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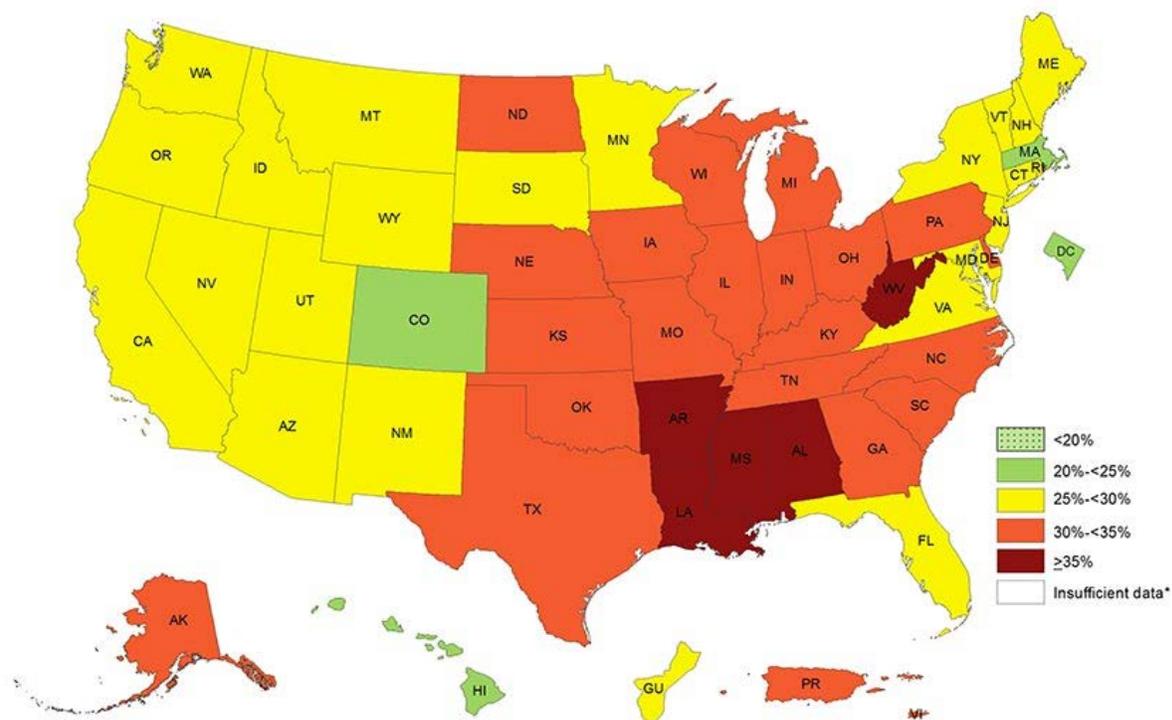
Identification, Evaluation, and Treatment of Overweight and Obesity in Adults

Clinical Practice Guideline
MedStar Health

These guidelines are provided to assist physicians and other clinicians in making decisions regarding the care of their patients. They are not a substitute for individual judgment brought to each clinical situation by the patient's primary care provider-in collaboration with the patient. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication, but should be used with the clear understanding that continued research may result in new knowledge and recommendations.

According to the 2013-2014 NHANES survey, about 70% of adults in the United States are overweight or obese. Obesity and overweight substantially increase the risk of morbidity from hypertension; dyslipidemia; type 2 diabetes; coronary heart disease; stroke; gallbladder disease; osteoarthritis; sleep apnea and respiratory problems; and endometrial, breast, prostate, and colon cancers. Higher body weights are also associated with increases in all-cause mortality. The aim of this guideline is to provide useful advice on how to achieve weight reduction and maintenance of a lower body weight. It is also important to note that prevention of further weight gain can be a goal for some patients. Obesity is a chronic disease, and both the patient and the practitioner need to understand that successful treatment requires a life-long effort.

Prevalence of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2016 ⁶



Assessment of Weight and Body Fat

Two measures important for assessing overweight and total body fat content are determining body mass index (BMI) and measuring waist circumference.

1. **Body Mass Index:** The BMI, which describes relative weight for height, is significantly correlated with total body fat content. The BMI should be used to assess overweight and obesity and to monitor changes in body weight. Measurements of body weight alone can be used to determine efficacy of weight loss therapy.

BMI is calculated as weight (kg)/height squared (m²). To estimate BMI using pounds and inches, use: [weight (pounds)/height (inches)²] x 703. Weight classifications by BMI, selected for use in this report, are shown in the table below.

The International Classification of Underweight, Overweight and Obesity according to BMI

Classification	BMI(kg/m ²)	
	Principal cut-off points	Additional cut-off points
Underweight	<18.50	<18.50
Severe thinness	<16.00	<16.00
Moderate thinness	16.00 - 16.99	16.00 - 16.99
Mild thinness	17.00 - 18.49	17.00 - 18.49
Normal range	18.50 - 24.99	18.50 - 22.99
		23.00 - 24.99
Overweight	≥ 25.00	≥ 25.00
Pre-obese	25.00 - 29.99	25.00 - 27.49
		27.50 - 29.99
Obese	≥ 30.00	≥ 30.00
Obese class I	30.00 - 34.99	30.00 - 32.49
		32.50 - 34.99
Obese class II	35.00 - 39.99	35.00 - 37.49
		37.50 - 39.99
Obese class III	≥40.00	≥40.00

Source: Adapted from WHO, 1995, WHO, 2000 and WHO 2004.

Risk of developing diabetes and cardiovascular disease occurs at a lower BMI in Asian populations, though the cutoff BMI for increased risk varies from 22-25 kg/m² in different Asian populations, and for high risk it varies from 26-31 kg/m². Nevertheless, the WHO recommends that the current classification be retained as the official international classification while encouraging all countries to report data using the additional cut-off BMI ranges to facilitate international comparisons³. Pregnant women who, on the basis of their pre-pregnant weight, would be classified as obese may encounter certain obstetrical risks. However, the inappropriateness of weight reduction during pregnancy is well recognized (Thomas, 1995). Hence, this guideline specifically excludes pregnant women.

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2. **Waist Circumference:** The presence of excess fat in the abdomen out of proportion to total body fat is an independent predictor of risk factors and morbidity. Waist circumference is positively correlated with abdominal fat content. It provides a clinically acceptable measurement for assessing a patient's abdominal fat content before and during weight loss treatment.

High Risk
Men: >102 cm (>40 in.)
Women: >88 cm (>35 in.)

Assessment of Risk Status

The patient's risk status should be assessed by determining the degree of overweight or obesity based on BMI, the presence of abdominal obesity based on waist circumference, and the presence of concomitant CHD risk factors or comorbidities.

The table, below, defines relative risk categories according to BMI and waist circumference. It is important to note that these categories denote *relative* risk, not *absolute* risk. They relate to the need to institute weight loss therapy, and do not directly define the required intensity of risk factor modification. The latter is determined by estimation of absolute risk based on the presence of associated disease or risk factors.

Classification of Overweight and Obesity by BMI, Waist Circumference and Associated Disease Risk*

Disease Risk* Related to Normal Weight and Waist Circumference

	BMI (kg/m ²)	Obesity Class	Men 102 cm (40 in.) Women 88 (35 in.)	Men >102 cm (>40 in.) Women >88 cm (>35 in.)
Underweight	< 18.5			
Normal+	18.5 - 24.9			
Overweight	25.0 - 29.9		Increases	High
Obesity	30.0 - 34.9	I	High	Very High
	35.0 - 39.9	II	Very High	Very High
Extreme Obesity	40	III	Extremely High	Extremely High

* Disease risk for type 2 diabetes, hypertension, and CHD.

+ Increased waist circumference can also be a marker for increased risk even in persons of normal weight.

Identification of Patients at Very High Absolute Risk

The following disease conditions or target organ damage in hypertensive patients denotes the presence of very high absolute risk that triggers the need for intense risk factor modification as well as disease management. For example, the presence of very high absolute risk indicates the need for aggressive cholesterol-lowering therapy.

- a. Established coronary heart disease (CHD)
 - History of myocardial infarction
 - History of angina pectoris (stable or unstable)
 - History of coronary artery surgery
 - History of coronary artery procedures (angioplasty)
- b. Presence of other atherosclerotic diseases
 - Peripheral arterial disease
 - Abdominal aortic aneurysm
 - Symptomatic carotid artery disease
- c. Type 2 diabetes
- d. Sleep apnea

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Identification of other obesity-associated diseases

Obese patients are at increased risk for several conditions that require detection and appropriate management, but that generally do not lead to widespread or life-threatening consequences. These include:

- Gynecological abnormalities
- Osteoarthritis
- Gallstones and their complications
- Stress incontinence

Identification of Cardiovascular Risk Factors That Impart a High Absolute Risk

Patients can be classified as being at high absolute risk for obesity-related disorders if they have three or more of the multiple risk factors listed below. The presence of high absolute risk increases the intensity of cholesterol lowering therapy and blood pressure management.

- Cigarette smoking
- Family history of premature CHD
- Age: Male 45 years, Female 55 years (or postmenopausal)
- High serum low-density lipoprotein cholesterol
- Hypertension
- Low high-density lipoprotein cholesterol
- Impaired fasting glucose

If not already done, a fasting glucose level and fasting lipid profile should be measured.

Other Risk Factors

Physical inactivity

A lack of physical activity imparts an increased risk for both CVD and type 2 diabetes. Physical inactivity enhances the severity of other risk factors, but it also has been shown to be an "independent" risk factor for all-cause mortality or CVD mortality

High triglycerides

In obese patients, elevated serum triglycerides are a marker for increased cardiovascular risk.

Category	Serum Triglyceride Levels
Normal triglycerides	Less than 200 mg/dL
Borderline-high triglycerides	200 to 400 mg/dL
High triglycerides	400 to 1,000 mg/dL
Very high triglycerides	Greater than 1,000 mg/dL

Patients with very high triglycerides are at increased risk for acute pancreatitis and must undergo immediate triglyceride lowering therapy.

Assessment of Patient Motivation

Practitioners need to assess the patient's motivation to enter weight loss therapy, assess the readiness of the patient to implement the plan, and then take appropriate steps to motivate the patient for treatment.

Goals of Weight Loss and Management

The general goals of weight loss and management are:

1. To reduce body weight.
2. To maintain a lower body weight over the long term.
3. To prevent further weight gain.

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- **Target Levels for Weight Loss**

The initial target goal of weight loss therapy for overweight patients is to *decrease body weight by about 10 percent*. If this target can be achieved, consideration can be given to the next step of further weight loss. It is important for patients to realize that even modest weight loss of 3-5%, if sustained, can result in clinically meaningful reduction in risk of diabetes as well as control of existing diabetes and hypertriglyceridemia.

- **Rate of Weight Loss**

A reasonable time line for weight loss is to achieve *a 10 percent reduction in body weight over 6 months of therapy*. For overweight patients with BMIs in the typical range of 27 to 35, a decrease of 300 to 500 kcal/day will result in weight losses of about 1/2 to 1 lb/week and a 10 percent weight loss in 6 months. For more severely obese patients with BMIs 35, deficits of up to 500 to 1,000 kcal/day will lead to weight losses of about 1 to 2 lb/week and a 10 percent weight loss in 6 months. After 6 months, the rate of weight loss usually declines and weight plateaus because of less energy expenditure at the lower weight. At this point, efforts to maintain weight loss should be put in place. If more weight loss is needed, another attempt at weight reduction can be made. This will require further adjustment of the diet and physical activity prescriptions.

- **Prevention of Further Weight Gain**

Some patients may not be able to achieve significant weight reduction. In such patients, an important goal is to prevent further weight gain that would exacerbate disease risk. Thus, prevention of further weight gain may justify entering a patient into weight loss therapy. Prevention of further weight gain can be considered a partial therapeutic success for many patients. Moreover, if further weight gain can be prevented, this achievement may be an important first step toward beginning the weight loss process. Primary care practitioners ought to recognize the importance of this goal for those patients who are not able to immediately lose weight. The need to prevent weight gain may warrant maintaining patients in a weight management program for an extended period.

Strategies for Weight Loss and Weight Maintenance

1. Dietary Therapy

Maintaining a caloric deficit of about 500 kcal/day results in weight loss of about one pound per week. Many patients find a calorie prescription (1200-1500 kcal per day for women or 1500-1800 kcal per day for men) to be helpful. There are multiple diet options (low fat diets, low carbohydrate diets, high protein diets, meal-replacement diets, the Mediterranean diet and others) which have been shown to result in comparable weight loss. The diet which the patient finds palatable, affordable and sustainable is the one to which the patient will adhere and the one which should be encouraged/prescribed by the clinician.

2. Physical Activity

An increase in physical activity is an important component of weight loss therapy since it leads to increased expenditure of energy. Increased physical activity may also inhibit food intake in overweight patients. Physical activity is primarily helpful in maintaining a desirable weight once weight loss has been achieved. In addition, sustained physical activity has the benefit of reducing overall CHD risk beyond that produced by weight reduction alone.

Strategies to Increase Physical Activity

Extremely obese persons may need to start with simple exercises that can gradually be intensified. The practitioner must decide whether exercise testing for cardiopulmonary disease is needed before embarking on a new physical activity regimen. This decision should be based on a patient's age, symptoms, and concomitant risk factors.

- Initial activities may be walking or swimming at a slow pace.
- With time, depending on progress, the amount of weight lost, and functional capacity, the patient may engage in more strenuous activities. Some of these include fitness walking, cycling, rowing, cross-country skiing, aerobic dancing, and rope jumping.

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- Jogging provides a high-intensity aerobic exercise, but can lead to orthopedic injury. If jogging is desired, the patient's ability to do this must first be assessed. The availability of a safe environment for the jogger is also a necessity.
- Competitive sports, such as tennis and volleyball, can provide an enjoyable form of physical activity for many, but again, care must be taken to avoid injury, especially in older people.

3. Behavior Therapy

The goal of behavior therapy is to alter the eating and activity habits of an obese patient. Behavioral strategies to reinforce changes in diet and physical activity can produce a weight loss in obese adults in the range of 10 percent of baseline weight over 4 months to 1 year. Multi-component behavioral intervention programs with at least 12 sessions have been shown to be more effective than programs with fewer sessions or lower treatment intensity. Unless a patient acquires a new set of eating and physical activity habits, long-term weight reduction is unlikely to succeed. The acquisition of new habits is particularly important for long-term weight maintenance at a lower weight. Most patients return to baseline weights in the absence of continued intervention.

- **Self-monitoring of both eating habits and physical activity**—Objectifying one's own behavior through observation and recording is a key step in behavior therapy. Patients should be taught to record the amount and types of food they eat, the caloric values, and nutrient composition. Keeping a record of the frequency, intensity, and type of physical activity likewise will add insight to personal behavior
- **Stress management**—Stress can trigger dysfunctional eating patterns, and stress management can defuse situations leading to overeating. Coping strategies, meditation, and relaxation techniques all have been successfully employed to reduce stress. In addition, inadequate sleep has been associated with risk of obesity though causality has not been proven.
- **Stimulus control**—Identifying stimuli that may encourage incidental eating enables individuals to limit their exposure to high-risk situations. Examples of stimulus control strategies include learning to shop carefully for healthy foods, keeping high-calorie foods out of the house, limiting the times and places of eating, and consciously avoiding situations in which overeating occurs.
- **Problem solving**—Self-corrections of problem areas related to eating and physical activity. Approaches to problem solving include identifying weight-related problems, generating or brainstorming possible solutions and choosing one, planning and implementing the healthier alternative, and evaluating the outcome of possible changes in behavior.
- **Contingency management**—Behavior can be changed by use of rewards for specific actions, such as increasing time spent walking or reducing consumption of specific foods. Rewards can come from either the professional team or from the patients themselves. For example, self-rewards can be monetary or social and should be encouraged.
- **Cognitive restructuring**—Unrealistic goals and inaccurate beliefs about weight loss and body image need to be modified to help change self-defeating thoughts and feelings that undermine weight loss efforts. Rational responses designed to replace negative thoughts are encouraged.
- **Social support**—A strong system of social support can facilitate weight reduction. Family members, friends, or colleagues can assist an individual in maintaining motivation and providing positive reinforcement.

Treatment of Obese Individuals with Binge Eating Disorder

If a patient suffers from binge eating disorder (BED), consideration can be given to referring the patient to a health professional who specializes in BED treatment. Behavioral approaches to BED associated with obesity have been derived from cognitive behavior therapy (CBT) used to treat bulimia nervosa. Pharmacotherapy with SSRI's is also efficacious but less so than cognitive behavioral therapy in treating BED.

Combined Therapy

To achieve the greatest likelihood of success from weight loss therapy, the combination of dietary therapy with an LCD, increased physical activity, and behavior therapy will be required. Inclusion of behavior

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therapy and increased physical activity in a weight loss regimen will provide the best opportunity for weight loss, and hopefully for long-term weight control. In order to achieve weight loss, such a regimen should be maintained for at least 6 months before considering pharmacotherapy.

Pharmacotherapy

It is important to remember that the major role of medications should be to help patients stay on a diet and physical activity plan while losing weight. Medication cannot be expected to continue to be effective in weight loss or weight maintenance once it has been stopped.

Therefore, an initial trial period of several weeks with a given drug or combination of drugs may help determine their efficacy in a given patient. If a patient does not respond to a drug with reasonable weight loss, the physician should reassess the patient to determine adherence to the medication regimen and adjunctive therapies, or consider the need for dosage adjustment. If the patient continues to be unresponsive to the medication, or serious adverse effects occur, the physician should consider its discontinuation. Medications are to be used in conjunction with lifestyle modification (i.e. dietary interventions, behavioral therapy, and increased physical activity).

Pharmacotherapy is recommended for individuals with a BMI >30 kg/m² or a waist circumference >35 inches (women) or 40 inches (men) and for patients with a BMI >27 kg/m² with the presence of an additional comorbid condition or more than one risk factor for 'weight-related' disease such as hypercholesterolemia, diabetes, hypertension.

Many herbal preparations have been used for weight loss; however, the NIH states that herbal preparations are not recommended as part of weight loss program. Only caffeine and ephedra (no longer available) have well performed studies, but this is only the short term. Overall the risks outweigh the benefits.

Medication	Action	Dose	Adverse Effects	Comments
Orlistat (Xenical-® _{Rx} , Alli - OTC®) Alli (brand only): \$53 Xenical (brand only): \$703	Lipase inhibitor-reduces nutrient absorption	Xenical- 120mg 3 times/day with or within 1 hour after fat containing meals, plus a daily multivitamin (spaced at least two hours from the medication) Alli- 60 mg 3 times/day with main meal containing fat	HA, flatus with discharge, fecal urgency, abdominal pain, steatorrhea, oily spotting, and increased defecation. These may decrease in frequency with time. Decreases absorption of fat-soluble vitamins Rarely reported: severe liver injury, oxalate-kidney injury	Approved for long term use. <i>Contraindications:</i> chronic malabsorption syndrome, cholestasis <i>Drug interactions:</i> cyclosporine, decrease absorption of amiodarone and vitamin K (may affect warfarin).
<u>Lorcaserin</u> <u>Schedule C-IV</u> (\$2318/month)	Serotonin-2C receptor agonist	Immediate release: 10 mg twice daily Extended release: 20mg once daily	Headache, dizziness, nausea, dry mouth, constipation (non-diabetic patients). Hypoglycemia, headache, back pain, cough (diabetic)	Approved for long term use. Avoid in patients with severe hepatic or renal insufficiency (CrCl <30 ml/min). Preferably avoid use with other serotonergic agents (including antidepressants, triptan anti-migrane meds, dextromethorphan)

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Medication	Action	Dose	Adverse Effects	Comments
<p><u>Phentermine-topiramate extended release (Qsymia)</u></p> <p><u>Schedule C-IV</u></p> <p><u>\$210/month</u></p>	<p>Nonadrenergic sympathomimetic + topiramate (topiramate mechanism unknown for weight management)</p>	<p>3.75mg/23 mg once daily in the morning. After 14 days at starting dose, titrate gradually to 15 mg/92 mg once daily if needed</p>	<p>patients)</p> <p>Paresthesia, dizziness, dysgeusia, insomnia, constipation, dry mouth, tachycardia, depression, anxiety, suicidal ideation, cognitive impairment</p>	<p>Approved for long term use</p> <p>Abuse potential (due to phentermine)</p> <p>Rare cases of metabolic acidosis and kidney stones</p> <p>Contraindicated during pregnancy, hyperthyroidism, glaucoma, patients taking MAO inhibitors</p> <p>Dose adjustment needed in renal dysfunction and moderate-severe hepatic impairment</p>
<p>Naltrexone / Bupropion extended release (Contrave)</p> <p>(not a controlled substance)</p> <p><u>\$334/month</u></p>	<p>Opioid antagonist + antidepressant</p> <p>Appetite / craving reduction</p>	<p>Target dose: 2 tabs (naltrexone 8 mg/ bupropion 90 mg per tab) twice daily.</p> <p>Start with 1 tab daily in the morning x 1 week, then 1 tablet twice daily x 1 week, then 2 tabs every morning and 1 tab every evening for 1 week, then full dose.</p>	<p>Suicidal ideation/ suicidality, mood changes, seizures, increased heart rate and/or blood pressure, allergic reactions, hepatotoxicity, angle closure glaucoma, nausea, vomiting, headache, dizziness, constipation, dry mouth</p>	<p>Approved for long term use</p> <p>Minimize seizure risk by titrating dose, not exceeding max dose, and avoiding taking dose with high fat meals. Contraindicated in patients with documented seizure disorder.</p> <p>Avoid concomitant use of efavirenz, lopinavir, or ritonavir.</p> <p>If used with clopidogrel or ticlopidine, reduce dose of Contrave to one tab in the morning and one tab in the evening</p> <p>May increase levels of drugs metabolized by CYP2D6</p> <p>Do not administer with high fat meals</p>
<p>Liraglutide (Saxenda; same as Victoza)</p> <p>(not a controlled substance)</p> <p><u>\$1440/month</u></p>	<p>GLP-1 receptor agonist; reduced appetite and energy intake</p>	<p>Target dose: 3 mg subcutaneous once daily (Start with 0.6 mg once daily then increase the daily dose by 0.6 mg each week to target of 3 mg once weekly at week five)</p>	<p>Constipation. diarrhea, dyspepsia, fatigue, increased heart rate, hepatitis, hypersensitivity, hypoglycemia (rare in patients without, nausea, diabetes), nausea, renal impairment, suicidal ideation, vomiting.</p>	<p>Approved for long term use</p> <p>Supplied as injector pen.</p> <p>When treatment is started consider reducing dose of any insulin secretagogues (e.g. sulfonylureas) the patient is taking to reduce the risk of hypoglycemia. If patient is on insulin, dose reduction (by at least 20%) is needed. Monitor blood glucose.</p> <p>Monitor for risks and symptoms of thyroid tumors.</p> <p>Monitor for signs and symptoms of pancreatitis; stop drug if pancreatitis is suspected; do not restart if pancreatitis is confirmed. Discontinue if 3mg dose not tolerated – no documented benefit at lower doses</p>

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<u>Diethylpropion</u> <u>Schedule C-IV</u> <u>Cost \$30/ month</u>	Sympatho- mimetic (nonadrenergic)	Immediate Release: 25 mg three or four times daily, taken one hour before meals, and mid- evening Controlled release: 75 mg once daily, mid-morning	Tachyarrhythmia, palpitations, hypertension insomnia, dry mouth, urticaria, and nausea	Indicated for short-term use (few weeks) because tolerance develops, they become ineffective, and the risk of dependence and abuse increases. <i>Contraindications:</i> HTN, CAD, pulmonary HTN, severe atherosclerosis, hyperthyroidism, glaucoma, agitated states, pregnancy, breast feeding <i>Drug interactions:</i> During or within 14 days following MAOIs in addition see individual product information.
<u>Phentermine</u> <u>Schedule C-IV</u> <u>Cost \$45/month</u>	Sympatho- mimetic (nonadrenergic)	18.75 to 37.5 mg (as phentermine HCl) once daily taken before breakfast or one to two hours after breakfast or 18.75 mg twice daily or 15-30 mg taken two hours after breakfast.	(same as above)	(same as above)
<u>Benzphetamine</u> <u>(\$40-120/month)</u> <u>Schedule C-III</u>	Sympatho- mimetic (nonadrenergic)	Initial 25 mg once daily; may titrate up to 25-50 mg one to three times daily Give single daily dose in the midmorning – mid afternoon	(same as above)	(same as above)
<u>Phendimetrazine</u> <u>(IR \$20/month</u> <u>SR \$115/month)</u> <u>Schedule C-III</u>	Sympatho- mimetic (nonadrenergic)	Immediate release: 17.5- 35 mg two to three times daily, one hour before meals; max dose 70 mg three times daily. Sustained release: 105 mg daily 30-60 minutes before morning meal	(same as above)	(same as above)

Surgery for Weight Loss

Surgery is one option for weight reduction for some patients with severe and resistant obesity. The aim of surgery is to modify the gastrointestinal tract to reduce net food intake. Bariatric surgery should be considered in patients with BMI ≥ 40 or in those with BMI ≥ 35 with obesity-related comorbid conditions who have not responded to diet, exercise and/or pharmacologic attempts to lose weight. Post bariatric

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surgery patients should be monitored periodically for the development of micro-nutrient deficiencies.⁹ The current recommendations can be found at: <https://asmbs.org/wp/uploads/2008/09/ASMBS-Nutritional-Guidelines-2016-Update.pdf>. This monitoring should ideally be done by the multidisciplinary bariatric surgery team but can be done by the primary care physician if necessary.

MedStar currently has bariatric surgery programs at three locations: MedStar Washington Hospital Center, MedStar Montgomery Medical Center, and MedStar Franklin Square Medical Center.

Patient Education

A Practical Guide for weight loss and other useful materials can be found on the NHLBI's Aim for a Healthy Weight Web site https://www.nhlbi.nih.gov/health/educational/lose_wt/. The site has a variety of diet plans, food exchange lists and links recipes.

<i>American Obesity Association (AOA)</i>	Newsletter, discounts on services and products, including prescription drugs. Annual membership dues are \$25 for individuals, \$40 for families, \$50 for health care professionals.	American Obesity Association 1250 24th St. NW, Suite 300 Washington, DC 20037 800-98-OBESE http://www.obesity.org
<i>National Institutes of Diabetes and Digestive and Kidney Disease</i>	Fact sheets, article reprints, reports, videos, information on local dietitians.	https://www.niddk.nih.gov/health-information/weight-management

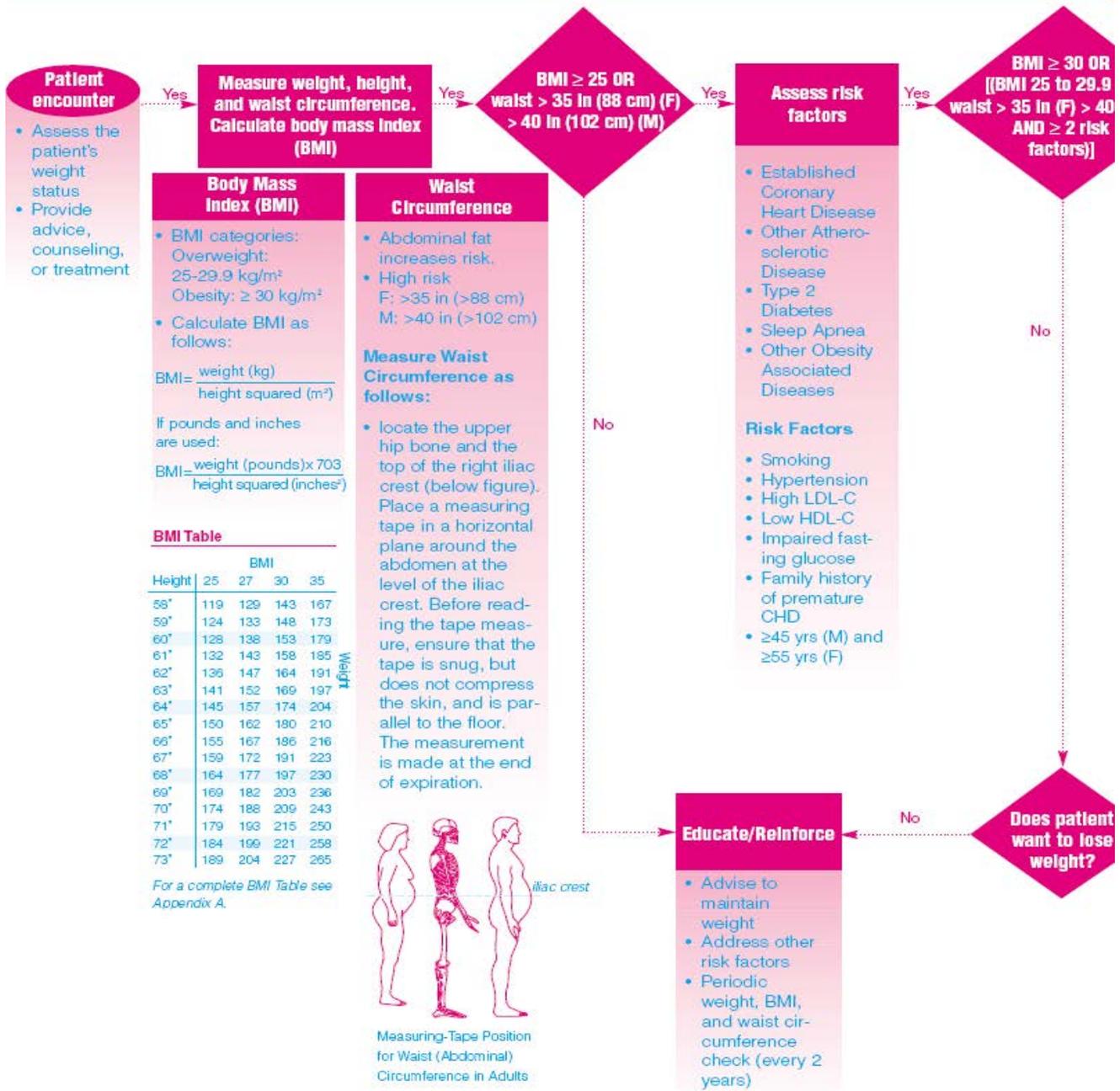
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A Quick Reference Tool to ACT

Assessment (A) and Classification (C)



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