


Clinical Crossroads

Assessment and Lifestyle Management of Patients With Obesity

Clinical Recommendations From Systematic Reviews

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IMPORTANCE Even though one-third of US adults are obese, identification and treatment rates for obesity remain low. Clinician engagement is vital to provide guidance and assistance to patients who are overweight or obese to address the underlying cause of many chronic diseases.

OBJECTIVES To describe current best practices for assessment and lifestyle management of obesity and to demonstrate how the updated Guidelines (2013) for Managing Overweight and Obesity in Adults based on a systematic evidence review sponsored by the National Heart, Lung, and Blood Institute (NHLBI) can be applied to an individual patient.

EVIDENCE REVIEW Systematic evidence review conducted for the Guidelines (2013) for Managing Overweight and Obesity in Adults supports treatment recommendations in 5 areas (risk assessment, weight loss benefits, diets for weight loss, comprehensive lifestyle intervention approaches, and bariatric surgery); for areas outside this scope, recommendations are supported by other guidelines (for obesity, 1998 NHLBI-sponsored obesity guidelines and those from the National Center for Health and Clinical Excellence and Canadian and US professional societies such as the American Association of Clinical Endocrinologists and American Society of Bariatric Physicians; for physical activity recommendations, the 2008 Physical Activity Guidelines for Americans); a PubMed search identified recent systematic reviews covering depression and obesity, motivational interviewing for weight management, metabolic adaptation to weight loss, and obesity pharmacotherapy.

FINDINGS The first step in obesity management is to screen all adults for overweight and obesity. A medical history should be obtained assessing for the multiple determinants of obesity, including dietary and physical activity patterns, psychosocial factors, weight-gaining medications, and familial traits. Emphasis on the complications of obesity to identify patients who will benefit the most from treatment is more useful than using body mass index (BMI; calculated as weight in kilograms divided by height in meters squared) alone for treatment decisions. The Guidelines (2013) recommend that clinicians offer patients who would benefit from weight loss (either BMI of ≥ 30 with or without comorbidities or ≥ 25 along with 1 comorbidity or risk factor) intensive, multicomponent behavioral intervention. Some clinicians do this within their primary care practices; others refer patients for these services. Weight loss is achieved by creating a negative energy balance through modification of food and physical activity behaviors. The Guidelines (2013) endorse comprehensive lifestyle treatment by intensive intervention. Treatment can be implemented either in a clinician's office or by referral to a registered dietitian or commercial weight loss program. Weight loss of 5% to 10% is the usual goal. It is not necessary for patients to attain a BMI of less than 25 to achieve a health benefit.

CONCLUSIONS AND RELEVANCE Screening and assessment of patients for obesity followed by initiation or referral of treatment should be incorporated into primary care practice settings. If clinicians can identify appropriate patients for weight loss efforts and provide informed advice and assistance on how to achieve and sustain modest weight loss, they will be addressing the underlying driver of many comorbidities and can have a major influence on patients' health status.

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Ms T, a 40-year-old woman, presents frustrated and concerned about a 13.6-kg (30-lb) progressive weight gain since her twin pregnancy 4 years ago. Her diet and weight history is notable for having anorexia nervosa and bulimia as a teenager, with a recalled weight of 45 kg (99 lb) in high school. After receiving psychological counseling for her eating disorders, she experienced continuing weight gain to 82.7 kg (182 lb) by age 33 years. She became pregnant with twins at age 35 years with significant gestational weight gain (to 114.5 kg [252 lb] at the time of delivery); her pregnancy was complicated by preeclampsia. After delivery, she retained 4.5 kg (10 lb) over her prepregnancy weight. Previous attempts to control her weight have included participation in 2 commercial weight management programs with modest short-term success.

Ms T has been married for 7 years. Her 4-year-old twins are in good health. She is a nurse practitioner who works three 12-hour shifts per week. She eats 3 fast food and ready-to-serve meals daily without attention to calories. She often eats dinner in the car on the way home from work and she often finds herself nibbling throughout the day. Physical activity is limited to work and minimal activities of daily living.

Her medical history is significant for depression and supraventricular tachycardia treated with cardiac ablation. Her only medication is paroxetine, 50 mg/d.

On examination, Ms T appeared well, weighed 100 kg, was 167 cm tall, and had a body mass index (BMI; calculated as weight in kilograms divided by height in meters squared) of 35.8. Her blood pressure was 120/80 mm Hg and her pulse was 76/min. Waist circumference measured 121.4 cm (48 in). Fasting laboratory test results were notable for glucose of 101 mg/dL, total cholesterol of 157 mg/dL, low-density lipoprotein cholesterol of 138 mg/dL, triglycerides of 157 mg/dL, high-density lipoprotein cholesterol of 38 mg/dL, glycohemoglobin of 5.5%, and thyrotropin of 3.17 mIU/L.

Ms T: Her View

I have always struggled with my weight and been an emotional eater. When I was younger, it was easier because my metabolism was faster. I had fewer life stressors, and I had more time to exercise. There was also that peer pressure or stigma of wanting to look good. When I was in high school I had an eating disorder, anorexia nervosa and then bulimia. Fortunately, I recovered and led a normal life for several years. Although I conquered anorexia nervosa, I never really learned to eat a healthy, well-balanced diet with normal portion sizes. I continued to gain weight at a slow but steady pace. I graduated college, had a successful career, married, and had children. As I aged, life became more stressful and I continued to be an emotional eater who never really learned how to set limits or eat healthy foods and portion sizes. I gained a considerable amount of weight. Fifty-six pounds in 8 years to be exact.

I work in health care and I wear hospital scrubs to work. It was easy to hide the extra weight until it got way out of control. I would buy larger-sized clothes every season. I remember thinking I could just eat more and eventually have a tummy tuck, liposuction, or maybe even gastric bypass surgery. Then reality set in. I turned 40 and realized not only were those surgical procedures expensive, but there are also risks involved. How could I have let myself go and gain

so much weight? I need to set a better example for my children and having plastic surgery was just a quick fix that would not lead to the long-term benefits of the lifestyle changes I needed to make. I work with cardiac patients and I knew it was only a matter of time before I myself would have heart disease or heart failure.

Once I turned 40, I realized I had a classic case of metabolic syndrome and my weight was way out of control. I asked my doctor for help largely because I knew I needed some professional accountability. I need to learn portion control and how to keep exercising. I know I will live a longer and healthier life and set a better example for my children. Looking back, I realize that although I was never hospitalized for my eating disorder and I received extensive outpatient therapy from a dietitian and psychologist as a teen during my actual time fighting my eating disorder, I never really gained full control.

How Can the Primary Care Practitioner Help This Patient?

Ms T presents with a commonly encountered scenario: obesity originating in childhood with progressive weight gain as an adult exacerbated by life events, stress, and medications. Ms T had disordered eating behaviors as a child; experienced a life event, pregnancy, commonly associated with weight gain; has stress associated with her work that includes sleep deprivation; has the pressures of being a working mother; and takes fluoxetine, which can cause weight gain. She blames herself for her weight gain, particularly since she thinks she should serve as a model for her children as well as a health care professional. After modest success with 2 commercial programs, she regained weight. Patients consider weight regain as a failure, but obesity is a chronic disease and relapse is frequent.

Ms T knows how obesity causes her health problems and the need for treatment. Her history is atypical for obese patients, including an eating disorder in the past and underweight as a teenager. Although she had nutritional counseling for her adolescent eating disorder and participated in 2 commercial weight loss programs, she still lacks the skill set needed to achieve sustained weight loss through diet, exercise, and behavioral change. Like most patients with obesity, she has attempted to lose weight many times using self-help books or commercial programs. She continues to struggle with healthy eating and being physically active in the context of a stressful personal and professional life. These challenges are common in modern society and exemplify the social, environmental, and behavioral determinants of obesity.

Methods and Evidence Review

The goal of the Guidelines (2013) for Managing Overweight and Obesity in Adults¹ was to help any clinician (physician, nurse practitioner, physician assistant) in the primary care setting to manage obesity more effectively. In 2008, the National Heart, Lung, and Blood Institute (NHLBI) assembled an expert panel to update prior guidelines. The approach² followed the Institute of Medicine reports, *Clinical Practice Guidelines We Can Trust*³ and *Finding What Works in Health Care—Standards for Systematic Reviews*.⁴ This rigorous method was intended to minimize bias and produce trustworthy recommendations. For the obesity guideline, studies

were included in the evidence review only if they reported results from randomized clinical trials having 6 or more months of observation, an intention-to-treat analysis, 80% study participant retention, less than 15% differential in treatment group dropout rate, and identical background intervention across treatment groups. From 23 initially suggested critical questions about obesity, only 5 could be addressed because of the time and cost associated with the review process. The 5 critical questions addressed risks of overweight and obesity and benefits of weight loss and evaluated 3 treatment approaches: diet, behavioral therapies, and surgery. Similarly, costs associated with the guideline development process limited the literature review's scope to articles published between 1999 and 2011.

Based on the systematic evidence review,⁵ recommendations and a treatment algorithm were developed by the guideline panel and published as a full report¹ and executive summary.⁶ For the current article, recommendations are based on the guideline full report. However, the guideline necessarily only covered certain aspects of obesity management. For recommendations beyond the scope of the Guidelines (2013) for Managing Overweight and Obesity in Adults (risk assessment, weight loss benefits, diets for weight loss, comprehensive lifestyle intervention approaches, and bariatric surgery), the authors relied on other guidelines (for obesity, the 1998 NHLBI-sponsored obesity guidelines and those from the National Center for Health and Clinical Excellence and Canadian and US professional societies, such as the American Association of Clinical Endocrinologists and American Society of Bariatric Physicians; for physical activity recommendations, the authors used the 2008 Physical Activity Guidelines for Americans⁷). Recent systematic reviews covering depression and obesity, motivational interviewing for weight management, metabolic adaptation to weight loss, and obesity pharmacotherapy were identified by a PubMed search. No recommendations in the current article are supported by articles that met exclusion criteria of the Guidelines (2013).

Assessment

Screening Recommendations

Currently, 33% of the American adult population is obese, defined as having a BMI of 30 or higher.⁸ Prevalence rates vary by ethnicity and race, with African American women having the highest prevalence (82%). Although Ms T actively sought treatment for her weight, obesity oftentimes remains undiagnosed and undertreated.⁹ Based on the burden of obesity and the benefits of treatment, the US Preventive Services Task Force recommends screening all adults for obesity and that patients with a BMI of 30 or higher receive intensive, multicomponent behavioral intervention, either in the office or by referral to another practitioner, registered dietitian, or commercial program.¹⁰ Monitoring BMI can help clinicians in primary care settings identify adult patients at risk of obesity complications. Accordingly, the recently released Guidelines (2013) for Managing Overweight and Obesity in Adults¹ recommends measuring height and weight and calculating BMI at annual visits or more frequently depending on a patient's risk factors. The importance of detecting high-risk individuals was reinforced in 2009 when the Healthcare Effectiveness Data and Information Set

measure for the first time included assessment of adult BMI.¹¹ The Centers for Medicare & Medicaid Services have also mandated that electronic medical records calculate BMI as part of Core Measures on Vital Signs.¹² The electronic medical record is also capable of tracking weight trajectory so that intervention can occur at an earlier time point to prevent further weight gain.

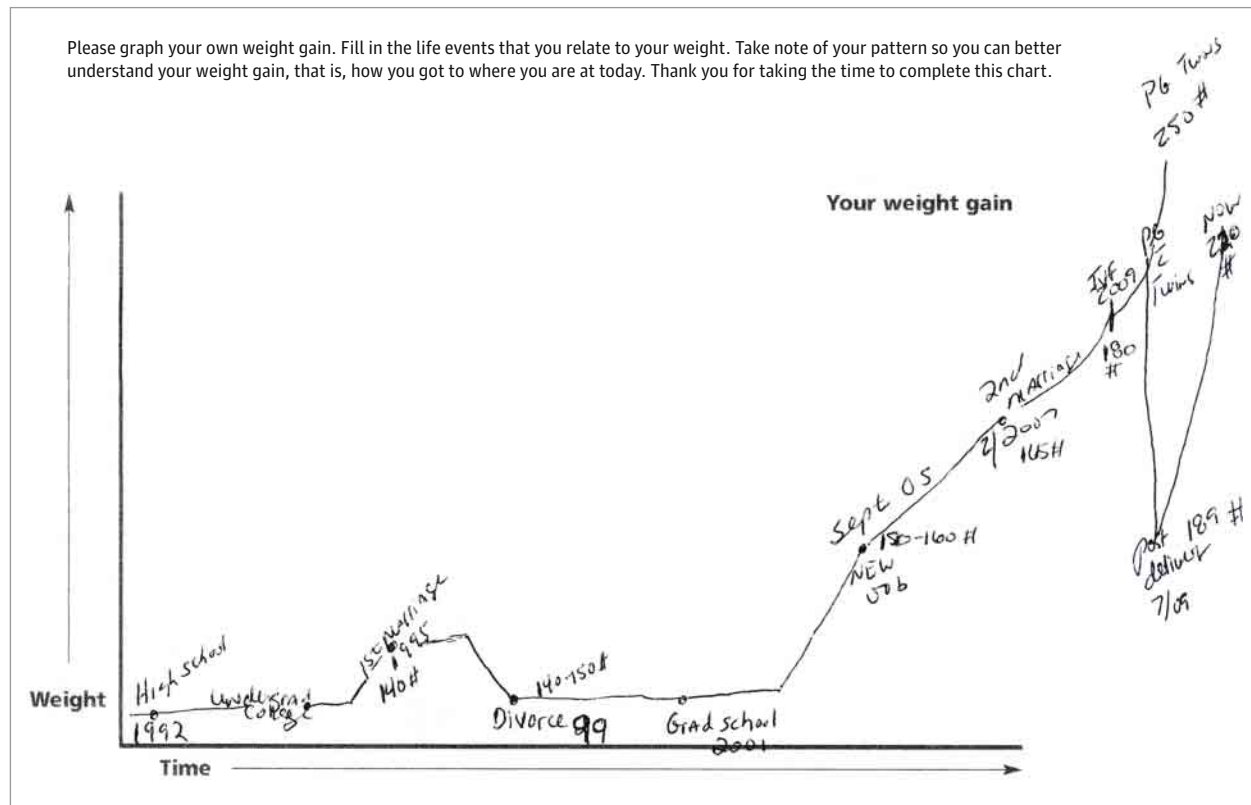
Taking an Obesity-Focused History

Once a diagnosis of obesity is established and a patient has health reasons to lose weight, issues that will affect treatment decisions should be incorporated into the history. This "obesity-focused" history allows physicians to develop tailored treatment recommendations that are more consistent with the needs and goals of individual patients. One approach that identifies behavioral and biopsychosocial determinants of weight gain is to have patients complete a lifestyle events-body weight graph prior to the medical visit.¹³ For many patients, weight gain initially occurs or is accelerated coincident to smoking cessation, initiation of a medication, or change in life events, such as a change in marital status or occupation or an illness.¹⁴ At-risk times for women include pregnancy and menopause. Stressful life events often result in a change in eating and physical activity habits. Ms T's self-reflective graph is shown in the Figure. Using the lifestyle events-body weight graph as a conversation map is an adaptation of the "autobiographical approach" to patient-centered chronic disease care¹⁵ and has been found useful by the authors to facilitate discussion from a patient's perspective.

A dietary and physical activity history should be assessed for all patients prior to initiating counseling. Assessment of psychological health and psychiatric history should be routinely obtained. Asking about mood disorders is important because they are relatively common in the general population and occur in high rates among persons with obesity.¹⁶ Ms T exemplifies the need to probe for conditions of disordered eating, such as binge eating disorder, bulimia, night eating syndrome, or other psychological conditions that may impair treatment. The occurrence of a major depressive episode should trigger referral to a mental health care professional and presence of an eating disorder to a psychological counselor with experience in these disorders. Drug-induced weight gain should always be considered when there is a change in the trajectory of body weight coincident with starting a new medication. Common medications that are associated with weight gain along with alternative weight-neutral or weight-losing medications are shown in Table 1.¹⁷ Ms T is taking paroxetine, a commonly prescribed antidepressant associated with weight gain.¹⁸ Substitution with a weight-neutral or weight-losing antidepressant medication should be considered if possible.

Determining a patient's readiness to make lifestyle changes is an important part of the initial evaluation. The Guidelines (2013) recommend that physicians assess whether a patient is prepared and ready to undertake the measures necessary to succeed at weight loss before undertaking comprehensive counseling efforts. Many patients are ambivalent about changing long-standing lifestyle behaviors, fearing that it will be difficult, uncomfortable, or depriving.^{18,19} Motivational interviewing is a useful technique to elicit a patient's own motivation to change and explore ambivalence¹⁹ and is shown to result in a modest amount of weight loss in obese patients.²⁰

Figure. Ms T's Lifestyle Events–Body Weight Graph



Patients are asked to graph their own weight and indicate the associated life events that pertain to the gain or loss of weight. The x-axis (time) and y-axis (weight) are continuous without predetermined units, allowing patients to

personalize their weight pattern. This activity is completed prior to the appointment and used as a conversation map during the visit to facilitate discussion from the patient's perspective.

Physical Examination of Obese Patients

In addition to BMI, the Guidelines (2013)¹ and other clinical practice guidelines²¹⁻²³ recommend measuring waist circumference for obesity-related comorbid conditions and risk factors. Using BMI cut points to define healthy (18.5-24.9), overweight (25-29.9), and obese (≥ 30) states is useful for screening and treatment decisions. However, the relationship between BMI and cardiovascular disease risk and all-cause mortality is curvilinear, resulting in underestimation of obesity-related risk when discrete BMI categories are used. In addition to BMI, complications of overweight and obesity are independently associated with excess abdominal fat and fitness level. Waist circumference, measured horizontally at the level of the iliac crest of the pelvis, should be obtained on an annual basis and used to identify patients who may be at increased risk of cardiovascular disease. In the Guidelines (2013), an elevated waist circumference is treated as a risk factor; with a BMI of greater than 25 and less than 30, an elevated waist circumference is considered a risk justifying medical intervention for weight loss. As shown in population studies, people with large waist circumferences have elevated obesity-related health risks compared with those with normal waist circumferences despite having similar BMI.²⁴ The threshold for what is considered excessive abdominal fat varies between racial and ethnic groups,²⁵ but cut points for waist circumference of greater than 88 cm (>35 in)

for women and greater than 102 cm (>40 in) for men are generally recommended for North American populations.¹

Longitudinal studies have shown that cardiorespiratory fitness (as measured by a maximal treadmill exercise test) is an important predictor of all-cause mortality independent of BMI and body composition. Fit obese men and women have a lower risk of all-cause mortality than unfit lean men and women.^{26,27} Consequently, fitness assessment is an important component of the clinical evaluation of obese patients. Detailed guidance on obtaining a physical activity history and providing fitness-related treatment recommendations can be found at Exercise is Medicine²⁸ and in the 2008 Physical Activity Guidelines for Americans.⁷ Assessment includes evaluation of cardiovascular risk and current engagement in physical activity. For most patients, obtaining at least 150 minutes a week of moderate-intensity or 75 minutes a week of vigorous-intensity aerobic physical activity performed in episodes of at least 10 minutes is a reasonable goal.⁷

Unique aspects of the physical examination for patients with obesity have been recently reviewed.²⁹ There is no single laboratory test or diagnostic evaluation that is indicated for all patients with obesity, although a fasting glucose and lipid profile are consistent with current guidelines.^{30,31} The specific evaluation performed should be based on presentation of symptoms, risk factors, index of suspicion, and screening guidelines appropriate to the patient.

Table 1. Drugs That Produce Weight Gain and Alternative Agents

Category	Drugs That Cause Weight Gain	Possible Alternatives
Neuroleptics	Thioridazine, haloperidol, olanzapine, quetiapine, risperidone, clozapine	Ziprasidone, aripiprazole
Antidepressants		
Tricyclics	Amitriptyline, nortriptyline, imipramine, doxepin	Protriptyline, bupropion, nefazodone
Monoamine oxidase inhibitors	Phenelzine	
Selective serotonin reuptake inhibitors	Paroxetine	Fluoxetine, sertraline
Other	Mirtazapine	
Anticonvulsants	Valproate, carbamazepine, gabapentin	Topiramate, lamotrigine, zonisamide
Antidiabetic drugs	Insulin, sulfonylureas, thiazolidinediones	Acarbose, sitagliptin, saxagliptin, canagliflozin, dapagliflozin, pramlintide, exenatide, liraglutide, miglitol, metformin, orlistat
Antihistamines	Cyproheptadine	Inhalers, decongestants
β - and α -adrenergic blockers	Propranolol, doxazosin	Angiotensin-converting enzyme inhibitors, calcium channel blockers
Steroid hormones	Contraceptives, glucocorticoids, progestational steroids	Barrier methods, nonsteroidal anti-inflammatory agents

Table 2. The Edmonton Obesity Staging System^a

Stage	Cardiometabolic Factors	Mechanical/Functional Factors
0	No risk factors	No functional impairment or improvement in well-being
1	Subclinical risk factors: prediabetes, metabolic syndrome, nonalcoholic fatty liver disease	Mild limitations and impairment of well-being (eg, dyspnea on moderate exertion, occasional aches and pains, fatigue)
2	End-stage metabolic disease: type 2 diabetes, hypertension, sleep apnea	Moderate limitations and impairment of well-being
3	End-stage cardiovascular disease: myocardial infarction, stroke	Significant limitations and/or impairment of well-being
4	End-stage disabilities	Severe limitations and/or impairment of well-being

^a Adapted from Sharma and Kushner.³³

Identifying High-Risk Obese Patients

With the high prevalence of obesity and the imprecision of BMI and waist circumference alone to estimate individual risk, identifying which patient to treat is an important clinical decision. Among US adults, 51.3% of overweight adults and 31.7% of obese adults are metabolically healthy, defined as having 0 or 1 cardiometabolic abnormalities (elevated blood pressure, triglyceride level, and glucose level; decreased high-density lipoprotein cholesterol level; insulin resistance [homeostatic model assessment–insulin resistance >90th percentile]; and systemic inflammation [high-sensitivity C-reactive protein >90th percentile]).³² Using the same criteria, 16.6% of obese men and women had 0 metabolic abnormalities. The Guidelines (2013) recommend weight loss treatment for obese individuals with or without comorbidity(ies) and for overweight individuals with 1 or more indicators of increased cardiovascular disease risk (eg, diabetes, prediabetes, hypertension, dyslipidemia, elevated waist circumference) or obesity-related comorbidities.

Although BMI and waist circumference are useful anthropometric markers to identify potential risk, they do not accurately reflect the presence or severity of the health risk. Analogous to other staging systems commonly used for congestive heart failure and chronic kidney disease, Sharma and Kushner³³ recently proposed use of a new functional staging system for obesity that would complement the current anthropometric classification. This risk-stratification construct, called the Edmonton Obesity Staging System, classifies individuals with obesity into 5 graded categories based

on morbidity and health risk profile (Table 2). The staging system was recently shown to predict increased mortality among 2 large population cohorts.^{34,35} Applying this new classification system to Ms T, she presents with stage 1 obesity (metabolic impairment). Another staging system based on cardiometabolic disease has been proposed by Daniel et al.³⁶ Future studies will need to determine if these new models improve risk stratification over other tools such as the Framingham Risk Score.

Treatment

Guidance for Clinicians in Primary Care Settings

The Guidelines (2013) for Managing Overweight and Obesity in Adults provide evidence-based recommendations for achieving and sustaining weight loss.^{1,2} Based on a systematic review,⁵ the guidelines provide recommendations for assessing risks of obesity and overweight and benefits of weight loss, and 3 treatment modes for achieving weight loss—diet, comprehensive lifestyle change, and bariatric surgery. These recommendations are supplemented by a treatment algorithm, the “chronic disease management model for primary care of patients with overweight and obesity.” The Box summarizes the recommendations most relevant to primary care practitioners and Table 3 provides key messages from the Guidelines (2013) along with changes from the 1998 guidelines.³

Box. Selected Recommendations From the 2013 Obesity Guidelines for Managing Overweight and Obesity in Adults¹**Identifying patients who need to lose weight**

Advise overweight and obese adults that the greater the body mass index (BMI; calculated as weight in kilograms divided by height in meters squared), the greater the risk of cardiovascular disease, type 2 diabetes, and all-cause mortality (grade A: strong)

Measure waist circumference at annual visits or more frequently in overweight and obese adults. Advise adults that the greater the waist circumference, the greater the risk of cardiovascular disease, type 2 diabetes, and all-cause mortality. The cut points currently in common use (from either the National Institutes of Health/National Heart, Lung, and Blood Institute¹ or the World Health Organization³⁷/International Diabetes Federation³⁸) may continue to be used to identify patients who may be at increased risk until further evidence becomes available (grade E: expert opinion)

Matching treatment benefits with risk profiles

Counsel overweight and obese adults with cardiovascular risk factors (high blood pressure, hyperlipidemia, and hyperglycemia) that lifestyle changes that produce even modest, sustained weight loss of 3% to 5% produce clinically meaningful health benefits and greater weight loss produces greater benefits (grade A)

Diets for weight loss

Prescribe a diet to achieve reduced calorie intake for obese or overweight individuals who would benefit from weight loss as part of a comprehensive lifestyle intervention. Any 1 of the following methods can be used to reduce food and calorie intake (grade A):

Prescribe 1200-1500 kcal/d for women and 1500-1800 kcal/d for men (calorie intake levels are usually adjusted for individual body weight);

Prescribe a 500-kcal/d or 750-kcal/d energy deficit; or

Prescribe one of the evidence-based diets that restricts certain food types (such as high-carbohydrate foods, low-fiber foods, or high-fat foods) to create an energy deficit by reduced food intake

Lifestyle intervention and counseling

Advise overweight and obese individuals who would benefit from weight loss to participate for ≥ 6 months in a comprehensive lifestyle program that assists participants in adhering to a lower-calorie diet and in increasing physical activity through use of behavioral strategies (grade A)

Prescribe on-site, high-intensity (ie, ≥ 14 sessions in 6 months) comprehensive weight loss interventions provided in individual or group sessions by a trained interventionist (grade A)

Some commercial-based programs that provide a comprehensive lifestyle intervention can be prescribed as an option for weight loss, provided there is peer-reviewed published evidence of their safety and efficacy (grade B: moderate)

Advise overweight and obese individuals who have lost weight to participate in a long-term (≥ 1 year) comprehensive weight loss maintenance program (grade A)

For weight loss maintenance, prescribe face-to-face or telephone-delivered weight loss maintenance programs that provide regular contact (monthly or more frequent) with a trained interventionist who helps participants engage in high levels of physical activity (ie, 200-300 min/wk), monitor body weight regularly (ie, weekly or more frequent), and consume a reduced-calorie diet (needed to maintain lower body weight) (grade A)

Selecting patients for bariatric surgical treatment for obesity

Advise adults with a BMI ≥ 40 or BMI ≥ 35 with obesity-related comorbid conditions who are motivated to lose weight and who have not responded to behavioral treatment with or without pharmacotherapy with sufficient weight loss to achieve targeted health outcome goals that bariatric surgery may be an appropriate option to improve health and offer referral to an experienced bariatric surgeon for consultation and evaluation (grade A)

Benefits of Treatment

It is not necessary for patients to get to a BMI of less than 25 to have a significant health benefit. Although the greater the BMI (and waist circumference), the greater the risk of cardiovascular disease, type 2 diabetes, sleep apnea, and many other conditions,³⁹⁻⁴² there is strong evidence that modest to moderate weight loss (5%-15%) can greatly reduce the risk of these conditions,⁴³⁻⁴⁸ even if patients remain in the obese or overweight category.⁴⁹

Sustained weight loss of as little as 3% to 5% is likely to result in clinically meaningful reductions in levels of triglycerides, blood glucose, and glycated hemoglobin and in risk of developing type 2 diabetes.¹ Greater amounts of weight loss reduce blood pressure, improve levels of low-density and high-density lipoprotein cholesterol, and reduce the need for medications to control blood pressure, blood glucose levels, and lipid levels as well as further reduce levels of triglycerides and blood glucose.¹

The Look AHEAD study⁴⁹ highlights the benefits of weight loss. It is a large study (>5000 participants) with high rates of abnormal risk factors in participants, and there is excellent retention (>96%) in the 2 treatment groups of comprehensive lifestyle intervention and diabetes support with education. With lifestyle intervention,

weight loss averaged 8.6% at 1 year and 4.7% at 4 years compared with a 0.7% and 1% loss, respectively, for diabetes support with education.^{46,47} Look AHEAD was a cardiovascular outcome trial but both treatment groups had very low rates of cardiovascular events, resulting in no statistically significant differences in cardiovascular outcomes between the 2 groups.⁵⁰ The effectiveness of modest weight loss to reduce cardiovascular events remains unresolved. Nevertheless, Look AHEAD did show benefits from modest weight loss by improvement in several risk factors, comorbidities, and symptoms associated with obesity. There were improvements in glyce-mic measures (with reduction in diabetes medication use), triglycerides, high-density lipoprotein cholesterol, and systolic blood pressure for up to 4 years.^{46,47} The study demonstrated a "dose effect," with greater weight loss being associated with greater improvements in these risk factors.⁵⁰ Other studies have shown that modest weight loss (5%-10%) can prevent progression to type 2 diabetes.^{51,52} Furthermore, Look AHEAD's modest weight loss has been associated with remission of diabetes (normoglycemia without any diabetes medications for 1 year).⁵³ Modest weight loss produces improvement in symptoms of sleep apnea, though it usually requires a weight loss of 10% or greater.^{54,55} Moreover, improve-

Table 3. Key Messages From the 2013 Obesity Guidelines and Differences From the 1998 Obesity Guidelines

	Guidelines (2013) for Managing Overweight and Obesity in Adults ¹	Difference From 1998 NHLBI Guidelines ³⁹
Who needs to lose weight?	BMI ≥ 30 or BMI ≥ 25 with ≥ 1 risk factor (including waist circumference, traditional risk factors)	Positions BMI as a screening tool, not a diagnostic tool
What is the role of waist circumference?	Use NIH/NHLBI ¹ and WHO ³⁷ /IDF ³⁸ cut points (≥ 35 in for women and ≥ 40 in for men) to further identify risk	Waist circumference is treated as a risk factor in Guidelines (2013)
How much weight loss must be achieved?	Not necessary to achieve ideal BMI Sustained weight loss of 3%-5% produces clinically meaningful health benefits and greater loss produces greater benefits	Greater emphasis on benefits of modest weight loss and importance of maximizing weight loss but does not suggest a BMI target
What is the best diet?	There is no "magic" diet for weight loss Prescribe a calorie-reduced diet based on the patient's health profile and food preferences	Does not endorse any particular dietary approach because all approaches can succeed if accompanied by calorie deficit
How much weight can be lost with a lifestyle intervention?	The ideal is 14 or more face-to-face counseling sessions with a trained interventionist in the first 6 mo with treatment for 1 year to produce average 8% weight loss	Sets a standard for what a lifestyle intervention should look like, who should deliver it, and what it should aim for
Are there alternatives to in-office counseling?	Telephonic counseling, electronic counseling, and commercial programs have an evidence base for efficacy, albeit with less average weight loss than face-to-face counseling	Reflects societal changes in delivery of weight loss intervention
How can weight loss be maintained?	Continue regular contact (monthly or more) with a trained interventionist who helps patients engage in high levels of physical activity (ie, 200-300 min/wk), monitor weight regularly (ie, weekly or more), and consume a reduced-calorie diet	Addresses importance of continued therapy to prevent regain
Who should receive bariatric surgery?	For adults with a BMI ≥ 40 or BMI ≥ 35 with obesity-related comorbidities who have not responded to treatment, advise that bariatric surgery may be an appropriate option and offer referral to an experienced bariatric surgeon	Stronger endorsement for referral for bariatric surgery using the same BMI and health criteria as 1998 guidelines

Abbreviation: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); IDF, International Diabetes Federation; NHLBI,

National Heart, Lung, and Blood Institute; NIH, National Institutes of Health; WHO, World Health Organization.

ments in urinary stress incontinence in women⁵⁶ and men⁵⁷ and in sexual function in both sexes are also seen with modest weight loss.^{58,59}

Ms T's history of depression merits consideration. The concern is whether depression affects ability to lose weight and whether weight loss might worsen depression. In the Look AHEAD study,⁶⁰ at 1 year, the incidence of emergent potentially significant symptoms of depression (defined as a Beck Depression Inventory score >10) was significantly lower with lifestyle intervention than with diabetes support with education (6.3% vs 9.6%). In the lifestyle intervention group, participants with and without symptoms of depression lost a mean of 7.8% (SD, 6.7%) and 8.7% (6.9%), respectively, a difference not clinically meaningful. Intentional weight loss was not associated with the precipitation of depression symptoms but appeared to protect against this occurrence.⁶⁰ Thus, for Ms T, a history of depression is not a reason to avoid a weight loss effort or for pessimism about weight loss outcome.

Lifestyle Intervention for Weight Loss and Weight Loss Maintenance

The Guidelines (2013)¹ provide a detailed review of lifestyle intervention. *Comprehensive* lifestyle intervention is needed to create a negative energy balance through modification of food and physical activity behaviors. Ms T's therapy will include a diet and physical activity prescription and use behavioral techniques to help her adhere to her diet and activity intentions. This includes self-monitoring of weight and food and physical activity, environmental control (removing foods from the environment that cue eating), contingency planning, and stress management. There are 2 physiologic systems that regulate food intake, the homeostatic system and the reward system.⁶¹ The reward system can override the homeostatic system to encourage food intake and is particularly susceptible to stress.⁶² Thus, resisting highly palatable foods may be difficult in times of stress, such as sleep deprivation,⁶³ for sus-

ceptible individuals. Ms T also describes "emotional eating," the challenge she feels in resisting highly palatable foods in conditions of stress. Thus, in her case the therapy will include strategies to cope with sleep hygiene, time management, and stress management.

The second aspect of the Guidelines (2013)¹ lifestyle recommendation is that the preferred treatment method should be an *intensive* comprehensive lifestyle intervention. The Guidelines (2013) endorse the prescription of "on site, high intensity (ie, ≥ 14 sessions in 6 months) comprehensive weight loss interventions provided in individual or group sessions by a trained interventionist." This can reliably produce an 8.2-kg (18-lb) weight loss (which can approximate reductions of 5% to 10%) in 6 months.¹ If patients do not have access to face-to-face programmatic approaches, electronically delivered weight loss programs (including by telephone) that include personalized feedback from a trained interventionist are a second-best option, even though weight loss would be less. Some commercial programs are appropriate and were endorsed by the Guidelines (2013). Application of these types of programs should be recommended only if there is peer-reviewed published evidence of their safety and efficacy.⁶⁴⁻⁶⁹

The Guidelines (2013) recommendation for lifestyle intervention (14 or more face-to-face sessions in the first 6 months and treatment for at least a year) are for programs that today are found only in a few clinical sites specializing in obesity treatment. Thus, implementation of these recommendations in primary care is constrained by accessibility and financial barriers. Lower-cost and more scalable alternatives must be developed in the form of more affordable, widely available commercial and community programs.

The Best Diet for Weight Loss

Popular culture promotes "magic" diets to produce rapid and easy weight loss, but the systematic literature review performed to support development of the Guideline (2013) found no superiority for

any of the 17 diets reviewed.⁴ Similarly, a network meta-analysis of popular named diets found little difference between individual diets but found that any diet resulted in weight loss if adhered to.⁷⁰ Clinicians in primary care should prescribe a diet to achieve reduced caloric intake as part of a comprehensive lifestyle intervention. This does not mean that diet composition is not important. However, without negative energy balance, weight loss will not occur. The clinician should consider the patient's health status in recommending diet composition, as well as the patient's personal preferences about food choices. Ms T has an elevated fasting glucose level, and both her glucose and triglycerides levels meet criteria for metabolic syndrome. This combination of problems suggests that a diet reduced in calories and whose content has a low glycemic load or fewer carbohydrates is appropriate. When the dietary recommendation has a specific health target, referral to a registered dietitian is recommended in the Guidelines (2013).¹

Calorie Target

The Guidelines (2013)¹ recommend that primary care practitioners use any 1 of 3 approaches to reduce food and calorie intake (Box).

Physical Activity During the Weight Loss Effort

An evidence review of optimal physical activity to support weight loss efforts was not performed for the development of the Guideline (2013).¹ In the review of comprehensive lifestyle intervention programs, it was noted that they typically prescribe increasing aerobic physical activity (such as brisk walking) to more than 150 min/wk (equal to >30 min/d most days of the week).¹ The strategy starts with low levels (10 min/d) and gradually increases to the goal.

Weight Loss Maintenance

The Guidelines (2013)¹ recommend that primary care practitioners prescribe face-to-face or telephone-delivered weight loss maintenance programs for at least 1 year. These should provide regular contact (at least monthly) with a trained interventionist who helps patients engage in high levels of physical activity (ie, 200-300 min/wk), monitor body weight regularly (at least weekly), and consume a reduced-calorie diet (needed to maintain lower body weight).

Setting Expectations

Obesity is a chronic disease. As with other chronic diseases, relapses and recurrences are expected and should be anticipated. The biologic⁷¹ and metabolic⁷² adaptations to weight loss produce increases in appetite, promote food intake, and reduce resting energy expenditure—physiologic responses that promote weight gain. Patients must recognize that weight loss does not cure obesity and that regain is a constant threat requiring patients to maintain lifestyle changes in the long term. Patients who are unsuccessful in maintaining lost weight can reinstate behaviors that produced success the first time and expect success again as in the refresher strategy of Look AHEAD.⁷³

Patients Who Struggle

For some patients, adjunctive therapies may be needed. The Guidelines (2013)¹ evaluated the efficacy and safety of bariatric surgery. The expert panel also offered opinion on use of medications.⁴ Adjunctive medications for obesity should be considered when comprehensive lifestyle intervention alone has not succeeded and when

the risk profile qualifies patients for these more intense therapies. Pharmacotherapy is indicated for individuals who have a BMI of 30 or higher or a BMI of 27 or higher and an obesity-related comorbidity.⁴ Surgery may be indicated for individuals who have a BMI of 40 or higher or 35 or higher with an obesity-related comorbidity.⁴

Pharmacotherapy has made progress in recent years with the addition of 2 new medications (lorcaserin and phentermine/topiramate extended release) for obesity management and several others under regulatory review (bupropion/naltrexone and liraglutide, 3 mg).⁷⁴ Because of the challenges of producing and sustaining weight loss with the low-intensity counseling that is typically provided in primary care practices,⁷⁵ medications can be useful biological adjuncts to aid patients in achieving their lifestyle goals around diet. Some sympathomimetic agents are on the market and approved for short-term use, but "medications for obesity treatment must be viewed through the lens of long-term use when evaluating their safety and efficacy."⁷⁴ The only medication approved for long-term weight management prior to 2012 that remains on the market is orlistat, but lorcaserin and phentermine/topiramate extended release are new additions. Newer approaches use more specific, targeted therapy (eg, lorcaserin has high affinity for the 5-hydroxytryptamine 2C receptor⁷⁴ to target the receptor subtype affecting appetite) or lower-dose combinations of medications with proven efficacy (eg, phentermine/topiramate extended release at recommended dose combines only 7.5 mg of phentermine and 46 mg of topiramate⁷⁴ to produce weight loss while limiting adverse effects). When used as adjuncts to lifestyle counseling, the medications currently approved for long-term use produce greater odds for meaningful weight loss compared with lifestyle counseling as a control. The proportion of patients achieving at least 5% weight loss with medication added to a counseling program typical of office practice ranges from 37% in patients with type 2 diabetes to 47% in obese patients without diabetes for lorcaserin and 62% for recommended-dose phentermine plus topiramate extended release.⁷⁴ For orlistat, the proportion ranges from 35% to 73%,⁷⁴ with the lower percentage more typical of office counseling. These medications provide useful options for patients who struggle with weight loss. Prospects look promising today for using these and additional biologic approaches to address the challenges of weight loss and maintenance for patients whose medical condition mandates weight loss, but their long-term effects on mortality and cardiovascular events are unknown and require study.⁷⁴

Recommendations for Ms T

Ms T should begin to track her diet for increased monitoring and accountability. She should reduce her caloric intake with a goal of consuming 1200 to 1400 kcal/d, limit foods with a high glycemic index, and incorporate meal replacement products (bars, shakes, or frozen entrees) for additional portion and calorie control. Ms T should try to accumulate at least 150 minutes of moderately vigorous physical activity on a weekly basis; discuss with her physician the substitution of paroxetine with an alternative antidepressant that is weight neutral; and consider referral to a mental health care professional for cognitive behavioral therapy to address emotional eating and stress reduction.

Conclusions

Providing care for patients who are overweight or obese and assisting them with weight loss is both a challenge and an opportunity for primary care practitioners. The opportunity is to address the underlying driver of many comorbidities and to have a major effect on a patient's health status with modest weight loss. The challenge for clinicians is learning how to translate the

behavioral intervention into the office setting. The Guidelines (2013)¹ provide a road map for clinicians in primary care and put forth some novel and key messages. Those messages must be incorporated into the treatment plan for patients who need to lose weight. Ms T wants to lose weight for the right reason—health improvement—and she is focused on long-term solutions to her weight problems. Primary care practitioners must see it as their role to help such patients achieve the skill set necessary for long-term success.

ARTICLE INFORMATION

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