Office-Based Strategies for the Management of Obesity

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Roughly two thirds of U.S. adults are overweight or obese. Obesity increases the risk of hypertension, type 2 diabetes mellitus, hyperlipidemia, heart disease, pulmonary disease, hepatobiliary disease, cancer, and a number of psychosocial complications. Physicians often feel unprepared to handle this important problem. Practical office-based strategies include: (1) making recommendations for assisted self-management, including guidance on popular diets, (2) advising patients about commercial weight-loss programs, (3) advising patients about and prescribing medications, (4) recommending bariatric surgery, and (5) supplementing these strategies with counseling about lifestyle changes using a systematic approach. Family physicians should provide basic information about the effectiveness and safety of popular diets and commercial weight-loss programs, and refer patients to appropriate information sources. Sibutramine and orlistat, the only medications currently approved for the long-term treatment of obesity, should only be prescribed in combination with lifestyle changes. Bariatric surgery is an option for adults with a body mass index of 40 kg per m^2 or higher, or for those with a body mass index of 35 kg per m^2 or higher who have obesity-related comorbidities such as type 2 diabetes. The five A's behavioral counseling paradigm (ask, advise, assess, assist, and arrange) can be used as the basis for a systematic, practical approach to the management of obesity that incorporates evidence for managing common obesity-related behaviors. (*Am Fam Physician*. 2010;81(12):1449-1455. Copyright © 2010 American Academy of Family Physicians.)

▶ **Patient information:** A handout on practical tips for weight loss, written by the author of this article, is provided on page 1456.

▶ **See related editorial on page 1406.**

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Obesity affects 33.8 percent of U.S. adults; 68.0 percent are either overweight or obese.[1] Obesity is a well-known risk factor for type 2 diabetes mellitus, hypertension, hyperlipidemia, pulmonary disease, and heart disease.[2] Excess weight also increases the risk of gallstones, fatty liver disease, obstructive sleep apnea, gastroesophageal reflux disease, osteoarthritis, and cancer.[3-7] As opposed to healthy weight, obesity is associated with an increased risk of colorectal cancer (relative risk of 1.6 among men and 1.3 among women).[8] An estimated 40 percent of endometrial cancers, 25 percent of renal cancers, and 10 percent of breast and colon cancers could be prevented by maintaining a body mass index (BMI) of less than 25 kg per m^2.[9]

The psychosocial complications of obesity are less studied but no less serious. Adults who are obese are more likely than those of normal weight to face discrimination at work and in other settings.[10] There are also higher rates of depression, bipolar disease, and agoraphobia in obese persons, suggesting that these conditions—and their pharmacologic treatment—produce disordered eating behaviors or that, conversely, obesity can aggravate existing psychopathology.[11]

BMI is defined as body weight in kilograms divided by the square of the height in meters and is used to define weight categories. Standards are based on the health risk associated with different weights. BMI is a practical but imperfect measure of obesity. Very muscular persons, for example, may have a high BMI but a low level of adiposity. Among persons 20 years and older, a BMI of 18.5 to 24.9 kg per m^2 is defined as normal, 25.0 to 29.9 kg per m^2 is overweight, and 30.0 kg per m^2 or higher is obese. The degree of obesity is designated separately. A BMI of 30.0 to 34.9 kg per m^2 defines stage I obesity, 35.0 to 39.9 kg per m^2 defines stage II, and 40.0 kg per m^2 or higher defines stage III.[12] The disease risk of each of these BMI categories is described in *Table 1*,[13] in addition to increased waist circumference, which independently increases health risk. This article summarizes practical strategies for helping patients achieve a healthy weight. Discussions of obesity prevention, evaluation and treatment of obesity-related illnesses, and maintenance of weight loss are beyond the scope of this article.

SORT: KEY RECOMMENDATIONS FOR PRACTICE

Clinical recommendation	*Evidence rating*	*References*	*Comments*
Measure height and weight and calculate BMI of adult patients at least once per year.	C	14	This is a widely used recommendation; the U.S. Preventive Services Task Force found good evidence that BMI measurement is reliable and valid for identifying adults at increased risk of morbidity and mortality from being overweight or obese.[14]
Prescribe pharmacotherapy for obesity only in conjunction with counseling to promote healthy dietary and physical activity habits.	C	29, 30	Evidence from key original studies[29] and from the Cochrane Collaboration[30] supports this recommendation.
Consider bariatric surgery in adults with a BMI ≥ 40 kg per m^2, or in those with a BMI ≥ 35 kg per m^2 who have obesity-related diseases, such as type 2 diabetes mellitus or obstructive sleep apnea.	B	33	This is a standard and longstanding guideline to determine which adults can benefit most from bariatric surgery, and is based on the idea that the risk of obesity in such persons outweighs the risks of surgery.[33] There is evidence that patients with a lower BMI may benefit, but it is too early to recommend surgery for such patients.
Advise patients to consume no more than one serving of sweet beverage (e.g., soft drinks, fruit drinks and juices, sports drinks) per day.	C	51	Strong evidence exists that consumption of sweet beverages has a dose-dependent relationship with BMI among children and adults, and can lead to weight gain. Although more research is needed, a systematic review[51] shows that there is sufficient evidence to discourage the consumption of sugary beverages as part of a healthy lifestyle.

BMI = body mass index.

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to http://www.aafp.org/afpsort.xml.

The Challenge of Office-Based Management

The U.S. Preventive Services Task Force (USPSTF) recommends measuring height and weight, and calculating BMI for all adult patients at least annually.[14] The American Academy of Family Physicians recommends screening for obesity and providing intensive counseling (i.e., more than one session per month for at least three months) and behavioral interventions for adults with obesity.[15] There is, however, evidence that physicians are uncomfortable managing obesity and often fail to do so. One study found that patients were less likely to receive weight management advice from their primary care physician

Table 1. Classification of Overweight and Obesity and Associated Disease Risk

			Disease risk (relative to normal weight and waist circumference)†	
*Classification**	*BMI (kg per m^2)*	*Obesity stage*	*Waist circumference Men: ≤ 40 in (≤ 102 cm) Women: ≤ 35 in (≤ 88 cm)*	*Waist circumference Men: > 40 in Women: > 35 in*
Underweight	< 18.5	—	—	—
Normal	18.5 to 24.9	—	—	—
Overweight	25.0 to 29.9	—	Increased	High
Obesity	30.0 to 34.9	I	High	Very high
	35.0 to 39.9	II	Very high	Very high
Extreme obesity	≥ 40.0	III	Extremely high	Extremely high

BMI = body mass index.

**—For persons 20 years and older.*

†*—Disease risk for type 2 diabetes mellitus, hypertension, and cardiovascular disease. Increased waist circumference can be a marker for increased disease risk, even in persons of normal weight.*

Adapted from World Health Organization. Preventing and Managing the Global Epidemic of Obesity. Report of the World Health Organization Consultation of Obesity. *Geneva, Switzerland: WHO; June 1997.*

than from their partner, family, or friends.[16] Despite this, physicians view obesity as serious and would like to provide help.[17,18] Possible barriers include a lack of time, lack of insurance reimbursement, and lack of support services (e.g., community-based weight-loss programs).[16] The barriers identified most often, however, are a lack of training and confidence among physicians in managing obesity and a lack of practical tools to care for patients who are overweight or obese. Essentially, family physicians and those in many other subspecialties are poorly equipped to handle this important problem.[16,19,20]

Family physicians need simple and practical strategies to address obesity.[21,22] Common strategies are recommending supported self-management or commercial weight-loss programs; recommending or prescribing medications for weight loss; recommending bariatric surgery; and assessing key habits and recommending lifestyle changes (structured counseling).

Supported Self-Management and Commercial Weight-Loss Programs

Patients pursue countless supported self-management approaches to weight loss. The most common are popular diets. The Atkins (very low in carbohydrates), Zone (low in carbohydrates), Ornish (high in carbohydrates), and Weight Watchers (restriction of portion sizes and calories) diets were evaluated in a 2005 randomized trial and yielded similar weight loss results of 4.44 to 6.66 lb (2 to 3 kg) after one year.[23] A 2007 trial compared the Atkins, Zone, Ornish, and LEARN (lifestyle program that includes exercise and a low-fat, high-carbohydrate diet) programs among premenopausal women. The Zone, Ornish, and LEARN programs were statistically equivalent in terms of weight loss. The Atkins program, associated with a mean weight loss of 10.44 lb (4.7 kg), was modestly more effective.[24] All these programs appear to be safe. Patients interested in these popular diets should be counseled that they are associated with modest but significant weight loss. The amount of weight loss is strongly associated with the degree of adherence to the program.

Americans spend roughly $40 billion annually on commercial weight-loss programs, such as Weight Watchers, LA Weight Loss, and Jenny Craig, and related products.[25] Commercial weight-loss programs seldom provide accurate information about typical results. In 2002, *Consumer Reports* surveyed 32,213 dieters and 8,000 persons who had lost at least 10 percent of their body weight and kept it off for at least one year. In this survey, 83 percent of successful dieters lost weight entirely on their own. Only 14 percent had enrolled in a commercial program.[26] Data from the National Weight Control Registry reveal that only one half of those successful in losing weight used a commercial program.[27] Nevertheless, patients may still be interested in these programs. The American Heart Association has detailed recommendations for choosing a commercial weight-loss program.[28]

Noncommercial weight-loss programs (e.g., university and workplace programs) and dietician counseling are two additional resources that, when available, are useful by themselves or as adjuncts to other strategies.

Medications to Promote Weight Loss

Sibutramine (Meridia) and orlistat (Xenical) are the only two medications currently approved for the long-term treatment of obesity. Given the limited role of pharmacotherapy for obesity, other medications that have been approved for short-term treatment or that are used off-label for longer treatment are not discussed here. Sibutramine acts centrally to inhibit serotonin and norepinephrine reuptake and increase satiety. A randomized trial revealed that, when combined with intensive lifestyle modification counseling, sibutramine resulted in a mean weight loss of 26.88 lb (12.1 kg; standard deviation [SD] = 21.77 lb [9.8 kg]) after one year. Sibutramine in combination with brief counseling resulted in a mean weight loss of 16.66 lb (7.5 kg; SD = 17.77 lb [8 kg]), but the superiority of this result over intensive counseling alone or sibutramine alone was statistically significant only early in the trial. Counseling alone or sibutramine alone was associated with a mean weight loss of 14.88 lb (6.7 kg; SD = 17.55 lb [7.9 kg]) and 11.11 lb (5.0 kg; SD = 16.44 lb [7.4 kg]) respectively.[29] Blood pressure may increase in some patients taking sibutramine and should be closely monitored.

Orlistat inactivates gastric and pancreatic lipases, preventing the absorption of fat through the gastrointestinal tract. The usual dosage is 120 mg three times daily. Common adverse effects are bloating, flatulence, and fatty or oily stools. The discontinuation rate in studies is roughly 33 percent.[30] Orlistat is now available over the counter under the brand name Alli (half-strength, 60-mg dose).

A recent meta-analysis of trials of one to four years' duration comparing medication treatment alone with placebo revealed that sibutramine is associated with a mean weight loss of 9.55 lb (4.3 kg; 95% confidence interval [CI], 8.0 to 10.44 lb [3.6 to 4.7 kg]) and orlistat with a mean weight loss of 6.44 lb (2.9 kg; 95% CI, 5.55 to 7.11 lb [2.5 to 3.2 kg]) compared with placebo.[31]

It can be concluded that sibutramine and orlistat promote modest degrees of weight loss. Medications should always be prescribed in combination with lifestyle changes.[29,30]

Bariatric Surgery

Surgical weight-loss procedures are classified as purely restrictive (limiting the volume of the stomach) and primarily malabsorptive. Purely restrictive procedures include laparoscopic adjustable gastric banding, vertical banded gastroplasty (uncommonly performed now), and laparoscopic vertical sleeve gastrectomy (an emerging procedure). Primarily malabsorptive procedures restrict the size of the stomach to some extent, but also involve bypassing a large portion of the stomach and duodenum. The most popular of these primarily malabsorptive procedures is the Roux-en-Y gastric bypass.

Percentage of excess weight loss, a commonly used outcome of bariatric surgery, is defined as the amount of weight lost as a percentage of the patient's excess weight above ideal, with ideal weight generally defined as a maximum BMI of 25 kg per m^2.[32] For instance, a man who is 6 ft (180 cm) tall and weighs 300 lb (135 kg; BMI of 40.6 kg per m^2) has approximately 116 lb (52.2 kg) of excess weight. A recent meta-analysis revealed that Roux-en-Y gastric bypass is more effective than laparoscopic adjustable gastric banding in promoting weight loss.[33] Patients undergoing Roux-en-Y gastric bypass had a mean excess weight loss of 61.5 percent after one year and 71.2 percent after three years. By contrast, patients undergoing laparoscopic adjustable gastric banding had a mean excess weight loss of 42.6 percent after one year and 55.2 percent after three years.

A recent Cochrane review compared different bariatric procedures.[34] All were found to be more effective in promoting weight loss than nonsurgical methods. Roux-en-Y gastric bypass was more effective than laparoscopic adjustable gastric banding and vertical banded gastroplasty. Vertical sleeve gastrectomy was as effective as Roux-en-Y gastric bypass. Resolution of comorbidities with bariatric surgery is common. A recent meta-analysis showed that, among patients with type 2 diabetes, 31 to 77 percent who had laparoscopic adjustable gastric banding and 72 to 100 percent who had Roux-en-Y gastric bypass experienced complete resolution of their disease after surgery.[35] Resolution of hypertension occurred at a comparable rate.

Bariatric surgery is typically safe, with a perioperative mortality rate of 0.3 percent and an adverse outcomes rate of 4.3 percent.[36] Furthermore, results from Sweden have demonstrated substantially reduced 10-year mortality with bariatric surgery compared with nonsurgical treatment of obesity (adjusted hazard ratio = 0.71).[37]

In general, bariatric surgery is an option for adults who have a BMI of 40 kg per m^2 or higher, or for those who have a BMI of 35 kg per m^2 or higher with significant obesity-related comorbidities (e.g., severe hypertension, type 2 diabetes, obstructive sleep apnea).[33,38] There is emerging evidence that bariatric surgery is beneficial to patients with obesity-related comorbidities who have a BMI of less than 35 kg per m^2, but it is too early to recommend surgery for such patients.[39]

Evaluation and Structured Counseling

Before initiating counseling, the physician should determine the patient's BMI. This is also a good opportunity to review the medical causes of obesity. The contributing role of medications is often overlooked. Many medications, including beta blockers, corticosteroids, diabetes drugs, psychoactive drugs, and valproic acid (Depakene), are known to cause weight gain. Some of the medications most likely to promote obesity, such as tricyclic antidepressants, are not prescribed as often as in the past. With some commonly used drugs, such as beta blockers, weight gain is relatively modest.[40] Among diabetes drugs, insulin and the sulfonylureas are associated with the greatest weight gain. Thiazolidinediones are also associated with weight gain, although not to the same degree. Metformin (Glucophage) and alpha-glucosidase inhibitors are not associated with weight gain.[41] Because type 2 diabetes and obesity are closely related, weight gain should be taken into consideration when prescribing an antidiabetic drug regimen.

Atypical antipsychotic drugs, including clozapine (Clozaril), olanzapine (Zyprexa), risperidone (Risperdal), ziprasidone (Geodon), aripiprazole (Abilify), and quetiapine (Seroquel), are increasingly prescribed for bipolar disease, schizophrenia, and other psychiatric conditions. Weight gain often adversely affects adherence to the antipsychotic medication regimen.[42] Clozapine and olanzapine are associated with roughly 8.88 lb (4 kg) and 7.77 lb (3.5 kg) of weight gain, respectively, within 10 weeks of use. Risperidone and quetiapine are associated with roughly 4.44 lb (2 kg) of weight gain. Ziprasidone and aripiprazole are associated with the least weight gain.[43] There is limited evidence that metformin, when prescribed as an adjunct to antipsychotic therapy, may mitigate increases in weight.[44]

Most obesogenic medications cause weight gain by stimulating appetite. Prescribing these medications may be unavoidable, but patients should be told that weight gain is a side effect and encouraged to take a proactive approach to prevent it (e.g., by adopting healthy snacking habits).

Guidelines for the management of obesity have been available for many years, but the extent to which they have been adopted into primary care is unknown.[45,46] A simple paradigm for obesity-related counseling, from which most patients can benefit, is needed. The USPSTF

Table 2. Key Obesity-Related Behaviors of Adults and Children

Behavior	*Key evidence*
Avoiding physical activity	Exercise, particularly in combination with dietary changes, is effective in promoting weight loss among adults.[49]
	School-based programs that include promotion of physical activity are effective in preventing obesity among children.[50]
Consuming soft drinks and other sweet beverages	Intake of sugar-sweetened beverages contributes to weight gain among children and adults.[51]
	Consuming 12 oz or more of fruit juice per day is associated with short stature and obesity in children (cross-sectional study).[52]
Eating fast food	Frequently consuming fast food is associated with higher daily energy intake and higher BMI among adults (large cross-sectional survey).[53]
	Children who consume fast food have poorer quality diets and higher energy intakes compared with those who do not (large cross-sectional survey).[54]
Not having family meals (for children and adolescents)	Frequency of eating dinner with the family is associated with a lower baseline risk of being overweight among adolescents, although not an increased longitudinal risk of becoming overweight (cross-sectional longitudinal study).[55]
	Family dinner is associated with healthful dietary intake patterns (cross-sectional study).[56]
Skipping breakfast	Children and adolescents who consistently eat breakfast are less likely to be overweight (systematic review).[57]
	Skipping breakfast is ineffective for controlling weight. Eating breakfast regularly is associated with a lower BMI (secondary analysis of NHANES III data).[58]
Watching television	Adults who watch four or more hours of television per day are four times as likely to be overweight as those who watch less than one hour per day.[59]
	The odds ratio of being overweight is 4.6 (95% confidence interval, 2.2 to 9.6) among young persons who watch more than five hours of television per day compared with those who watch zero to two hours (large cohort study).[60]
	A school-based intervention designed to reduce television viewing resulted in a statistically significant relative decrease in BMI compared with no intervention.[61]

BMI = body mass index; NHANES III = Third National Health and Nutrition Examination Survey.

Information from references 49 through 61.

has developed a useful framework known as the five A's (ask, advise, assess, assist, and arrange) for the delivery of preventive counseling in primary care. This can also be used for the delivery of obesity-related counseling according to a stepwise approach.[47,48] Thus, after evaluating BMI and medical conditions that might contribute to obesity, the physician should ask about a patient's interest in achieving a healthier weight and whether or not he or she would like help. If the patient is not interested, the physician can defer the issue for another time or use motivational interviewing techniques for additional assessment. It is critical to ask about common behaviors that may have contributed to obesity. Common behaviors with evidence to support their role in obesity are listed in *Table 2*.[49-61] *Table 3* provides sample questions to ask obese patients as part of the five A's paradigm.[48]

The next step is to advise the patient about the impact of problem behaviors on weight. For example, patients should understand that consumption of sweet beverages is associated with obesity, and that no more than one serving of sweet beverage (roughly 12 oz of juice, fruit drink, regular soda, etc.) should be consumed per day.[51] The physician and patient can then agree on a plan or goals to change behaviors over a period of time. Goals should take into consideration the patient's own readiness to change his or her behavior. Useful tips can then be provided to assist the patient in meeting these goals. Finally, it is helpful to arrange for follow-up in person, by

Table 3. Sample Questions to Ask Obese Patients as Part of the Five A's Paradigm

Do you eat a nutritionally balanced breakfast soon after awakening?
Do you eat fast food (e.g., hamburgers, fries) more than once per week?
Do you consume more than one serving of sweet beverages (e.g., fruit juice, fruit drink/punch, regular soft drink, energy drink) per day?
Do you engage in at least 30 to 60 minutes of physical activity per day?
Do you reward yourself with food for good behavior or, for example, after "a hard day" on a regular basis? (Using food as a reward in this way is discouraged.)

Five A's = ask, advise, assess, assist, arrange.

Information from reference 48.

telephone, or electronically to provide reinforcement over time. The frequency of follow-up depends on the patient's progress, interest in receiving additional help, and scheduling issues. If time is lacking, the physician can make sensible recommendations about commercial or other weight-loss programs if the patient expresses interest.

The five A's paradigm is an example of a structured approach to obesity counseling, although supportive evidence for this model is lacking. There is evidence that low- to moderate-intensity counseling by physicians is ineffective by itself in producing clinically meaningful weight loss.[62] However, the five A's approach has important advantages over other approaches. First, it is simple to deliver. Second, it is based on an existing paradigm that has been shown to be successful for counseling of other problems, such as smoking cessation and lipid disorders.[63,64] Finally, as part of routine health maintenance, it does not stigmatize persons who are overweight or obese.

Because the emphasis is on healthy behaviors, all persons, obese or not, can benefit from counseling based on the five A's paradigm. The five A's paradigm is being evaluated for the counseling of overweight and obese children and adolescents in primary care settings in combination with extensive practice changes (including an assisted self-management program) based on the chronic-care model.[65] Currently, the five A's paradigm can be a useful starting point for discussing weight with patients, especially in settings with limited additional resources. It can also be combined easily with the other strategies. Given the gravity of the obesity epidemic, the lack of research on primary care strategies to date, and current calls for action,[66] a paradigm that incorporates evidence for obesity-related behaviors is a valuable tool.

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Author disclosure: Nothing to disclose.

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