



## Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults

Effective April 2007

About 97 million 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.

### 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 (m<sup>2</sup>). To estimate BMI using pounds and inches, use: [weight (pounds)/height (inches)<sup>2</sup>] x 703. Weight classifications by BMI, selected for use in this report, are shown in the table below.

**Table IV-1: Classification of Overweight and Obesity by BMI\***

	Obesity Class	BMI (kg/m <sup>2</sup> )
Underweight		<18.5
Normal		18.5-24.9
Overweight		25.0-29.9
Obesity	I	30.0-34.9
	II	35.0-39.9
Extreme Obesity	III	40

- 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.  
Source (adapted from): Preventing and Managing the Global Epidemic of Obesity. Report of the World Health Organization Consultation of Obesity. WHO, Geneva, June 1997.

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.)

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**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.

**Table IV-2: Classification of Overweight and Obesity by BMI, Waist Circumference and Associated Disease Risk\***

			Disease Risk* Relative to Normal Weight and Waist Circumference	
	BMI (kg/m <sup>2</sup> )	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

**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

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**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

**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.

• **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.

• **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

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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

In the majority of overweight and obese patients, adjustment of the diet to reduce caloric intake will be required. Dietary therapy consists, in large part, of instructing patients on how to modify their diets to achieve a decrease in caloric intake. A key element of the current recommendation is the use of a moderate reduction in caloric intake to achieve a slow but progressive weight loss. Ideally, caloric intake should be reduced only to the level required to maintain weight at the desired level. If this level of caloric intake is achieved, excess weight will gradually disappear. In practice, somewhat greater caloric deficits are used in the period of active weight loss, but diets with very low calories are to be avoided. Finally, the composition of the diet should be modified to minimize other cardiovascular risk factors

**Low-calorie diet (LCD) (800 to 1,500 kcal/day).** The LCD recommended contains a nutrient composition that will decrease other risk factors, notably, high serum cholesterol and hypertension.

Nutrient	Recommended Intake
Calories	Approximately 500 to 1,000 kcal/day reduction from usual intake
Total Fat	30 percent or less of total calories
Saturated Fatty Acids	8 to 10 percent of total calories
Monounsaturated Fatty Acids	Up to 15 percent of total calories
Polyunsaturated Fatty Acids	Up to 10 percent of total calories
Cholesterol	300 mg/day
Protein	Approximately 15 percent of total calories
Carbohydrate	55 percent or more of total calories
Sodium Chloride	No more than 100 mmol per day (approximately 2.4 g of sodium or approximately 6 g of sodium chloride)
Calcium	1,000 to 1,500 mg
Fiber	20 to 30 g

### 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 can also be helpful in maintaining a desirable weight. In addition, sustained physical activity has the benefit of reducing overall CHD risk beyond that produced by weight reduction alone.

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### 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.
- 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. 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.
- **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.

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## 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 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/m<sup>2</sup> or a waist circumference >35 inches (women) or 40 inches (men) and for patients with a BMI >27 kg/m<sup>2</sup> with the presence of an additional comorbid condition or more than one risk factor for 'weight-related' disease such as hypercholesterolemia, diabetes, hypertension.

Medication	Action	Dose	Adverse Effects	Comments
Benzphetamine (Didrex)	Noradrenergic	25-50mg 1-3 times/day	Insomnia, dry mouth, constipation, euphoria, palpitations, and hypertension	Indicated for short-term use (few weeks) Contraindications: HTN, cardiovascular disease, hyperthyroidism, glaucoma, agitated states, pregnancy Drug interactions: MAOIs, guanethidine, CNS stimulants, alcohol, sibutramine, tricyclic antidepressant Give mid-morning, avoid later day administration
Phendimetrazine (Bontril, Prelu-2, Melfiat –105 Unicelles)	Noradrenergic	17.5-70mg 2-3 times/day before meals or 105mg/d in the morning	same	same
Phentermine (Adipex-P)	Noradrenergic	18.75-37.5mg/d once daily before breakfast	same	Same, see individual products for more specific administration guidelines
Phentermine resin (Ionamin)	Noradrenergic	15-30mg/d once daily before breakfast or 10-14 hr before bedtime	same	Same, swallow whole
Diethylpropion (Tenuate, Tenuate Dospan)	Noradrenergic	25mg 3 times/day before meals or 75mg sustained release/d (mid-	same	Same, swallow whole; Dosage adjustments may be needed for hepatic insufficiency

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Medication	Action	Dose	Adverse Effects	Comments
Sibutramine (Meridia)	Mixed noradrenergic and serotonergic	morning) 10-15mg/day once daily with or without food	Increase in BP, pulse (less than other weight loss drugs), dry mouth, headache, insomnia, constipation	Approved for long term use. Contraindications: uncontrolled HTN, severe renal or liver impairment, narrow angle-glaucoma, h/o substance abuse, CAD, CHF, arrhythmias, CVA Drug interactions: SSRIs, MAOIs, centrally active anorexiant, sumatriptan, dihydroergotamine, dextromethorphan, meperidine, pentazocine, fentanyl, lithium, tryptophan
Orlistat (Xenical)	Lipase inhibitor-reduces nutrient absorption	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)	Flatulence with discharge, fecal urgency, fecal incontinence, steatorrhea, oily spotting, and increased defecation. These may decrease in frequency with time. Decreases absorption of fat-soluble vitamins	Approved for long term use. Contraindications: chronic malabsorption syndromes, cholestasis Drug interactions:cyclosporine
Ephedra, herbal products (ma huang), chromium, caffeine (Dexatrim, Acutrim – multiple components)				Not approved for treatment of obesity, only caffeine and ephedra have well performed studies, but only short term. NIH states that herbal preparations are not recommended as part of weight loss program.
Other investigational agents: Bupropion (Wellbutrin), topiramate (Topamax), metformin (Glucophage), Fluoxetine (Prozac); Rimonabant Amphetamines				Fluoxetine and Sertraline show loss of efficacy long term (weight regain); Fluoxetine and fluvoxamine are indicated for treatment of binge eating disorder  Not recommended for weight loss- small effect and usually not long lasting

### 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. Most authorities agree that weight loss surgery should be reserved for patients with severe obesity, in whom efforts at other therapy have failed, and who are suffering from the complications of obesity.

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### Patient Education

A Practical Guide for weight loss and other useful materials can be found on the NHLBI's [Aim for a Healthy Weight](http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt) Web site ([http://www.nhlbi.nih.gov/health/public/heart/obesity/lose\\_wt](http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt)). A new feature on the Institute's Web site is the ultimate "cyber" tool for devising low calorie meals, an interactive [menu planner](#). The menu planner allows the user to plan a single meal or a whole day's meals. Other sites for information are listed below.

<i>Shape Up America! web site</i>	Interactive resource for weight control. Excellent reference book -- <i>Guidance for Treatment of Adult Obesity</i> -- may be accessed on-line.	<a href="http://www.shapeup.org">http://www.shapeup.org</a> Shape Up America!
<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 <a href="http://www.obesity.org">http://www.obesity.org</a>
<i>Weight Control Information Network (WIN)</i>	Fact sheets, article reprints, reports, videos, information on local dietitians. Produced by the National Institute of Digestive Diseases and Kidney Disorders (NIDDK), NIH.	1 WIN Way Bethesda, MD 20893-3665 <a href="http://www.niddk.nih.gov">http://www.niddk.nih.gov</a> (see nutrition & obesity) 800-WIN-8098

### References

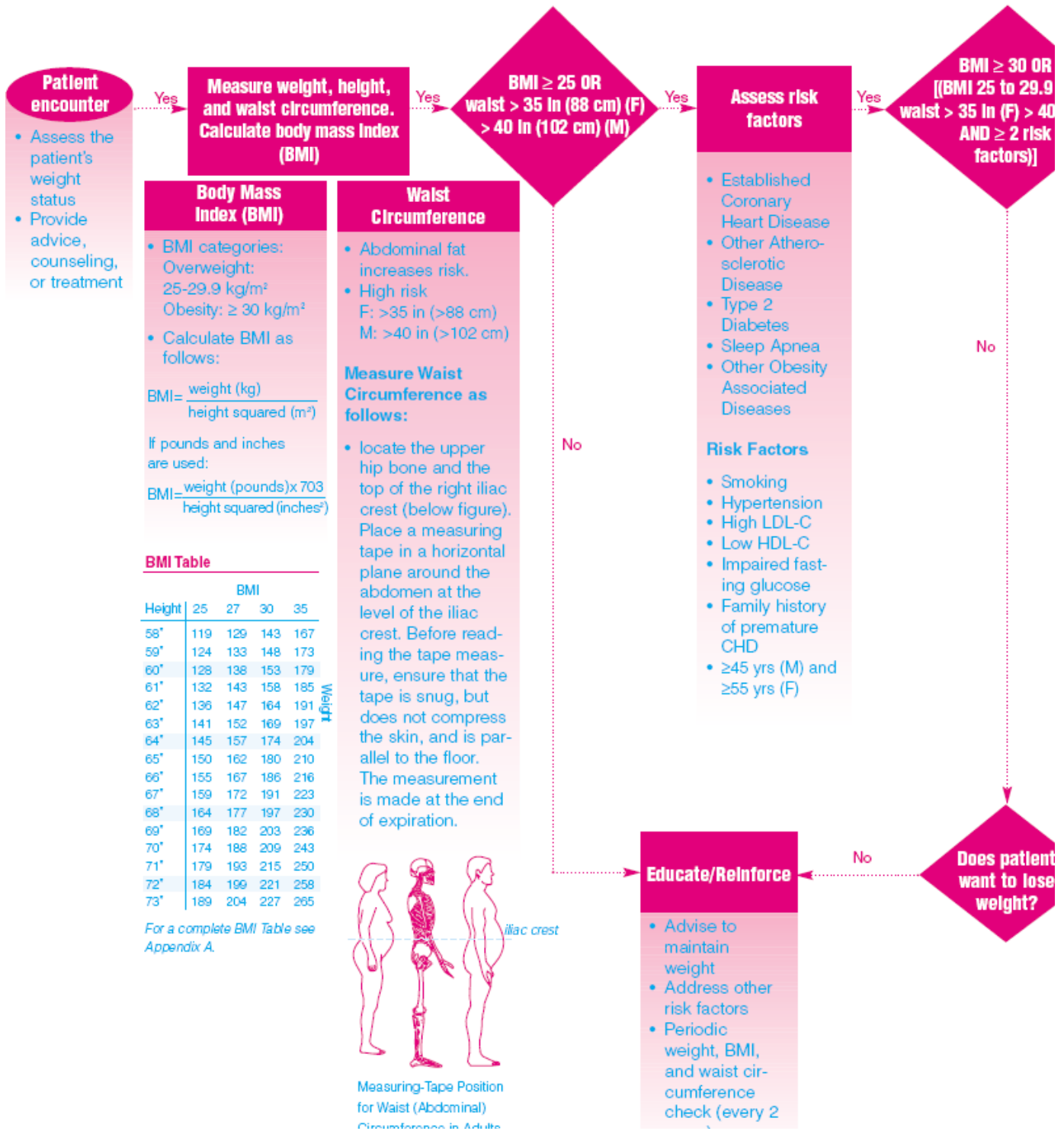
Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults, HIH-NHLBI 1998.  
The Practical Guide to the Identification, Evaluation and Treatment of Overweight and Obesity in Adults (2000) NHLBI

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# A Quick Reference Tool to ACT

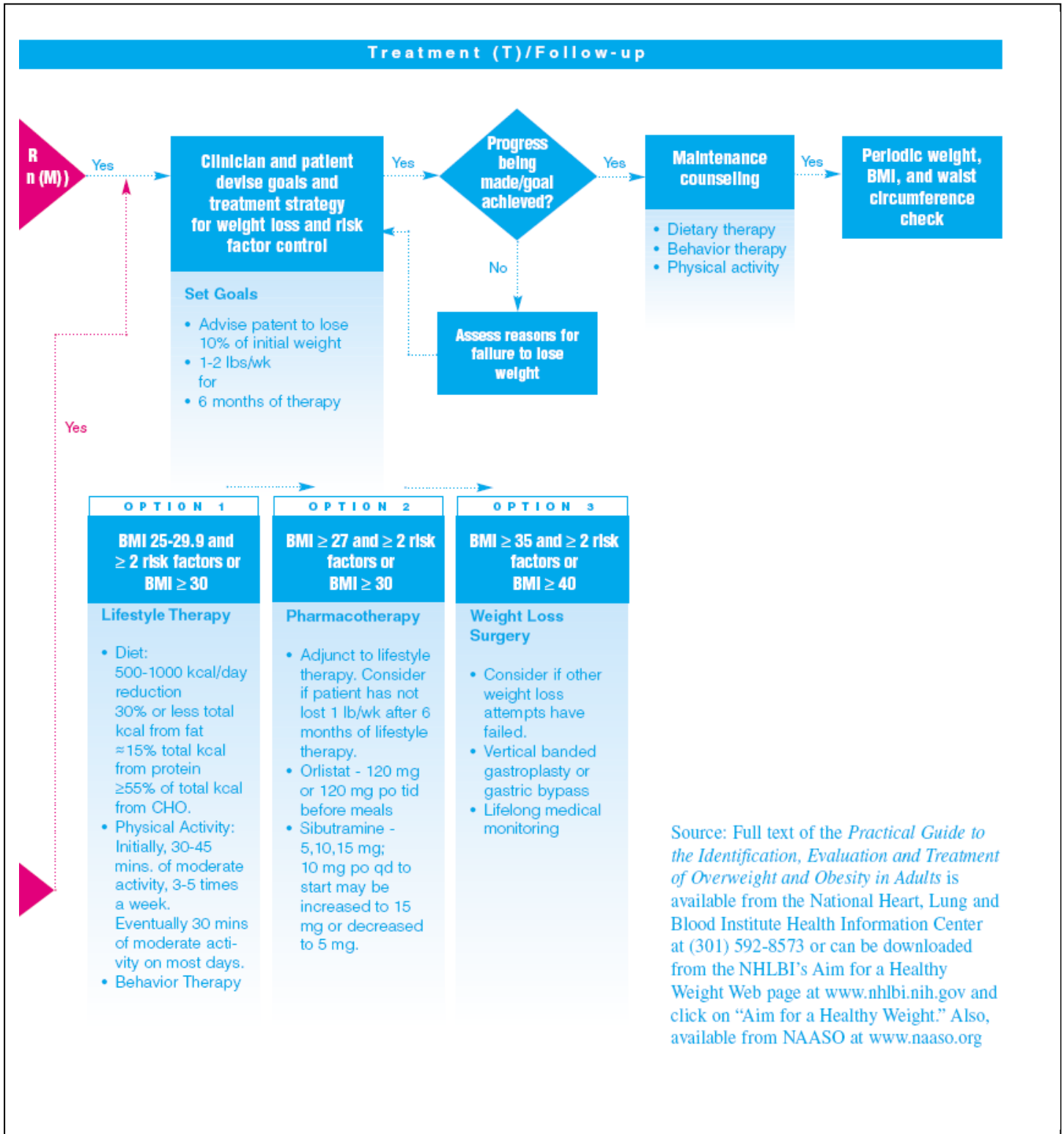
## Assessment (A) and Classification (C)



U.S. Department of Health and Human Services  
Public Health Service  
National Institutes of Health  
National Heart, Lung, and Blood Institute

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Basic treatment of overweight and obese patients requires a comprehensive approach involving diet and nutrition, regular physical activity, and behavioral change, with an emphasis on long-term weight management rather than short-term extreme weight reduction. Physicians and other health professionals have an important role in promoting preventive measures and encouraging positive lifestyle behaviors, as well as identifying and treating obesity-related comorbidities.Â Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adultsâ€”the evidence report. Obesity Res 1998;6(suppl 2):51S-209S [Published erratum appears in Obes Res 1998;6:464].

In June 1998, the Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: Evidence Report was released by the National Heart, Lung, and Blood Institute's (NHLBI) Obesity Education Initiative in cooperation with the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The impetus behind the clinical practice guidelines was the increasing prevalence of over-weight and obesity in the United States and the need to alert practitioners to accompanying health risks. The Expert Panel that developed the guidelines consisted of 24 exp