

## 416 Evaluation and Management of Obesity

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More than 66% of U.S. adults are categorized as overweight or obese, and the prevalence of obesity is increasing rapidly in most of the industrialized world. Children and adolescents also are becoming more obese, indicating that the current trends will accelerate over time. Obesity is associated with an increased risk of multiple health problems, including hypertension, type 2 diabetes, dyslipidemia, obstructive sleep apnea, nonalcoholic fatty liver disease, degenerative joint disease, and some malignancies. Thus, it is important for physicians to identify, evaluate, and treat patients for obesity and associated comorbid conditions.

### EVALUATION

Physicians should screen all adult patients for obesity and offer intensive counseling and behavioral interventions to promote sustained weight loss. The five main steps in the evaluation of obesity, as described below, are (1) a focused obesity-related history, (2) a physical examination to determine the degree and type of obesity, (3) assessment of comorbid conditions, (4) determination of fitness level, and (5) assessment of the patient's readiness to adopt lifestyle changes.

**The Obesity-Focused History** Information from the history should address the following seven questions:

- What factors contribute to the patient's obesity?
- How is the obesity affecting the patient's health?

- What is the patient's level of risk from obesity?
- What does the patient find difficult about managing weight?
- What are the patient's goals and expectations?
- Is the patient motivated to begin a weight management program?
- What kind of help does the patient need?

Although the vast majority of cases of obesity can be attributed to behavioral factors that affect diet and physical activity patterns, the history may suggest secondary causes that merit further evaluation. Disorders to consider include polycystic ovarian syndrome, hypothyroidism, Cushing's syndrome, and hypothalamic disease. Drug-induced weight gain also should be considered. Common causes include medications for diabetes (insulin, sulfonylureas, thiazolidinediones); steroid hormones; psychotropic agents; mood stabilizers (lithium); antidepressants (tricyclics, monoamine oxidase inhibitors, paroxetine, mirtazapine); and antiepileptic drugs (valproate, gabapentin, carbamazepine). Other medications, such as nonsteroidal anti-inflammatory drugs and calcium channel blockers, may cause peripheral edema but do not increase body fat.

The patient's current diet and physical activity patterns may reveal factors that contribute to the development of obesity and may identify behaviors to target for treatment. This type of historic information is best obtained by the combination of a questionnaire and an interview.

**Body Mass Index (BMI) and Waist Circumference** Three key anthropometric measurements are important in evaluating the degree of obesity: weight, height, and waist circumference. The BMI, calculated as weight (kg)/height (m)<sup>2</sup> or as weight (lbs)/height (inches)<sup>2</sup> × 703, is used to classify weight status and risk of disease (Tables 416-1 and 416-2). BMI provides an estimate of body fat and is related to disease risk. Lower BMI thresholds for overweight and obesity have been proposed for the Asia-Pacific region since this population appears to be at risk for glucose and lipid abnormalities at lower body weights.

Excess abdominal fat, assessed by measurement of waist circumference or waist-to-hip ratio, is independently associated with a higher risk for diabetes mellitus and cardiovascular disease. Measurement of the waist circumference is a surrogate for visceral adipose tissue and should be performed in the horizontal plane above the iliac crest (Table 416-3).

**Physical Fitness** Several prospective studies have demonstrated that physical fitness, reported by questionnaire or measured by a maximal treadmill exercise test, is an important predictor of all-cause mortality rate independent of BMI and body composition. These observations highlight the importance of taking a physical activity and exercise history during examination as well as emphasizing physical activity as a treatment approach.

**Obesity-Associated Comorbid Conditions** The evaluation of comorbid conditions should be based on presentation of symptoms, risk factors, and index of suspicion. For all patients, a fasting lipid panel should be performed (total, low-density lipoprotein, and high-density lipoprotein cholesterol and triglyceride levels) and a fasting blood glucose level and blood pressure determined. Symptoms and diseases that are directly or indirectly related to obesity are listed in Table 416-4. Although individuals vary, the number and severity of organ-specific comorbid conditions usually rise with increasing levels of obesity. Patients at very high absolute risk include those with the following: established coronary heart disease; presence of other atherosclerotic diseases, such as peripheral arterial disease, abdominal aortic aneurysm, and symptomatic carotid artery disease; type 2 diabetes; and sleep apnea.

**Assessing the Patient's Readiness to Change** An attempt to initiate lifestyle changes when the patient is not ready usually leads to frustration and may hamper future weight-loss efforts. Assessment includes