As the obesity epidemic increases, primary care clinicians are encountering obesity and health problems associated with obesity more frequently than ever before. In 2007, 41% of women were classified as obese, with a body mass index (BMI) of 30 or higher. Non-Hispanic blacks and Hispanics are more likely to be obese than white, non-Hispanics. A wide spectrum of health problems has been associated with obesity, including cardiovascular disease, diabetes, metabolic syndrome, osteoarthritis, and polycystic ovary syndrome. Obesity has been shown to be a low-grade inflammatory state, which may be responsible for many of the comorbidities. The general consensus recommends screening for obesity and counseling to promote weight loss. In some cases, pharmacotherapy and or bariatric surgery may be recommended. J Midwifery Womens Health 2010;55:568–578 © 2010 by the American College of Nurse-Midwives.

**keywords:** obesity, weight loss, weight loss strategies

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"The presence of overweight and obesity in a patient is of medical concern because it increases the risk for several diseases, particularly cardiovascular diseases (CVDs) and diabetes mellitus . . . and it increases all-cause mortality."1

**INTRODUCTION**

More and more often, primary care clinicians are caring for women who are overweight or obese. The latest gender-based statistics from the US Centers for Disease Control and Prevention (CDC) estimate that one-third of women in the United States are obese,2 including 38.8% of women in the 40- to 59-year-old age group. Non-Hispanic black and Mexican American adult women are 2.01 (95% confidence interval [CI] 1.76–2.29) and 1.31 (95% CI 1.11–1.55) times more likely to be obese than non-Hispanic white women. The prevalence in women is highest in the 40- to 59-year cohort, with 37.8% of non-Hispanic white women, 48.5% of Mexican Americans, and 57.5% of non-Hispanic blacks being obese.3 As can be seen in Figure 1, there has been an increase in the prevalence of obesity in every state in the United States from 1990 through 2008.

Obesity is generally defined as a body mass index (BMI) of 30 or higher. Body mass index is a calculated ratio: weight/(height squared) (kg/m²), which can give a reasonable estimate of body fat for many people. The National Institutes of Health (NIH) defined BMI categories in 1998 out of a research-based concern that obesity was strongly associated with disease (Table 1). Thus NIH meant a “normal” BMI to be interpreted to mean “within a clinically-healthy range.”1 Most individuals can determine their BMI by referring to a conversion chart. These charts are readily available on the World Wide Web (see Appendix A) or in health care providers’ offices.4

Why do clinicians consider weight loss counseling for overweight and obese individuals? The short answer is that many studies over the years have found a clear association between obesity and increased morbidity and mortality. Table 2 lists the many morbidities that are associated with obesity. This article reviews the evidence and discusses weight management assessment and counseling in a primary care or other clinical setting.

**THE ROLE OF OBESITY IN CHRONIC DISEASE**

Although it has been thought that many of the diseases associated with obesity were due to the physical stress of the weight itself, it is becoming increasingly clear that obesity is a low-grade inflammatory disorder, and many, if not most, of the comorbidities may be related to the inflammatory process.5 Adipose tissue produces proinflammatory cytokines known as adipocytokines, as well as tumor necrosis factor and other proinflammatory products. These factors are associated with elevated C-reactive protein and other proinflammatory pathways.6 A growing body of research suggests that this inflammatory state is the mediator between obesity and type 2 diabetes, certain cancers, cardiovascular disease, liver disease, rheumatoid arthritis, osteoarthritis, spondyloarthropathy,7 fibromyalgia,8 and chronic fatigue.

**Metabolic Syndrome**

Obesity is an integral component of metabolic syndrome, which is diagnosed when an individual has at least three of the following five heart disease risk factors: 1) abdominal obesity, 2) reduced high-density lipoprotein (HDL) cholesterol, 3) elevated triglycerides, 4) hypertension, and 5) elevated fasting glucose.9 One model proposed for
a pathway that explains the development of metabolic syndrome suggests that obesity is an independent risk factor for hypertension, and it is also the beginning of the cascade from obesity to inflammation, as measured by C-reactive protein, to insulin resistance and dyslipidemia.  

**Cardiovascular Disease**

Much study has been devoted to the link between obesity and coronary heart disease. The American Heart Association added obesity to its list of major risk factors for coronary heart disease in 1998. In three US National Health and Nutrition Examination Surveys conducted in 1988–91, 1991–94, and 1999–2004, higher BMI was independently associated with hypertension (>140/90 mmHg). Higher BMI is associated with elevated total cholesterol and elevated low-density lipoprotein (LDL) cholesterol levels, and lower levels of HDL (good) cholesterol. Specifically, the National Health and Nutrition Examination Surveys (1999–2004) found that the prevalence of dyslipidemia in those of normal weight was 8.9%, and the prevalence among those with a BMI of 35 to 39.9 was 20.6%.

Increased weight is strongly associated with carotid artery plaques and carotid wall thickness. For example, high-resolution B-mode ultrasound of a subsample of 310 women from an ongoing study of more than 5000 Italian women aged 30 to 69 revealed even a slight increase in BMI from 27 to 29 was detectably associated with the presence of common carotid artery plaques after adjusting for age. An independent study of this same subsample of 310 women concluded that BMI and waist-to-hip ratio were significant predictors of carotid wall thickness independent of other cardiovascular risk factors.

Other cardiovascular effects of obesity include its association with both heart failure and stroke. For example, in a retrospective cohort study of 5881 participants in the Framingham Heart Study, Kenchaiah and colleagues found that obese women (BMI ≥ 30) were 2.1 (95% CI 1.51–2.97) times more likely to develop heart failure compared with those of normal BMI. Findings from the Multi-Ethnic Study of Atherosclerosis suggest that the association between obesity and congestive heart failure may be related to inflammation rather than obesity itself. Paradoxically, those with heart failure who are obese experience lower rates of both overall and cardiovascular mortality. The evidence for obesity’s role in stroke is less certain. According to one case control study, abdominal fat—rather than obesity as such—is more strongly associated with an increased risk of stroke.

![Figure 1. State-specific percentage of adults characterized as obese by black/white race or Hispanic ethnicity, 2006–2008. Source: Centers for Disease Control and Prevention, 2009.](image)

**Diabetes**

Analyses by the International Obesity Task Force found that in Western countries, approximately 58% of type 2 diabetes cases are attributable to weight gain. Dietary and activity changes sufficient to produce a 5% to 7% weight loss can by themselves substantially reduce the incidence of type 2 diabetes in an overweight population.
Musculoskeletal Disorders

Obesity is associated with osteoarthritis, inflammatory arthritis, lumbar spine disorders, as well as other musculoskeletal conditions. Increasing BMI has been shown to have a strong association with osteoarthritis. A meta-analysis of clinical trials found that weight loss greater than 5% significantly reduced self-reported disability from osteoarthritis of the knee, with an effect size of 0.23 (95% CI 0.04–0.42). Sowers et al. suggested that the amount of skeletal muscle mass is much more predictive of osteoarthritis of the knee than BMI. Weight loss programs should therefore include efforts to maintain or build muscle mass.

Depression and Headaches

Several studies have found an association between obesity and depression. In addition to depression leading to obesity, researchers in England found that metabolic syndrome, specifically dyslipidemia and obesity, was associated with an increased risk of depression (odds ratio 1.38, 95% CI 1.02–1.96). To learn more about the comorbidity of obesity and depression, a research team is currently studying whether there is any effect of providing behavioral therapy for depression on improving outcomes of weight loss therapy.

Both obesity and migraine headaches are multifactorial conditions, influenced by both genetics and environment. Both obesity and migraines also are associated with increased inflammatory mediators. Although obesity has not been found to be associated with an increased prevalence of migraine headaches, it has been associated with an increased transformation from episodic to chronic daily headache. This association is stronger between obesity and transformed migraine than obesity and chronic tension–type headache.

Other Health Problems

Although a direct causal link between obesity and sleep apnea has not been established, obesity is often associated with sleep apnea, and weight reduction has been associated with comparable reduction in the severity of sleep apnea. Obesity is also linked to gallbladder disease. A recent prospective population-based study found that women in the overweight, obese, and morbidly obese categories had higher rates of hospitalization for gallbladder disease (mean 28.6 [for overweight], 49.4 [for obese] and 49.4 [for morbidly obese] days per 1000 person years, respectively) when compared with women who were normal weight or underweight (16.5 days per 1000 person years). Obesity has been linked to cancers of the colon, breast (postmenopausal), endometrium, kidney, and esophagus. Some studies have also reported links between obesity and cancers of the gallbladder, ovaries, and pancreas.

OBESITY AND DISEASES SPECIFIC TO WOMEN

Obesity is associated with several disorders specific to women. The effect of obesity on breast cancer risk depends on a woman’s menopausal status.
menopause, women who are obese have a lower risk of developing breast cancer than do women of a healthy weight. After menopause, however, women with a BMI of 30 or higher were found to have a relative risk for breast cancer of 1.29 (95% CI 1.22–1.36) when compared with women with a BMI of 22.5 to 24.9. Obesity is also associated with stress incontinence and amenorrhea.

Although obesity is often considered a key factor in polycystic ovary syndrome (PCOS), it is not one of the diagnostic criteria for PCOS, which includes ovarian dysfunction (oligomenorrhea or amenorrhea) and androgen excess. Between 30% to 70% of women with PCOS are obese, and obesity complicates the comorbidities associated with PCOS, such as insulin resistance, type 2 diabetes, hyperlipidemia, and hypertension. It has been proposed that both PCOS and early adrenarche may stem from programming of the ovary as early as fetal life. Obesity is associated with abnormal menstrual patterns, even in the absence of PCOS. A prospective observational study followed 120 overweight Mexican women aged 18 to 40 without PCOS (which is independently associated with amenorrhea), classifying them into one of five grades depending on the severity of the obesity. The risk for irregular or absent menses increased twofold with each increase in obesity grade.

Finally, as detailed elsewhere in this issue, obesity during pregnancy is associated with risks for both mother and child.

WEIGHT SCREENING AND WEIGHT LOSS MANAGEMENT

Although the research currently suggests that the pathways by which obesity leads to morbidity are more complex than previously believed, the good news is that weight loss decreases the chronic inflammatory state as well as physical stress. Many authorities recommend that clinicians screen for obesity and consider weight loss interventions for individuals who are overweight or obese. The NIH has also defined a waist size of 35 inches or more as an indicator that she needs to lose body fat. Similarly, since obesity grade.

WEIGHT MANAGEMENT AND TREATMENT ALGORITHM

Among nutritionists and epidemiologists, there is a minority opinion appreciably contrary to standard treatment recommendations. The authors of the 1998 NIH guideline acknowledged that “there have been no prospective trials to show changes in mortality with weight loss in obese patients.” In a highly controversial 2006 review of morbidities and mortality associated with overweight and obesity, Campos et al. claimed that studies have shown that obesity is only weakly related to mortality, and noted, for example, studies demonstrating that “all of the excess mortality associated with obesity in the Framingham study can be accounted for by the impact of weight cycling.” Obese Framingham residents with stable body weights were not at increased risk. Similarly, Wilson and McAlpine reviewed the research on the effectiveness of screening adults for obesity and applied the study results to the criteria a screening program must meet to be considered effective, that is, detection is followed by effective treatment and improved health outcomes, and the program be feasible to implement in clinical practice. These authors concluded that screening all adults for obesity was unlikely to improve long-term health outcomes.

On the other hand, the authors of a 2008 review compared the results of several clinical trials that evaluated treatment for metabolic syndrome with weight-reduction surgery, lifestyle changes, or drug treatment. They found that participants in the randomized trials of weight-reduction surgery had a dramatic improvement in metabolic syndrome (weighted mean of 93% of the participants had a resolution of metabolic syndrome), whereas only 25% and 19% of the participants in the lifestyle changes and drug therapy studies, respectively, reported resolution of metabolic syndrome after the intervention. These authors strongly suggest that obesity per se is the major cause of this condition.

There is modest support in the research literature for approaches other than encouraging weight loss for the overweight and obese. In a small (N = 78) randomized clinical trial of white, obese, women who were chronic dieters, aged 30 to 45 years, one group dieted to lose weight, whereas the other “health at any size” group was encouraged not to diet but to “listen” more carefully to their body’s hunger signals and to enjoy physical activity. At a 2-year follow-up, this “health at every size” group maintained weight loss and had improvement in metabolic fitness, energy expenditure, eating behavior (restraint,
eating disorder pathology), and psychological factors such as self-esteem, whereas the dieting group had regained all weight lost and had no improvements in the other outcome measures.47

Talking to a woman about her weight can be a delicate undertaking in any circumstance. In counseling a woman to make significant behavioral change, such as weight loss or smoking cessation, it is important to be supportive, nonjudgmental, and factual. Validating that weight loss can seem an overwhelming undertaking, yet can be achieved, can sometimes convince someone to make the effort. To further discourage the clinician, there is little evidence that low-to-moderate intensity counseling has a significant effect on weight loss.48 On the other hand, behavioral counseling to eat better and lose weight has never been shown to have any negative effects. Even if this counseling has a small effect on individuals, any benefit at all for some individuals would have a significant effect on the well-being of the population as a whole.49

The Five A’s Approach to Assessment

The Agency for Healthcare Research and Quality has recommended the “Four A’s” construct (more recently amended to be the “Five A’s”) as a strategy that can be incorporated into a primary care clinician’s practice49 (Table 3). Although this construct was initially developed as an approach for smoking cessation, it has also been applied to other desired behavioral changes.49 It is a relatively easy and efficient method for clinicians to employ with their patients. If a woman expresses no intention of changing her behavior, then the counseling may end with advising her of the risks of her weight and the benefit of changing her patterns. If, on the other hand, she is anxious to change her behavior, more time would be spent on developing a strategy.

Assessing Readiness to Change

Assessing readiness to change is based on the psychologic research which suggests that motivational readiness to change a behavior progresses in a somewhat ordered manner.50 Psychologists using this “stages of change” model identify several steps in the process: “precontemplation (no intention of changing in the foreseeable future, usually defined as the next 6 months), contemplation (intending to change, but not soon), preparation (intending to change in the next month), action (recent change), and maintenance (maintaining change for at least 6 months).”50 Some spiraling or temporary retrogression within these phases is not unusual for many individuals.

Thus, if a clinician is seeing a patient who might meet NIH criteria for weight loss management, a simple question to get conversation started in a productive direction might be, “Have you been thinking about losing weight?”—and then listening carefully for the answer. For example, if the answer is a straight “No,” then the woman is in the “precontemplative” stage. Clinician
intervention should therefore be focused not on establishing a weight loss program but on a dialogue that begins to move her to the next stage, “contemplation,” in which she intends to lose weight in the future, but not definitely in the next month. The question of when to develop and agree on a plan such as a weight loss program, referral to a dietician, etc., would therefore be as dependent on what “stage of change” she is in.

Advise

The simple acronym WAVE (weight, activity, variety, and excess) can help providers remember to address overall weight, activity, portion control, and the importance of eating a variety of foods in the “advise” step of counseling. REAP (Rapid Eating and Activity Assessment for Patients) is a screening tool that can be used to assess readiness to make a change in eating or activity. It is a validated, two-page survey with an accompanying provider key that provides clear direction for counseling based on patient responses to 31 questions. These tools have been tested in busy primary care settings and are suitable for short visits of less than 10 minutes. Both of these tools are available from the Brown University Nutrition Education Web site under the header Nutrition Tools–Diet Assessment (Appendix A).

Agree

An assessment of current dietary intake is an important part of the “agree” step of collaboratively developing treatment goals with a woman who desires to lose weight. Extensive diet histories are not practical for a busy clinician, but there are tools that can be completed by the overweight individual that are short and correlate fairly well with more extensive intake questionnaires. One tool midwives may want to consider is the Block Food Intake Screener and Rate Your Plate checklist (Appendix A). The latter is available from the Brown University Web site. Rate Your Plate has 23 checklist items that can be self-scored. A provider can quickly review the results and give positive feedback for good food choices.

Assist With a Plan

If the clinician and the patient agree that a weight loss intervention would be beneficial, then the fourth A, “assist with a plan,” would be initiated. The initial goal should be reducing body weight by 10% over a 6-month period, using lifestyle interventions only (no medications or surgery). For women with BMIs of 27 to 35, a reduction of caloric intake of 300 to 500 kcal per day would reach this goal (yielding .50–1 lb loss per week); a 500 to 1000 kcal per day reduction would accomplish the same weight loss rate in individuals whose starting BMI is 35 or higher (1–2 lb per week). Obviously, diets that fail to meet nutritional requirements should be avoided, as should those that call for reductions in caloric intake greater than the recommendations. After a maximum of 6 months, a follow-up assessment should occur.

Weight Loss Diets

Weight loss seems to be successful after either low-carbohydrate diets (e.g., Atkins diet), or ones that focus on low glycemic index, which discourage energy-dense foods such as breads and pasta and emphasize fresh fruits and vegetables with adequate amounts of protein (e.g., Zone, DASH, or Mediterranean diets). The Dietary Intervention Randomized Controlled Trial randomly assigned 322 (14% of the participants were women) individuals with a mean BMI of 31, to one of three diet regimens (Mediterranean diet, low-fat restricted calorie diet, or a low-carbohydrate but nonrestricted calorie diet) and followed them for 2 years. Diet adherence was 95.4% at 1 year and 84.6% at 2 years. Among the 272 participants who completed the intervention, the mean weight loss was 3.3 kg for the low-fat group, 4.6 kg for the Mediterranean group, and 5.5 kg in the low-carbohydrate group. When weight data from all participants were calculated, the mean weight loss was 2.9 kg for the low-fat group, 4.4 kg for the Mediterranean group, and 4.7 kg for the low-carbohydrate group. Participants in the low-carbohydrate group experienced a 20% reduction in the total cholesterol: high-density lipoprotein/cholesterol ratio, whereas persons with diabetes in the Mediterranean diet group had the most favorable glycemic control.

Increasing fruits and vegetables to greater than or equal to five a day has the advantage of increasing satiety. A low-fat diet is difficult to sustain, as fat increases the palatability of food and is the primary reason people choose certain foods to eat. Fat has more calories per gram than protein or carbohydrates (9 versus 4 kcal per gram). In addition, the body only expends 3 kcal to store 100 grams of fat compared with 25 to 40 kcal to store the same amount of protein. The aim should be to keep fat intake to 30% of calories and limit fat to monosaturated fats such as olive oil, avocado, and nuts.

In an intervention reported in 2001 to improve diet counseling in a busy primary care practice, physicians

Table 3. The Five A’s Applied to Weight Loss Counseling

<table>
<thead>
<tr>
<th>Ask/Assess</th>
<th>Ask/assess how weight affects her life and readiness to change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advise</td>
<td>Advise of recommendation to change her behaviors, including information regarding the associated disease risks and the role of weight management</td>
</tr>
<tr>
<td>Agree</td>
<td>Agree with the woman on developing a strategy based on her readiness to change</td>
</tr>
<tr>
<td>Assist</td>
<td>Assist with a plan using counseling and other medical/surgical techniques as indicated</td>
</tr>
<tr>
<td>Arrange</td>
<td>Arrange follow-up (either by phone or face-to-face encounter) for support and to monitor progress</td>
</tr>
</tbody>
</table>

Adapted with permission from Whitlock et al., 2002.
established a weight loss plan with a group of individuals who weighed more than 200 pounds and who were ready to make the commitment to lose weight. A total of 202 women and 50 men participated in this intervention. Participants had the option of portion-controlled meals such as frozen meals or commercial replacement meals such as Slim Fast. Two thirds of the women participants chose the replacement meals. The initial 10-minute visit with the physician was followed up by weekly phone calls by a dietician for 3 months and then monthly for the rest of the year. Patients were seen again for a medical visit at 1, 6, and 12 months. This fairly modest intervention resulted in 9.5% weight loss by 6 months among women.55

Arrange Follow-up and Support

The follow-up with phone calls and visits are examples of the 5th A, “arrange follow-up and support.” In the behavior change model, discussing previous successes and failures the woman has had with modifying behavior can be helpful to anticipate and problem solve potential barriers to implementing the present change. Other kinds of support are finding a family member or friend to assist or engagement in group follow-up sessions. Online Web sources are available to help people track their progress and to obtain support through online groups. The Michigan Department of Community Health has an excellent free Web site that offers access to programs to track personal progress (Appendix A). This site has weight loss resources and strategies available as well. Another innovative site, titled stickK, was founded by professors at Yale University and helps people make and keep personal commitment contracts through incentives that require people “to put their money where their mouth is.” If an individual fails to attain her personally set goal, they commit to giving money to a friend, enemy, or organization. For example, a rabid Democrat might contract to give money to the Republican party if they don’t achieve their goal. Talk about incentive! This Web site has a weight loss section with personal stories and ways to track success (Appendix A).

The Role of Exercise

Increased physical activity should also be recommended. Modest increases in physical activity are not in themselves likely to produce noticeable weight loss. In addition, it is not advisable to lose muscle mass during weight loss. To avoid unjustified feelings of discouragement in women who increase their physical activity, it would be advisable to forestall this with words such as this: “We’re aiming to improve your health, and moving around more makes you healthier, even if your weight loss might be a little slow at times.” Thirty minutes of brisk walking daily has been shown to have health benefits. Some women may not be ready to change their eating but are ready to increase their activity. Providers should support women with whatever change they are ready to make.

PHARMACOLOGIC AND SURGICAL MANAGEMENT OF WEIGHT LOSS

The use of drugs for weight loss is only recommended for obese patients who fail to achieve weight loss goals with diet and exercise. Table 4 summarizes their mechanisms of action, side effects, and adverse effects. Choice of drugs include four that are FDA approved specifically for weight management: sibutramine (Meridia), orlistat (Xenical, Alli), phentermine (Adipex-P), and diethylpropion (Tenuate), and two antidepressants that have shown to be effective for weight loss in some patients: fluoxetine (Prozac) and bupropion (Wellbutrin).56

The pooled results from a large meta-analysis57 of these drugs found the largest mean weight loss at 12 months, 4.5 kg (95% CI not reported), occurred with use of sibutramine (Meridia).57 Sibutramine inhibits norepinephrine and serotonin reuptake, which results in appetite suppression and increased thermogenesis.57 The primary side effects were increases in heart rate and blood pressure.

The other two FDA-approved weight loss drugs that are appetite suppressants recommended for short-term use in weight management are phentermine (Adipex-P) and diethylpropion (Tenuate). Phentermine (Adipex-P) is a sympathomimetic amine that may result in side effects common to sympathomimetics, such as cardiovascular, central nervous system, and gastrointestinal effects. The studies included in the meta-analysis all involved lifestyle modifications, which together with the drug led to modest weight loss of 3.6 kg (95% CI 0.6–6.0 kg).57 Diethylpropion (Tenuate) is similar to phentermine (Adipex-P), with modest weight loss results at 6 months of 3 kg (95% CI 1.6 to 11.5 kg).57

Orlistat (Xenical, Alli) is not an appetite suppressant but a lipase inhibitor that prevents the absorption and digestion of about 30% of dietary fat, including fat-soluble vitamins. Persons taking orlistat had more modest weight loss by 12 months, 2.58 kg (95% CI 1.9–3.3 kg), whereas experiencing a three times increase in gastrointestinal side effects such as diarrhea, bloating, and dyspepsia when compared with placebo.57

Two antidepressants have been studied for weight loss, fluoxetine (Prozac) and bupropion (Wellbutrin). Although the studies on fluoxetine included in the meta-analysis57 showed a mean weight loss of 0.9 kg to 9.1 kg at 6 months when compared with placebo, only half of the studies that reported weight loss at 12 months found statistically significant weight loss, ranging from 14.5 kg lost to 0.4 kg gained.57 The pooled analysis of three studies of bupropion showed a mean weight loss of 2.77 kg (95% CI 4.5–1 kg).57

Topiramate (Topamax) is an antiepileptic that has been used for such diverse indications as migraine prophylaxis, relief from neuroleptic pain, and weight loss.58 Six studies
were included in the meta-analysis, all of which reported weight loss as percentage of weight lost rather than absolute weight loss. All six studies reported statistically significant weight loss, with a pooled estimate of 6.5% (95% CI 4.8%–8.3%) over 6 months.57

It should be noted that there are no good long-term data on the health effects of any of these medications. Midwives and other advanced practice nurses with prescriptive authority who prescribe these drugs should be familiar with their effects, side effects, and drug interactions, and also be sure that they are within their scope of practice as defined by practice guidelines. They should be extremely careful never to order drugs for weight loss outside their scope of practice, even “for a friend.” Such actions may be dangerous for the patient and can result in termination of employment for the midwife and adverse action on the authority who prescribe these drugs should be familiar with their effects, side effects, and drug interactions, and also be sure that they are within their scope of practice as defined by practice guidelines. They should be extremely careful never to order drugs for weight loss outside their scope of practice, even “for a friend.” Such actions may be dangerous for the patient and can result in termination of employment for the midwife and adverse action on the health problems associated with obesity, and brief diet and exercise counseling, should be an integral part of this care. For women who are obese and motivated to change, more intense counseling, with possible referral for a weight loss program or bariatric surgeon, is appropriate.

Surgery is a treatment option for women who have a BMI of 40 or higher who have been unable to lose adequate weight and have other conditions that jeopardize their health, such as hypertension, diabetes, hyperlipidemia, and obstructive sleep apnea. Although the data are less clear, there is also evidence of benefit from surgical approaches in those with a BMI between 35 and 40.59 Women with a BMI in this range, especially those with comorbidities, may benefit from a referral to a weight loss specialist. For best results, the woman should be referred to a surgeon who does a high volume of these procedures.59 For further information about bariatric surgery, see the article by Harris and Barger in this issue.

### Table 4. Pharmacologic Treatment of Obesity

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Mechanism of Action</th>
<th>Side Effects and Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sibutramine</td>
<td>5–10 mg daily</td>
<td>Appetite suppressant; combined serotonin and norepinephrine reuptake inhibitor</td>
<td>Dry mouth, headache, insomnia; increased heart rate and blood pressure</td>
</tr>
<tr>
<td>(Meridia)a</td>
<td>8 mg tid or 15–37.5 mg daily</td>
<td>Appetite suppressant; indirect-acting sympathomimetic</td>
<td>Urticaria; pulmonary hypertension when used with other anorexics</td>
</tr>
<tr>
<td>Phentermine</td>
<td>25 mg tid daily</td>
<td>Appetite suppressant; indirect-acting sympathomimetic</td>
<td>Insomnia, restlessness, irritability, dry mouth, headache, gastrointestinal disturbances, tachycardia, palpitations</td>
</tr>
<tr>
<td>(Adipex-P)b</td>
<td>Modified release: 75 mg daily midmorning</td>
<td>Gas, headache, gastrointestinal disturbances</td>
<td>Fecal urgency, incontinence, flatulence, fatty stools; may reduce absorption of fat-soluble vitamins</td>
</tr>
<tr>
<td>Diethylpropion</td>
<td>120 mg tid</td>
<td>Limits absorption of fat; lipase inhibitor</td>
<td>Fecal urgency, incontinence, flatulence, fatty stools; may reduce absorption of fat-soluble vitamins</td>
</tr>
<tr>
<td>(Tenuate)a,b</td>
<td>Modified release: 75 mg daily midmorning</td>
<td>Gas, headache, gastrointestinal disturbances</td>
<td>Fecal urgency, incontinence, flatulence, fatty stools; may reduce absorption of fat-soluble vitamins</td>
</tr>
<tr>
<td>Orlistat</td>
<td>120 mg tid</td>
<td>Fecal urgency, incontinence, flatulence, fatty stools</td>
<td>Fecal urgency, incontinence, flatulence, fatty stools; may reduce absorption of fat-soluble vitamins</td>
</tr>
<tr>
<td>(Xenical, Alli)a,b,c</td>
<td>8 mg tid or 15–37.5 mg daily</td>
<td>Fecal urgency, incontinence, flatulence, fatty stools</td>
<td>Fecal urgency, incontinence, flatulence, fatty stools; may reduce absorption of fat-soluble vitamins</td>
</tr>
<tr>
<td>Bupropionb</td>
<td>100 mg bid</td>
<td>Appetite suppression; exact mechanism unknown</td>
<td>Dry mouth, dizziness, headache, hypersensitivity, lowered seizure threshold, especially in patients with eating disorders</td>
</tr>
<tr>
<td>(Wellbutrin, Zyban)b</td>
<td>Modified release 150 mg bid</td>
<td>Dry mouth, dizziness, headache, hypersensitivity, lowered seizure threshold, especially in patients with eating disorders</td>
<td></td>
</tr>
<tr>
<td>Fluoxetineb</td>
<td>Up to 60 mg daily</td>
<td>Selective serotonin reuptake inhibitor</td>
<td>Dry mouth, gastrointestinal disturbances, anorexia, sexual dysfunction</td>
</tr>
<tr>
<td>(Prozac)b</td>
<td>Modified release: 75 mg daily midmorning</td>
<td>Dry mouth, gastrointestinal disturbances, anorexia, sexual dysfunction</td>
<td></td>
</tr>
<tr>
<td>Topiramateb</td>
<td>Studied 96 and 192 mg/d</td>
<td>Antiepileptic, weight loss mechanism unknown</td>
<td>Paragrristonia, dizziness, confusion, difficulty with concentration, agitation, changes in taste</td>
</tr>
<tr>
<td>(Topamax)</td>
<td>Modified release: 15–30 mg daily</td>
<td>Antiepileptic, weight loss mechanism unknown</td>
<td>Paragrristonia, dizziness, confusion, difficulty with concentration, agitation, changes in taste</td>
</tr>
<tr>
<td></td>
<td>Modified release: 75 mg daily</td>
<td>Antiepileptic, weight loss mechanism unknown</td>
<td>Paragrristonia, dizziness, confusion, difficulty with concentration, agitation, changes in taste</td>
</tr>
<tr>
<td></td>
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<td>Antiepileptic, weight loss mechanism unknown</td>
<td>Paragrristonia, dizziness, confusion, difficulty with concentration, agitation, changes in taste</td>
</tr>
</tbody>
</table>

**CONCLUSION**

There is no question that there has been an increase in obesity and its associated comorbidities over the last decade. There has also been an increased consumption of fast foods and high-calorie foods and beverages. Although the evidence may be sparse to support the benefit of screening for obesity and counseling for weight loss, there is absolutely no evidence that such nonjudgmental screening or counseling cause any harm. Primary care providers are responsible for preventive health care, which includes a significant amount of behavioral counseling. Discussing the health problems associated with obesity, and brief diet and exercise counseling, should be an integral part of this care. For women who are obese and motivated to change, more intense counseling, with possible referral for a weight loss program or bariatric surgeon, is appropriate.

**REFERENCES**


## Appendix A. Resources on Weight Management

<table>
<thead>
<tr>
<th>Site</th>
<th>URL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI calculator</td>
<td><a href="http://www.nhlbisupport.com/bmi/">www.nhlbisupport.com/bmi/</a></td>
<td>This BMI calculator is available on the Web site of the National Institutes of Health.</td>
</tr>
<tr>
<td>Rapid Eating Assessment for Patients (REAP)</td>
<td><a href="http://bms.brown.edu/nutrition/acrobat/REAP%206.pdf">http://bms.brown.edu/nutrition/acrobat/REAP%206.pdf</a></td>
<td>This is a short survey that clinicians can give to patients.</td>
</tr>
<tr>
<td>WAVE Assessment</td>
<td><a href="http://bms.brown.edu/nutrition/acrobat/wave.pdf">http://bms.brown.edu/nutrition/acrobat/wave.pdf</a></td>
<td>The WAVE Assessment reviews weight, activity, variety of foods eaten, and excess on a one-page handout.</td>
</tr>
<tr>
<td>Block Food Screeners for Adults</td>
<td><a href="http://www.nutritionquest.com/products/questionnaires_screeners.html#fsfa">www.nutritionquest.com/products/questionnaires_screeners.html#fsfa</a></td>
<td>These simple questionnaires focus on specific nutrients like fat, fruits, and vegetables, or calcium. The short screening surveys can be taken online or downloaded.</td>
</tr>
<tr>
<td>Rate Your Plate</td>
<td><a href="http://bms.brown.edu/nutrition/acrobat/RYP.pdf">http://bms.brown.edu/nutrition/acrobat/RYP.pdf</a></td>
<td>Two-page survey that assigns scores to usual foods eaten. The scores are used to say eating habits are healthy or need to be healthier. Those who need to eat healthier are given some guidelines for foods that are listed in one of the columns of this screening tool.</td>
</tr>
<tr>
<td>National Heart, Lung, and Blood Institute</td>
<td><a href="http://www.nhlbi.nih.gov/guidelines/obesity/ob_home.htm">www.nhlbi.nih.gov/guidelines/obesity/ob_home.htm</a></td>
<td>Several guidelines available that can be downloaded from this site.</td>
</tr>
<tr>
<td>Clinical Guidelines on Identification, Evaluation, and Treatment of Overweight and Obesity in Adults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michigan Department of Community Health</td>
<td><a href="http://www.michigan.gov/surgeongeneral">www.michigan.gov/surgeongeneral</a></td>
<td>This site provides a personalized plan for improving diet, activity, and smoking cessation.</td>
</tr>
<tr>
<td>stickK</td>
<td><a href="http://www.stickk.com/">www.stickk.com/</a></td>
<td>This site guides users to make and keep a contract with themselves. The goals can be weight loss, exercise, or daily habits.</td>
</tr>
</tbody>
</table>

BMI = body mass index.