</tbody>
</table>
| Metabolic Syndrome | Based on waist circumference, blood pressure and lab results.             | FPG triglycerides and high-density lipoprotein cholesterol (HDL-c). **Criteria for metabolic syndrome:**  
  Waist circumference:  
  - Women >35 inches  
  - Men >40 inches  
  Blood pressure: >= 130/80  
  Fasting glucose: >= 100mg/dL  
  Triglyceride: >150 mg/dL  
  HDL:  
  - Men <40 mg/dL  
  - Women < 50 mg/dL |
| Hypertension       | All patients with overweight and obesity should be screened for hypertension. | Use the correctly sized cuff with the patient in a sitting position for at least five minutes. **Suggest secondary testing when needed to confirm diagnosis, to determine severity or to guide treatment.**  
Repeat elevated blood pressure measurements to complete diagnosis; home blood pressure or ambulatory blood pressure monitoring may help complete testing. |
<table>
<thead>
<tr>
<th>Complication</th>
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<th>Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polycystic Ovary Syndrome (PCOS)</td>
<td>Premenopausal female patients should be assessed for polycystic ovary syndrome (PCOS) via physical examination, ROS, menstrual and reproductive history and lab results. Exam may find hirsutism, acne and female-pattern hair loss.</td>
<td>Insulin resistance labs (fasting insulin level, Homeostatic Model Assessment for Insulin Resistance [HOMA2-IR], lipids) and hormones (androgen levels, sex hormone-binding globulin [SHBG], luteinizing hormone [LH], follicle-stimulating hormone [FSH], estradiol).</td>
</tr>
<tr>
<td>Male Hypogonadism</td>
<td>Assessed by physical examination, ROS and lab results.</td>
<td>Suggest secondary testing when needed to confirm diagnosis, to determine severity or to guide treatment. Hormonal testing (total and free testosterone, SHBG, LH/FSH, prolactin) as needed to complete diagnosis.</td>
</tr>
<tr>
<td>Asthma/ Respiratory Disease</td>
<td>Assessed by physical examination and ROS.</td>
<td>Suggest secondary testing when needed to confirm diagnosis, to determine severity or to guide treatment. Chest X-ray and spirometry may be needed to complete diagnosis.</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>Assessed by history, physical exam, medical records and ROS.</td>
<td>Referral based on findings. 10-year risk for ASCVD is categorized as: Low-risk (&lt;5%) Borderline risk (5% to 7.4%) Intermediate risk (7.5% to 19.9%) High risk (≥20%) Suggest secondary testing when needed to confirm diagnosis, to determine severity or to guide treatment. Additional testing based on findings and risk status (e.g., ankle-brachial index, stress testing, coronary artery calcium score and the Multi-Ethnic Study of Atherosclerosis [MESA] risk score calculator, arteriography and carotid ultrasound).</td>
</tr>
<tr>
<td>Insulin resistance</td>
<td>Acanthosis nigricans and skin tags.</td>
<td>Fasting insulin level and HOMA2-IR. Lipids, elevated triglycerides and suppressed HDL.</td>
</tr>
<tr>
<td>Complication</td>
<td>Findings</td>
<td>Testing</td>
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</tbody>
</table>
| **Dyslipidemia** | Patients should be evaluated with a lipid panel because dyslipidemia is common with overweight and obesity. | Lipid panel includes triglycerides, low-density lipoprotein cholesterol (LDL-C), HDL-C and non-HDL cholesterol.  
**Suggest secondary testing when needed to confirm diagnosis, to determine severity or to guide treatment.** |
| **Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD) / Metabolic Dysfunction/Associated Steatohepatitis (MASH)** | Assessed by physical exam. | Liver function test.  
**Suggest secondary testing when needed to confirm diagnosis, to determine severity or to guide treatment.** |
| **Obstructive Sleep Apnea** | Assessed by physical exam, neck circumference and ROS.  
Increased risk with neck circumference (men: greater than 17 inches, and women: greater than 16 inches), daytime sleepiness, snoring and evidence of apnea episodes provided by a sleeping partner and/or the STOP/BANG questionnaire. | Complete blood count (CBC.)  
Polysomnography is needed to complete diagnosis.  
Positive screening warrants a referral for a sleep study.  
STOP/BANG questionnaire. |
| **Osteoarthritis** | Assessed by physical examination and ROS. | Radiographic imaging may be needed to complete diagnosis. |
| **Urinary Stress Incontinence** | Assessed by physical examination and ROS. | Urine culture and urodynamic testing may be needed to complete diagnosis. |
| **Gastroesophageal Reflux Disease (GERD)** | Assessed by physical examination and ROS. | Endoscopy and esophageal motility study may be needed to complete diagnosis. |
| **Depression, Anxiety, Binge Eating Disorder, Stigmatization** | Assessed by history and ROS. | Screening/diagnostic evaluation or questionnaires based on criteria in the Diagnostic and Statistical Manual of Mental Disorders; referral to clinical psychologist or psychiatrist. |
**BASELINE LAB TEST OVERVIEW:**

- FPG of $\geq 100$ mg/dL (impaired fasting glucose, prediabetes and diabetes).
- Elevated liver function test (MASLD/MASH).
- HbA1c of $\geq 5.7\%$ (prediabetes and diabetes).
- CBC (obstructive sleep apnea).
- Lipid panel with elevated triglycerides, decreased HDL (cardiometabolic, insulin resistance).
- Thyroid function test, thyroid stimulating hormone and free T4 (hypothyroid).
- Elevated high-sensitivity C-reactive protein (a marker for vascular inflammation).
- Fasting insulin level (insulin resistance).
- Vitamin B12 (metformin can prevent the absorption of B12).
- 25-hydroxy vitamin D (vitamin D is often low with obesity).

**PSYCHOLOGICAL HISTORY**

Psychological conditions have a bidirectional relationship with overweight and obesity and can be triggered or exacerbated by the stigma and bias people with overweight and obesity face.\(^3\)\(^4\)

People with obesity experience bias at work, school and in health care settings.\(^3\) They earn less and receive fewer promotions than those without overweight or obesity in comparable positions.\(^3\) People with overweight and obesity also have higher rates of post-traumatic stress disorder and are more likely to have a history of sexual, physical or verbal abuse.\(^4\)

Unresolved psychological issues can sabotage obesity treatment. Gently asking questions such as, “Can you tell me about your childhood?” can reveal such histories.

All clinicians should practice the principles of trauma-informed care (TIC), particularly for patients with overweight or obesity. Those who have experienced trauma may require a range of services beyond those offered by the primary care provider. Patients with significant psychological issues should be referred to mental health care professionals. Patients with an eating disorder should be referred to a counselor with experience in this field.

**REFERENCES**

The following questions ask about your eating patterns and behaviors within the last three months. For each question, choose the answer that best applies to you.

1. During the last three months, did you have any episodes of excessive overeating (i.e., eating significantly more than what most people would eat in a similar period of time)?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
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<tbody>
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</table>

**NOTE: IF YOU ANSWERED “NO” TO QUESTION 1, YOU MAY STOP. THE REMAINING QUESTIONS DO NOT APPLY TO YOU.**

2. Do you feel distressed about your episodes of excessive eating?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

3. During your episodes of excessive overeating, how often did you feel like you had no control over your eating (e.g., not being able to stop eating, felt compelled to eat or went back and forth for more food)?

<table>
<thead>
<tr>
<th>NEVER OR RARELY</th>
<th>SOMETIMES</th>
<th>OFTEN</th>
<th>ALWAYS</th>
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</table>

4. During your episodes of excessive overeating, how often did you continue eating even though you were not hungry?

5. During your episodes of excessive overeating, how often were you embarrassed by how much you ate?

6. During your episodes of excessive overeating, how often did you feel disgusted with yourself or guilty afterward?

7. How often did you make yourself vomit as a means to control your weight or shape?

<table>
<thead>
<tr>
<th>NEVER OR RARELY</th>
<th>SOMETIMES</th>
<th>OFTEN</th>
<th>ALWAYS</th>
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</table>
FOR CLINICIANS

The BEDS-7 is a screening tool to help you identify adults whom you suspect may have binge-eating disorder (BED). It should not be used as a diagnostic tool.

How to use this tool:

<table>
<thead>
<tr>
<th>STEP 1: QUESTION 1</th>
<th>If the patient answers YES to question 1, have them complete questions 2 through 7. If the patient answers NO to question 1, there is no need to continue with the remaining questions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEP 2: QUESTION 2-7</td>
<td>If the patient answers YES to question 2 AND checks one of the shaded boxes for ALL questions 3 through 7, a follow-up discussion of the patient’s eating behaviors and his/her feelings about those behaviors should be considered.</td>
</tr>
<tr>
<td>STEP 3:</td>
<td>If the patient meets the criteria in step 2 above, consider a referral to a mental health professional for further patient evaluation.</td>
</tr>
</tbody>
</table>

REFERENCES

Assessing Readiness for Physical Activity

Pre-Exercise Physical Assessments

PAR-Q+

Before your patients with overweight or obesity can begin a program of physical activity, you should determine if they are healthy enough to exercise independently. The Physical Activity Readiness Questionnaire (PAR-Q) is a seven-question screening tool that focuses on symptoms of heart disease and identifies musculoskeletal problems that should be evaluated before patients participate in a physical activity program.\textsuperscript{1-4} If your patient answers "no" to all seven PAR-Q questions, he or she may be cleared for low to moderate physical activity, such as walking.

If your patient answers "yes" to any of the PAR-Q questions, use your professional judgment to further evaluate readiness for physical activity. You may decide to follow up with more advanced screening tools, such as a treadmill stress test.

Mobility Assessment

Overweight and obesity can compromise mobility and increase the risk of injury. You should assess your patients’ mobility, balance and gait before prescribing physical activity.\textsuperscript{5} Patients with diminished mobility may benefit from chair-based exercise. Patients with osteoarthritis or activity-induced musculoskeletal pain may benefit from pool-based exercises or classes designed for people with arthritis. Referral to a physical therapist for rehabilitative exercise may be warranted.

Medical Testing

Based on your professional judgment, patients with metabolic, cardiac or pulmonary disease may need a treadmill stress test to minimize the risk of injury, stroke or heart attack.\textsuperscript{6} Patients may also need pulmonary function tests or musculoskeletal assessment.

Access Evaluation

Keep in mind that some of your patients may not have access to safe places to be physically active.\textsuperscript{7} Does your patient live in a safe, walkable neighborhood with sidewalks, crosswalks and access to parks? Can your patient afford gym fees? Understanding obstacles to access can help you and your patient find solutions. For example, perhaps the patient’s local high school keeps the track or gym open after school hours for use by the community.
READINESS FOR A CHANGE IN PHYSICAL ACTIVITY

People with overweight and obesity may face specific barriers when increasing their physical activity. They may feel self-conscious about exercising in a class because they feel uncomfortable and exposed in exercise clothes. They may worry that they will not be able to keep up with others in the class or that their fitness instructor will not empathize with their physical limitations. They may believe that the recommended exercise schedule is just too much for them. All these barriers affect a patient’s readiness to change.

The stages of readiness for change are pre-contemplation, contemplation, preparation, action and maintenance.8

Stages of Change

Explore health care provider resources to help your patients incorporate regular physical activity into their daily lives.
OBESITY AND PHYSICAL ACTIVITY OMA ALGORITHM 2024

TOP 10 TAKEAWAYS

1. Routine physical activity may improve body composition.
2. Moderate intensity activity for 150 minutes a week can modestly help with weight loss and prevent weight gain. Increasing this to 250 or more minutes a week can lead to clinically significant weight loss and weight maintenance.
3. Routine physical activity may improve adiposopathic endocrine and immune body processes.
4. Physical activity may improve metabolic, musculoskeletal, cardiovascular, pulmonary, mental, sexual and cognitive health.
5. Dynamic training promotes weight loss and may help prevent weight gain or regain.
6. Resistance training may improve body composition, prevent muscle loss during weight loss and increase resting energy expenditure.
7. Less than 5000 steps per day is considered sedentary; >10,000 steps per day is considered active.
8. A common physical exercise prescription (FITTE) includes frequency, intensity, time spent, type and enjoyment.
9. Metabolic equivalent of task (METS) are used to assess the intensity of physical exercise, with one MET equal to the amount of energy expended for one minute while lying down at rest [equal to 3.5 milliliters of oxygen consumption per kilogram of bodyweight per minute (3.5 ml/kg/min)]. Standing = 2 METS; walking 4 miles per hour = 4 METS; running 10 miles per hour = 16 METS.
10. Progress can be measured through tracking activity patterns over time via various activity logs or can be measured by using a reliable technique to measure body composition.

REFERENCES


OVERVIEW

Common eating plans restrict carbohydrates, calories or fat. Other eating plans emphasize meal patterns and time-restricted eating plans.
CARBOHYDRATE-RESTRICTED APPROACHES

Low-carbohydrate: <130 grams of carbohydrate/day or <26% calories/day
Very low-carbohydrate: <50 grams of carbohydrate/day

**Proposed Benefits**

- Reduces fasting glucose, insulin and triglycerides.
- Modestly increases high-density lipoprotein cholesterol levels.
- May increase low-density lipoprotein cholesterol levels.
- May modestly reduce blood pressure.
- The metabolic effects noted above may occur with or without weight loss.
- In patients with epilepsy, a very low carbohydrate ketogenic diet (VLCKD) may reduce seizures.
- LCKD may possibly improve diabetes mellitus complications (i.e., nephropathy).
- May help increase energy expenditure during weight loss maintenance.

**Nutrition**

- Daily limit of 20 to 60 grams of carbohydrates.
- No limit on fats, but recommend limiting saturated fat and eliminating trans fat.

**Potential Risks**

- May produce carbohydrate cravings within the first few days of implementation, which may be mitigated by adding low-glycemic-index carbohydrate foods.
- May induce gout flare in patients with a history of gout.
- May result in malaise.
- May present challenges in patients with dietary protein restriction (severe kidney disease).
- Monitor for hypoglycemia and hypotension in patients treated with medications for diabetes mellitus and hypertension. Adjust medications as needed.

Very Low-Calorie Diets (VLCDs)

In VLCDs, patients consume less than 800 calories per day. These diets may be used by obesity specialists and bariatric surgery programs. They require medical supervision and replace some or all meals with shakes, bars, soups and other meal-replacement options. Rapid weight reduction of 3 to 5 pounds per week is possible. Risks include fatigue, nausea, constipation, diarrhea, hair loss, brittle nails, cold intolerance, dysmenorrhea, electrolyte imbalance and cardiac dysrhythmia. If patients are not taught proper nutrition when they transition to self-prepared foods, they will regain lost weight. For short-term use, and under medical supervision only.

Metabolic Effects
- Reduces fasting glucose, insulin and triglycerides.
- May modestly increase high-density lipoprotein cholesterol levels.
- May modestly decrease low-density lipoprotein cholesterol.
- Reduces blood pressure.

Proposed Benefits
- Loss of 3-5 pounds per week.

Risks
- Fatigue, nausea, constipation, diarrhea, hair loss, brittle nails, cold intolerance, dysmenorrhea.
- Small increased risk of gallstones, kidney stones, gout flare.
- Monitor for hypoglycemia and hypotension in patients treated with medications for diabetes mellitus and hypertension. Adjust medications as needed.
- Potential insufficient micronutrient intake, which may predispose to cardiac dysrhythmias and muscle cramps. Consider screening for vitamin D, iron, thiamine, folate, vitamin B12 and vitamin/mineral supplementation.
- Weight regain will occur if patients are not taught how to maintain healthful eating when transitioning to non-meal replacement.

REFERENCES
Low-fat eating plans limit fat to 10% to 30% of total calories from fat. Very low-fat eating plans limit fat to less than 10% of total calories.¹,²

**Proposed Benefits**
- Provides weight loss.
- Improves metabolic markers.
- Improves blood pressure.
- May reduce premature all-cause mortality.

**Nutrition**
- A fat intake of 15% to 20% of total calories has been shown to decrease total and low-density lipoprotein (LDL) cholesterol by 10% to 20%, likely due to a reduction in saturated fat intake. Example: Dietary Approaches to Stop Hypertension (DASH) Diet.
- If individuals with hypertension were fully adherent to DASH, an estimated 400,000 cardiovascular disease events could be prevented over 10 years (see Meal Pattern Approaches for more information).
MEAL PATTERN APPROACHES

DASH DIET

The DASH Diet was initially developed as a diet for patients with hypertension.\(^1\) It is considered a balanced-nutrient, moderate-calorie approach.\(^2\)

The DASH diet is rich in fruits, vegetables and low-fat or nonfat dairy.\(^1\) It also includes mostly whole grains, lean meats, fish and poultry, nuts and beans. It is high in fiber and low-to-moderate in fat.\(^2\) Numerous studies have shown that the DASH Diet is a good choice for weight management, and particularly for weight reduction in persons with obesity.

In a randomized, controlled trial conducted in 116 patients with metabolic syndrome, three diets were prescribed for six months: a control diet, a weight-reducing diet emphasizing healthy food choices and the DASH Diet.\(^4\) Women randomized to the DASH Diet achieved a 15-kilogram weight loss, and men achieved a 16-kilogram weight loss, compared with 13 and 12 kilogram loss, respectively, in patients randomized to the weight-reducing diet.\(^4\)

**Proposed Benefits**
- Lowered blood pressure and LDL cholesterol.
- Weight loss.
- PREMIER clinical trial: those who followed the DASH diet and received behavioral interventions had a mean weight loss of 5.8 kg, and 35% overall had optimal blood pressure at six months.

**Nutrition**
- The DASH eating plan provides daily and weekly nutritional goals. This plan recommends figuring out the patient’s daily calorie needs based on age and physical activity level. The food groups and daily/weekly servings include:
  - Grains (6-8 per day).
  - Vegetables (4-5 per day).
  - Fruits (4-5 per day).
  - Fat-free or low-fat dairy products (2-3 per day).
  - Lean meats, poultry and fish (6 or fewer per day).
  - Nuts, seeds and legumes (4-5 per week).
  - Fats and oils (2-3 per day).
  - Sweets and added sugars are limited (5 or fewer per week).
  - Sodium is limited (2,300 mg* per day).
  - *Restricting sodium to 1,500 mg per day lowers blood pressure even further.
MEAL PATTERN APPROACHES

MEDITERRANEAN DIET\textsuperscript{7,8}

The Mediterranean Diet emphasizes fruits, vegetables, whole grains and legumes. It also emphasizes mono-unsaturated fatty acids (MUFAs), including olive oil, nuts, canola oil, avocados, olives and nut butters. MUFAs reduce cardiometabolic risk factors, but they are high in calories and should be consumed in moderation. Red meats are limited in the diet, and fish and poultry are eaten at least twice per week. Herbs and spices replace salt. Red wine is recommended in moderation if the patient drinks alcohol. According to the Obesity Medicine Association, the Mediterranean Diet "has the most consistent and robust scientific support in reducing atherosclerotic cardiovascular disease risk."\textsuperscript{1}

Proposed Benefits

- Improves heart disease.
  - Lyon Heart Study: 50% to 70% reduction in second cardiovascular event.
  - PREDIMED Study: cardiovascular risks reduced by 30% even without calorie reduction.
- Anti-inflammatory.
- Protects against dementia, Alzheimer’s disease and Parkinson’s disease.
- Reduces all-cause death, including cancer.

Nutrition

- Nine dietary components score 0-9 depending on amounts consumed:
  - Vegetables (2-3 cups per day).
  - Oils and fats (1 serving per day).
  - Legumes (2-3 servings per week).
  - Seafood (2 servings per week).
  - Fruits and nuts (1-2 servings per day).
  - Dairy (1 serving per day).
  - Meats (4 ounces per day; red meat rarely).
  - Cereals and whole grains (2-3 servings per day).
  - Alcohol (2 drinks per day for men, 1 drink per day for women).
- Avoid sugar-sweetened beverages, added sugars, processed meat, refined grains, refined oils and other highly processed foods.
MEAL PATTERN APPROACHES

WHOLE FOOD AND PLANT-BASED PLANS, ORNISH

**Proposed Benefits**
- Improves metabolic markers.
- Improves blood pressure.
- May reduce premature all-cause mortality.
- Decreases visceral adipose tissue.

**Nutrition**
- **Dos:**
  - Leafy greens.
  - Starchy vegetables.
  - Fruits.
  - Legumes.
  - Cruciferous vegetables.
  - Whole grains.
- **Don’ts:**
  - Highly refined grains.
  - Processed oils.
  - Animal products.
  - Added sugars.
Intermittent Fasting

Encompasses Alternate Day Fasting (ADF) and Time-Restricted Fasting (TRF)

Time-restricted eating is based on the science of circadian rhythms, which control every hormone. Time-restricted eating limits caloric intake by eating in prescribed, narrowed windows of time. Time-restricted eating varies from fasting on alternate days to intermittent fasting. There are several intermittent fasting types, including one meal per day; the 5/2 method, or feasting five days and fasting two; and eating only within a specific time window. The window can be 4:20, 8:16 or 10:14, where 4:20 means eating during a 4-hour window and fasting the remaining 20 hours of the day and so forth. During the fasting phase, a person utilizes fat for energy instead of glucose.

ADF and TRF

Proposed Benefits
- Particularly effective for weight loss among middle-aged people.
- Decreases inflammatory markers.
- Reverse insulin resistance.
- Decreases visceral adipose tissue.
- Improves cardiometabolic profile.
- Improves lipid profile.
- Decreases blood pressure.
- Low cost.

Nutrition
- Varies from actual fasting to reduced caloric intake on alternate days, such as:
  - Zero calories.
  - 25% of calorie needs.
  - 500-750 calories.

Evidence
- Sixteen adult participants, eight-week trial: ADF, 450 calories consumed between 1200 and 1400 hours, no limits on feed day.
  - Weight loss of 5.6 kilograms.
  - Total and LDL cholesterol decreased by 21% and 25%.
  - No changes in HDL.
- Concerns include long-term adherence to eating plan and sustained weight loss.
INTERMITTENT FASTING\textsuperscript{11-14}

TIME-RESTRICTED FASTING\textsuperscript{11}

\textbf{Proposed Benefits}
- Lower insulin and decreased insulin resistance.
- Decrease in body weight.
- Decrease in hunger.
- Low cost.

\textbf{Nutrition}
- Fasting 12 to 16 hours per day.

\textbf{Evidence}
- Twenty-three adult participants, 12-week trial: eight-hour, time-restricted feeding, water fasting 16 hours.
  - Weight loss of 2.6%.
  - Systolic blood pressure decreased 7 mmHg.
- Concerns include a high drop-out rate of 26%.


OVERVIEW

Commonly prescribed medications that promote weight gain with recommendations for alternative options.
## WEIGHT PROMOTING MEDICATIONS AND ALTERNATIVES

### MENTAL HEALTH MEDICATIONS

<table>
<thead>
<tr>
<th>Category</th>
<th>Significant Weight Gain</th>
<th>Small to Neutral Weight Gain</th>
<th>Weight Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antipsychotics</strong></td>
<td>Clozapine, Olanzapine, Chlorpromazine, Quetiapine, Risperidone</td>
<td>Aripiprazole, Haloperidol, Ziprasidone</td>
<td></td>
</tr>
<tr>
<td><strong>Antidepressants</strong></td>
<td>Paroxetine, Lithium, Amitriptyline, Desipramine, Olanzapine, Citalopram, Nortriptyline, Doxepin, Mirtazapine, Escitalopram, Duloxetine, Imipramine</td>
<td>Venlafaxine, Fluvoxamine, Sertraline, Trazodone, Fluoxetine</td>
<td>Bupropion</td>
</tr>
<tr>
<td><strong>Mood Stabilizers</strong></td>
<td>Valproate, Lithium, Gabapentin</td>
<td></td>
<td>Topiramate</td>
</tr>
<tr>
<td><strong>Anxiolytics</strong></td>
<td></td>
<td>Lorazepam, Diazepam, Oxazepam</td>
<td></td>
</tr>
</tbody>
</table>
# Weight Promoting Medications and Alternatives

## Endocrine Agents

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight Promoting (not inclusive of all available medications)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulin and insulin analogs</td>
<td>Insulin lispro&lt;br&gt;Insulin aspart&lt;br&gt;Insulin glargine</td>
</tr>
<tr>
<td>Glucocorticoids</td>
<td>Prednisone</td>
</tr>
<tr>
<td>Hormonal Contraceptives</td>
<td>Medroxyprogesterone&lt;br&gt;Oral Contraceptives</td>
</tr>
</tbody>
</table>

## Miscellaneous Agents

<table>
<thead>
<tr>
<th></th>
<th>Significant Weight Gain</th>
<th>Small to Neutral Weight Gain</th>
<th>Weight Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension/Cardiovascular</td>
<td>Beta blockers</td>
<td>Angiotensin-converting enzyme (ACE) inhibitors&lt;br&gt;Calcium channel blockers&lt;br&gt;Angiotensin-2 receptor antagonist</td>
<td></td>
</tr>
<tr>
<td>Antihistamine</td>
<td>Diphenhydramine</td>
<td>Loratadine&lt;br&gt;Cetirizine&lt;br&gt;Cyproheptadine</td>
<td></td>
</tr>
<tr>
<td>Sleep Aids</td>
<td>Zolpidem&lt;br&gt;Trazadone (+/-)</td>
<td>Melatonin</td>
<td>Melatonin</td>
</tr>
<tr>
<td>CNS: ADHD, Anti-Seizure, Migraine, Miscellaneous</td>
<td>Significant Weight Gain</td>
<td>Small to Neutral Weight Gain</td>
<td>Weight Reduction (Neutral to Moderate)</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------------</td>
<td>-----------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>ADHD</td>
<td></td>
<td>Guanfacine</td>
<td>Atomoxetine, Lisdexamfetamine, Amphetamine, Methylphenidate</td>
</tr>
<tr>
<td>Anti-Seizure</td>
<td>Valproate, Vigabatrin, Pregabalin, Gabapentin</td>
<td>Carbamazepine, Oxcarbazepine, Lamotrigine, Levetiracetam, Phenytoin</td>
<td>Topiramate, Zonisamide, Felbamate</td>
</tr>
<tr>
<td>Migraine</td>
<td>Amitriptyline, Divalproex, Flunarizine, Gabapentin, Metoprolol, Propranolol</td>
<td>Timolol, Levetiracetam</td>
<td>Zonisamide, Topiramate</td>
</tr>
<tr>
<td>Allergy/Asthma</td>
<td>Glucocorticoids</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
OVERVIEW
A review of the current FDA approved anti-obesity Medications, including efficacy, mechanism of action, adverse effects and contraindications.
### Phentermine

**Weight Reduction:**
AVERAGE: 4.5-10KG | MEAN: 5%

**Method of Action:**
Age 17 years and older

Sympathomimetic amine anorectic agonist at the TAAR1 receptor site, pro-opiomelanocortin neurons in the hypothalamus (POMC) stimulate norepinephrine release that suppresses appetite and cravings.

<table>
<thead>
<tr>
<th>BRANDS</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>ADMIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adipex-P®</td>
<td>37.4 mg</td>
<td>Oral</td>
<td>Daily</td>
</tr>
<tr>
<td>Lomaira™</td>
<td>8mg</td>
<td>Oral</td>
<td>TID</td>
</tr>
</tbody>
</table>

**Adverse Effects**
- Constipation
- Difficulty sleeping
- Headache
- Restlessness
- Dry Mouth

**Interactions**
- MAOI w/in 14 days
- Sympathomimetics
- Antidepressants
- Neuron-blocking medications

**Contraindications**
- Uncontrolled HTN
- Alcohol use
- Glaucoma
- History of drug abuse
- History CVD
- Hyperthyroidism
- Pregnancy/Nursing

### Phentermine/Topiramate ER

(DEA Schedule IV)

**Weight Reduction:**
AVERAGE: 10.2kg | MEAN: 5-10%

**Method of Action:**
Age 12 years and older

Noradrenergic + GABA-receptor activator, Kainite/AMPA glutamate receptor inhibitor causing appetite suppression.

<table>
<thead>
<tr>
<th>BRANDS</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>ADMIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qsymia®</td>
<td>3.75mg/23mg, 7.5mg/46mg, 11/25.69mg, 15mg/92mg</td>
<td>Oral</td>
<td>Daily</td>
</tr>
</tbody>
</table>

**Adverse Effects**
- Constipation
- Dizziness
- Dry Mouth
- Difficulty concentrating
- Insomnia
- Paresthesia
- Glaucoma
- Uncontrolled hyperthyroidism

**Contraindications**
- MOAI w/in 14 days
- Pregnancy/Nursing
- Cardiovascular disease

**Treatment Considerations:**
Titrate dose at initiation and discontinuation.
**Liraglutide 3.0**  
**METHOD OF ACTION:**  
GLP-1 receptor agonist that reduces appetite, increases satiety and delays gastric emptying.  

**Indication:** adults with excess weight (BMI ≥27) who also have weight-related medical problems or obesity (BMI ≥30), and children aged 12-17 years with a body weight above 132 pounds (60 kg) and obesity to help them lose weight and keep the weight off.

<table>
<thead>
<tr>
<th>BRANDS</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>ADMIN</th>
</tr>
</thead>
</table>
| Saxenda® | 0.6 mg (initial)  
1.2 mg Week 2  
1.8 mg Week 3  
2.4 mg Week 4  
3 mg Maintenance | Injection | Q week |

**ADVERSE EFFECTS**  
- Nausea/vomiting  
- Constipation  
- Headache  
- Diarrhea  

**CONTRAINDICATIONS**  
- Personal or family history of medullary thyroid cancer  
- Multiple endocrine neoplasia syndrome 2  
- Pregnancy/Nursing

**Semaglutide 2.4**  
**METHOD OF ACTION:**  
GLP-1 receptor agonist that reduces appetite, increases satiety and delays gastric emptying.  

**Indication:** adults with initial BMI ≥30 kg/m² (obesity) or ≥27 kg/m² (overweight) in the presence of a weight-related comorbidity. Children aged 12 years or older with an initial BMI at ≥ 95th percentile standardized for age and sex (obesity). To reduce the risk of major adverse cardiovascular events (cardiovascular death, non-fatal myocardial infarction, or non-fatal stroke) in adults with established cardiovascular disease (CVD) and either obesity or overweight.

<table>
<thead>
<tr>
<th>BRANDS</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>ADMIN</th>
</tr>
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</table>
| Wegovy® | 0.25 mg (initial) x 4 weeks  
0.5 mg x 4 weeks  
1 mg x 4 weeks  
1.7 mg x 4 weeks (or maint.)  
2.4 mg [maintenance] | Injection | Q week |

**ADVERSE EFFECTS**  
- Nausea/vomiting  
- Constipation  
- Headache  
- Diarrhea

**CONTRAINDICATIONS**  
- Personal or family history of medullary thyroid cancer  
- Multiple Endocrine Neoplasia syndrome 2  
- Pregnancy/Nursing
## Tirzepatide 5, 10, 15

### Weight Reduction:
- **Average:** 5.3 kg
- **Mean:** 15-20.9%

### Method of Action:
GIP/GLP-1 receptor agonist that reduces appetite, increases satiety and delays gastric emptying.

### Brands

<table>
<thead>
<tr>
<th>BRANDS</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>ADMIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zepbound®</td>
<td>Initiation: 2.5 mg x 4 weeks</td>
<td>Injection</td>
<td>Q week</td>
</tr>
<tr>
<td></td>
<td>Titrate: 2.5 mg every 4 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max dose 15 mg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Adverse Effects
- Nausea/vomiting
- Constipation
- Headache
- Diarrhea

### Contraindications
- Personal or family history of medullary thyroid cancer
- Multiple endocrine neoplasia syndrome 2
- Pregnancy/Nursing

### Indication:
- Adults with initial BMI ≥30 kg/m² (obesity) or ≥27 kg/m² (overweight) in the presence of a weight-related comorbidity.

## Naltrexone HCL/Bupropion HCL ER

### Weight Reduction:
- **Average:** 6.1 kg
- **Mean:** 5.40%

### Method of Action:
Opioid receptor antagonist, dopamine and noradrenaline reuptake inhibitor that reduces appetite and cravings.

### Brands

<table>
<thead>
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<th>DOSE</th>
<th>ROUTE</th>
<th>ADMIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrave®</td>
<td>8 mg/90 pills</td>
<td>Oral</td>
<td>AM/PM</td>
</tr>
<tr>
<td></td>
<td>1 daily x 7 days, then 1 BID x 7 days, then 2 in AM and 1 PM x 7 days, then 2 BID</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Treatment Considerations:
Titratedose on initiation, monitor BP and depression. CYP2D6 metabolized medications — beware of medications that lower seizure threshold.

<table>
<thead>
<tr>
<th>Adverse Effects</th>
<th>Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nausea/vomiting</td>
<td>Seizure disorder</td>
</tr>
<tr>
<td>Constipation</td>
<td>Uncontrolled hypertension</td>
</tr>
<tr>
<td>Dysgeusia</td>
<td>Use of other bupropion-containing products</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>Use within 14 days of MAOI</td>
</tr>
<tr>
<td>Dry Mouth</td>
<td>Bulimia or Anorexia nervosa</td>
</tr>
<tr>
<td>Headache</td>
<td>History of seizures</td>
</tr>
<tr>
<td>Insomnia</td>
<td>History of suicidal behavior</td>
</tr>
<tr>
<td>Nausea/Vomiting</td>
<td>Pregnancy/Nursing</td>
</tr>
</tbody>
</table>