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Answers to Clinical Questions in the Primary Care Management of People with Obesity



S1 Introduction

S2 Screening and Diagnosis

Robert F. Kushner, MD, MS, FACP;
Donna Ryan, MD

S5 Communication and Patient Self-Management

Carlos Campos, MD, MPH, CDE;
Joseph Nadglowski

S9 Principles of Patient Management

Deborah Bade Horn, DO, MPH, FOMA;
Donna Ryan, MD

S13 Lifestyle Management

Neil S. Skolnik, MD; Deborah Bade Horn, DO, MPH, FOMA

S16 Pharmacologic Management

Ken Fujioka, MD; Jill Braverman-Panza, RPh, MD

S23 Bariatric Surgery

Jill Braverman-Panza, RPh, MD;
Deborah Bade Horn, DO, MPH, FOMA

S25 Practice Redesign and Reimbursement

Jill Braverman-Panza, RPh, MD; Louis Kuritzky, MD;
Deborah Bade Horn, DO, MPH, FOMA

S28 Summary

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Learning Objectives:

After reading this supplement on managing persons with obesity, the primary care provider will be able to:

1. Implement screening techniques for identifying patients with obesity
2. Implement strategies for effective communication about weight with patients
3. Support patient self-management to improve obesity-related health outcomes
4. Apply key principles in the management of patients with obesity
5. Implement lifestyle management in consideration of patient needs and characteristics
6. Describe the efficacy, safety, and tolerability of medications available for long-term use
7. Initiate pharmacologic therapy in consideration of medication and patient factors to achieve weight loss goals
8. Modify treatment to help patients maintain long-term weight loss
9. Collaborate with other health care providers regarding the surgical management of patients with obesity
10. Implement strategies to resolve practice design barriers to the delivery of optimal care

Introduction

More than 1 in 3 adults aged 20 years or older and 1 in 6 children aged 2 to 19 years in the United States were obese during the period 2011-2014 (adults, body mass index [BMI] ≥ 30 kg/m²; children, BMI greater than or equal to age- and sex-specific 95th percentile of the 2000 Centers for Disease Control growth charts).¹ Furthermore, the prevalence of obesity was shown to have increased from 1999-2000 through 2013-2014.¹ Obesity has enormous health consequences, as it is an independent risk factor for numerous diseases such as type 2 diabetes mellitus, hypertension, ischemic heart disease, hypercholesterolemia, gallstones, obstructive sleep apnea, degenerative and inflammatory musculoskeletal conditions, gastrointestinal disorders (hiatal hernia and reflux disease), and cancer of the breast, cervix, endometrium, ovaries, prostate, esophagus, colon, liver, kidney, and rectum.²⁻⁶ Children with obesity are also more likely to have comorbidities such as asthma, musculoskeletal pain and fractures, and impaired psychological functioning (emotional symptoms, behavioral disturbance, social challenges, and diminished prosocial functioning).⁷⁻⁹

The incremental lifetime medical cost for a child with obesity is estimated to be \$19,000 more than for a child of normal weight who maintains normal weight through adulthood.¹⁰ The indirect costs of overweight and obesity are estimated to be slightly higher than the direct health care costs, suggesting that physical functioning and activities of daily living are adversely affected by obesity.¹¹ As BMI increases, there are significant increases in physician visits, emergency department visits, and health care costs, as well as impairment in work productivity.¹² Indeed, obesity accounts for 6.5% to 12.6% of total absenteeism costs in the workplace.¹³ Furthermore, obesity puts an individual at greater risk of filing for bankruptcy.¹⁴

As shown in landmark clinical trials such as the Diabetes Prevention Program and Look AHEAD, reducing cardiovascular and other health consequences of obesity can be achieved, but weight loss must be sustained.^{15,16} Recent guidelines provide recommendations for managing patients with obesity, but these recommendations must be put into a real-world context for managing individual patients, because achieving and maintaining meaningful weight loss is challenging.

This supplement, which builds on *Management of Obe-*

sity in Adults, a July 2014 supplement to *The Journal of Family Practice*, is more clinical in nature, and includes 7 articles that contain answers to nearly 50 questions related to the care of patients with overweight or obesity. The questions were identified through readership surveys conducted by *The Journal of Family Practice*, evaluations from continuing medical education activities sponsored by Primary Care Education Consortium, and interviews with primary care physicians, nurse practitioners, and physician assistants.

In the first article, Dr. Robert Kushner and Dr. Donna Ryan focus on several issues related to screening and diagnosis, including screening tools and risk factor assessment. In the second article, Dr. Carlos Campos and Mr. Joseph Nadglowski address common difficulties concerning communication with adults and children and offer effective strategies, including appropriate word choices. They also address factors that affect patient self-management, and provide strategies and tools that can be used to help educate patients about obesity and its management. In the third article, Dr. Deborah Horn and Dr. Ryan provide their insights into the principles of patient management, including the primary goal of improving patient health and the importance of basing the intensity of treatment on an individual's risk of weight-related complications.

Lifestyle management is a cornerstone of therapy for people with obesity. In the fourth article, Dr. Neil Skolnik and Dr. Horn discuss comprehensive weight loss management, ie, dietary management, including commercial weight loss programs, as well as physical activity and intensive behavioral therapy. The availability of several new medications for long-term use in combination with lifestyle management provides greater opportunity for achieving and sustaining weight loss. In the fifth article, Dr. Ken Fujioka and Dr. Jill Braverman-Panza provide valuable guidance on individualizing pharmacotherapy.

Weight loss surgery is also an important option for patients with obesity. In the sixth article, Dr. Braverman-Panza and Dr. Horn share their experiences with bariatric surgery and provide suggestions regarding the role of the primary care provider before surgical referral and after bariatric surgery.

Supporting the special care needs of people with obesity may require redesign of the office practice and greater collaboration with other health care professionals and office

staff. In the final article, Dr. Braverman-Panza, Dr. Kuritzky, and Dr. Horn share their experiences with these issues and offer guidance regarding reimbursement for services.

Answers to Clinical Questions in the Primary Care Management of People with Obesity should prove helpful as you continue to provide the highest quality of care to these patients. ●

REFERENCES

- Ogden CL, Carroll MD, Fryar CD, et al. Prevalence of obesity among adults and youth: United States, 2011-2014. NCHS data brief 219. <http://www.cdc.gov/nchs/data/databriefs/db219.htm>. Updated October 28, 2015. Accessed May 26, 2016.
- Field AE, Coakley EH, Must A, et al. Impact of overweight on the risk of developing common chronic diseases during a 10-year period. *Arch Intern Med*. 2001;161:1581-1586.
- Guh DP, Zhang W, Bansback N, et al. The incidence of co-morbidities related to obesity and overweight: a systematic review and meta-analysis. *BMC Public Health*. 2009;9:88.
- Kulie T, Slattengren A, Redmer J, et al. Obesity and women's health: an evidence-based review. *J Am Board Fam Med*. 2011;24:75-85.
- Vucenik I, Stains JP. Obesity and cancer risk: evidence, mechanisms, and recommendations. *Ann N Y Acad Sci*. 2012;1271:37-43.
- Anandacoomarasamy A, Fransen M, March L. Obesity and the musculoskeletal system. *Curr Opin Rheumatol*. 2009;21:71-77.
- Egan KB, Ettinger AS, Bracken MB. Childhood body mass index and subsequent physician-diagnosed asthma: a systematic review and meta-analysis of prospective cohort studies. *BMC Pediatr*. 2013;13:121.
- Paulis WD, Silva S, Koes BW, et al. Overweight and obesity are associated with musculoskeletal complaints as early as childhood: a systematic review. *Obes Rev*. 2014;15:52-67.
- Walders-Abramson N, Nadeau KJ, Kelsey MM, et al. Psychological functioning in adolescents with obesity co-morbidities. *Child Obes*. 2013;9:319-325.
- Finkelstein EA, Graham WC, Malhotra R. Lifetime direct medical costs of childhood obesity. *Pediatrics*. 2014;133:854-862.
- Dee A, Kearns K, O'Neill C, et al. The direct and indirect costs of both overweight and obesity: a systematic review. *BMC Res Notes*. 2014;7:242.
- DiBonaventura M, Lay AL, Kumar M, et al. The association between body mass index and health and economic outcomes in the United States. *J Occup Environ Med*. 2015;57:1047-1054.
- Andreyeva T, Luedicke J, Wang YC. State-level estimates of obesity-attributable costs of absenteeism. *J Occup Environ Med*. 2014;56:1120-1127.
- Guettabi M, Munasib A. The impact of obesity on consumer bankruptcy. *Econ Hum Biol*. 2015;17:208-224.
- Pi-Sunyer X, Blackburn G, Brancati FL, et al. Reduction in weight and cardiovascular disease risk factors in individuals with type 2 diabetes: one-year results of the look AHEAD trial. *Diabetes Care*. 2007;30:1374-1383.
- Wing RR, Bond DS, Gendrano IN III, et al. Effect of intensive lifestyle intervention on sexual dysfunction in women with type 2 diabetes: results from an ancillary Look AHEAD study. *Diabetes Care*. 2013;36:2937-2944.

Screening and Diagnosis

Robert F. Kushner, MD, MS, FACP; Donna Ryan, MD

Obesity is a highly prevalent disease, but it is not commonly addressed in primary care. A 2013 2-part survey (n=1009 adults; n=501 physicians, 301 in primary care) found that only half of patients with overweight or obesity reported ever having discussed weight with their physicians.¹ These findings are relatively unchanged from a

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2008 survey.² Identifying patients with overweight or obesity would aid in implementing appropriate management to reduce the risk of cardiovascular and other complications of obesity.

WHO SHOULD BE SCREENED FOR OVERWEIGHT AND OBESITY?

Everyone. Children should be screened at each well-child visit.³ For adults, universal screening should occur annually or more frequently, with no age limit.⁴

The purpose of screening for overweight and obesity is to initiate a patient's risk assessment for cardiovascular, metabolic, and other complications so as to formulate a suitable treatment plan.

IS ASSESSING BODY MASS INDEX ADEQUATE FOR SCREENING?

Not by itself. Body mass index (BMI) is a useful tool to follow changes in body size over time in a population and, because it correlates well with body fat, on a population basis it can indicate increased risk across a population for cardiovascular disease and other obesity-related complications. How-

TABLE 1 Common obesity-related complications^{3,9-11}

Organ/group	Complication
Cardiovascular	Hypertension, dyslipidemia, hypertriglyceridemia
Endocrine	Type 2 diabetes mellitus, polycystic ovary syndrome, oligomenorrhea, hypogonadism
Gastrointestinal	Nonalcoholic fatty liver disease, gastroesophageal reflux disease, cholesterol gallstones
Musculoskeletal	Arthralgias, osteoarthritis, degenerative joint disease
Psychiatric	Depression, eating disorder
Respiratory	Obstructive sleep apnea, obstructive lung disease, obesity hypoventilation syndrome (Pickwickian syndrome)

ever, by itself, BMI is not sufficient to assess risk in an individual because BMI measures only body size and is not a direct measure of body fat, body fat distribution, or overall health. Also, BMI is not always accurate with certain body types such as very muscular men. Furthermore, the amount and distribution of body fat may vary based on ethnicity, sex, and age.^{5,6}

WHEN AND HOW SHOULD WAIST CIRCUMFERENCE BE MEASURED?

As a complementary measure to BMI, waist circumference should be measured at the same time that BMI is calculated, especially in people with a BMI of 25 to 35 kg/m², as it can provide additional information in risk assessment.

Waist circumference is measured from the top of the iliac crest then around the navel. The tape measure should be parallel to the floor and snug but not compressing the skin. The measurement is made at the end of a normal expiration.⁷

Excess body fat, specifically abdominal fat, is associated with greater health risks, including cardiovascular disease, type 2 diabetes, hypertension, dyslipidemia, and all-cause mortality, as a continuous variable. Waist circumference is the most practical measure of abdominal visceral fat.⁴ A waist circumference of more than 40 inches (102 cm) for men and more than 35 inches (88 cm) for women is the generally recommended cutpoint to identify elevated risk. However, because of differences in body fat distribution, the International Diabetes Federation has recommended lower cutpoints for Asian populations and South and Central Americans (men, ≥90 cm; women, ≥80 cm) and for Europeans (Caucasians) (men, ≥94 cm; women, ≥80 cm).⁸

IF AN INDIVIDUAL IS FOUND TO BE OVERWEIGHT OR OBESE, SHOULD THAT INDIVIDUAL BE SCREENED FOR OTHER RISK FACTORS?

Yes, because obesity-related medical conditions may involve almost every organ system in the body. Some of the more common diseases that may be caused by obesity are shown

in **TABLE 1**.^{3,9-11} Thus, a physical examination is an important opportunity to screen for many of these conditions. Children with obesity are also more likely to have comorbidities such as asthma, musculoskeletal conditions, and impaired psychological functioning (emotional symptoms, behavioral disturbance, social challenges, and diminished prosocial functioning).¹²⁻¹⁴

The obesity-related risk of an individual can be assessed using either the Edmonton Obesity Staging System (<http://www.drsharma.ca/wp-content/uploads/edmonton-obesity-staging-system-pocket-card.pdf>)¹⁵ or the American Association of Clinical Endocrinologists/American College of Endocrinology Advanced Framework (<https://www.aace.com/files/2014-advanced-framework-for-a-new-diagnosis-of-obesity-as-a-chronic-disease.pdf>).¹⁶

WHEN AND HOW SHOULD A BEHAVIORAL ASSESSMENT BE CONDUCTED?

Eating and physical activity patterns that lead to weight gain and obesity are also determined by behavior. When there is concern about the weight-related health status of a patient, a brief behavioral assessment is recommended during the psychosocial section of the history to identify these behaviors.

A behavioral assessment for obesity has 2 goals. The first is to identify modifiable dietary and physical activity behaviors that may promote energy imbalance. Behaviors that commonly contribute to obesity are shown in **TABLE 2** and should be explored with the patient longitudinally.^{3,7} The second goal is to assess the capacity (ie, the motivation and opportunity) of the patient (and the parents if the patient is a child) to change one or more of those modifiable behaviors.³

If several modifiable behaviors that contribute to a patient's weight problem are identified, shared decision-making should be used to determine on which behavior to focus. To modify the behavior, the patient (or the patient's parents) should be offered support, including referral to a dietitian or exercise therapist.

TABLE 2 Eating and physical activity behaviors to be assessed^{3,7}

Activity	Behavior
Eating	<ul style="list-style-type: none"> • Frequency of eating food prepared outside the home (eg, restaurants, school and work cafeterias, fast food establishments, take-out) • Ounces of sugar-sweetened beverages and 100% fruit juices consumed each day • Portions that are large for age • Daily routine eating pattern (number, size of meals; late night; binge eating), including regularly skipping meals • Consumption of energy-dense foods, such as chips, crackers, candy, high-fat foods (fried foods, cream sauces and dressings, fatty meats) • Number of fruit and vegetable servings consumed each day (goal is 4-5 cups per day) • Number and quality of meals and snacks consumed each day
Physical activity	<ul style="list-style-type: none"> • Time spent each day in moderate or vigorous physical activity, including structured and unstructured physical activity (eg, team sports, play) • Regular activity, such as walking to school or work or at the mall; working out at the gym/home; performing yard work or gardening, housekeeping, or home maintenance • Time spent in sedentary behavior, including hours watching television or videos, playing video games, computer use, reading (goal is <2 hours per day) • Number of hours spent sleeping per day

SHOULD THE BMI CHART AND THE PATIENT'S BMI CATEGORY BE DISCUSSED WITH THE PATIENT?

For some patients, seeing where their weight places them on the BMI chart is highly motivating, whereas others find this information insulting and demotivating. The tone and nature of the discussion with the patient about their weight and BMI should serve as the basis for considering the benefits and risks of showing them their category on the BMI chart. ●

REFERENCES

1. PR Newswire. New survey reveals that communication breakdown between physicians and patients hinders weight loss efforts. <http://www.premswire.com/news-releases/new-survey-reveals-that-communication-breakdown-between-physicians-and-patients-hinders-weight-loss-efforts-231724561.html>. Published November 13, 2013. Accessed May 26, 2016.
2. Greiner KA, Born W, Hall S, et al. Discussing weight with obese primary care patients: physician and patient perceptions. *J Gen Intern Med.* 2008;23:581-587.
3. Barlow SE. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics.* 2007;120(suppl 4):S164-S192.
4. American College of Cardiology/American Heart Association Task Force on Practice Guidelines, Obesity Expert Panel, 2013. Expert panel report: guidelines (2013) for the management of overweight and obesity in adults. *Obesity (Silver Spring).* 2014;22(suppl 2):S41-S410.
5. Flegal KM, Shepherd JA, Looker AC, et al. Comparisons of percentage body fat, body

- mass index, waist circumference, and waist-stature ratio in adults. *Am J Clin Nutr.* 2009;89:500-508.
6. Flegal KM, Ogden CL, Yanovski JA, et al. High adiposity and high body mass index-for-age in US children and adolescents overall and by race-ethnic group. *Am J Clin Nutr.* 2010;91:1020-1026.
7. Pi-Sunyer FX, Becker DM, Bouchard C, et al; National Institutes of Health. The practical guide. Identification, evaluation, and treatment of overweight and obesity in adults. NIH publication 00-4084. http://www.nhlbi.nih.gov/guidelines/obesity/prctgd_c.pdf. Published October 2000. Accessed May 26, 2016.
8. Alberti G, Zimmet P, Shaw J, et al; International Diabetes Federation. The IDF consensus worldwide definition of the metabolic syndrome. http://www.idf.org/webdata/docs/IDF_Meta_def_final.pdf. Published 2006. Accessed May 26, 2016.
9. Field AE, Coakley EH, Must A, et al. Impact of overweight on the risk of developing common chronic diseases during a 10-year period. *Arch Intern Med.* 2001;161:1581-1586.
10. Guh DP, Zhang W, Bansback N, et al. The incidence of co-morbidities related to obesity and overweight: a systematic review and meta-analysis. *BMC Public Health.* 2009;9:88.
11. Kulie T, Slattengren A, Redmer J, et al. Obesity and women's health: an evidence-based review. *J Am Board Fam Med.* 2011;24:75-85.
12. Egan KB, Etinger AS, Bracken MB. Childhood body mass index and subsequent physician-diagnosed asthma: a systematic review and meta-analysis of prospective cohort studies. *BMC Pediatr.* 2013;13:121.
13. Paulis WD, Silva S, Koes BW, et al. Overweight and obesity are associated with musculoskeletal complaints as early as childhood: a systematic review. *Obes Rev.* 2014;15:52-67.
14. Walders-Abramson N, Nadeau KJ, Kelsey MM, et al. Psychological functioning in adolescents with obesity co-morbidities. *Child Obes.* 2013;9:319-325.
15. Sharma AM, Kushner RF. A proposed clinical staging system for obesity. *Int J Obes (Lond).* 2009;33:289-295.
16. Garvey WT, Garber AJ, Mechanick JL, et al. American Association of Clinical Endocrinologists and American College of Endocrinology position statement on the 2014 advanced framework for a new diagnosis of obesity as a chronic disease. *Endocr Pract.* 2014;20:977-989.

Communication and Patient Self-Management

Carlos Campos, MD, MPH, CDE; Joseph Nadglowski

Body weight is a sensitive subject for most people; this statement is particularly true for people who are overweight or have obesity, because social stigmatization is common not only in society but also in the health care setting.¹⁻⁴ Health care providers are often unaware of their own biases toward patients with obesity, yet they report having less patience, less desire to help, and less respect for patients with obesity, particularly patients with severe obesity.⁵ The Weight Implicit Associations Test (<https://implicit.harvard.edu/implicit/index.jsp>) can be helpful in assessing one's attitudes and beliefs about people with obesity.

Communication and ongoing support are critical. Physicians are often reluctant to talk with patients about body weight, but patients want, and often wait for, their providers to initiate a conversation about weight.⁶ Because successful long-term weight loss is rarely simple or without setbacks, patients should be supported at each visit. Congratulating a patient for each success—no matter how small—can reinvigorate the patient's motivation to further his or her lifestyle modification efforts, increasing the likelihood of further weight loss and associated health benefits.

HOW SHOULD A DISCUSSION ABOUT OBESITY BE INITIATED?

When initiating a discussion about weight, health care providers should ask patients for their permission before proceeding. This may be done by asking, "May I talk with you about your weight?" or "Have you wondered if your weight might be affecting your health?" or "You mentioned that you generally feel tired, which may be related to excess weight. Would you like to talk about this to see if we can help you feel

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better?" Once the conversation has been initiated, using the 5As (ask or assess, advise, agree, assist, arrange) approach or the FRAMES (feedback, responsibility, advice, menu, empathy, self-efficacy) approach (<http://www.ncbi.nlm.nih.gov/books/NBK64963/>) may be helpful in furthering the conversation in an organized manner. If the patient does not initially consent to a discussion about weight, the discussion may be delayed to the next office visit by saying, "Okay, that's fine. However, I think this is an important health issue and one with which I'd like to help you. Let's plan to talk about it during your next visit."

When the conversation about weight does occur, taking a nonjudgmental approach and being empathetic are important. As overweight or obesity is a chronic disease with a complex pathophysiology, it is important to separate the weight problem from the patient, as one would do with a patient with asthma, a urinary tract infection, osteoporosis, or other health issue. The STOP Obesity Alliance has developed a valuable guide to discussing obesity and health with patients (<http://www.stopobesityalliance.org/wp-content/themes/stopobesityalliance/pdfs/STOP-Provider-Discussion-Tool.pdf>).

ARE THERE WORDS PATIENTS PREFER OR FIND LESS OFFENSIVE TO HEAR DURING A DISCUSSION ABOUT THEIR WEIGHT?

Studies show that some words are more closely associated with the stigmatization of obesity and are best avoided, while other words are preferred (**TABLE 1**).⁷⁻¹¹ One survey found that "unhealthy weight" and "overweight" were terms most likely to motivate a patient to lose weight.¹¹

HOW DO YOU OPEN THE DOOR TO DISCUSSING WEIGHT WITH ADOLESCENTS?

The same strategies that work for adults also work for adolescents. To initiate the discussion about weight with an adolescent, it is essential to ask the patient's permission. Other key communication tips are shown in **TABLE 2**.^{12,13} Using open-ended questions and reflective listening is best, but the content of the questions can be either motivating (leading to "change talk") or demotivating (leading to "counter-change talk"). For example, asking about or reflecting upon their

TABLE 1 More desirable and less desirable terms when discussing weight change⁷⁻¹¹

More Desirable	Weight	
	Body mass index	
	Unhealthy weight	
	Unhealthy body mass index	
	Excess weight	
	Weight problem	
	Overweight status	
	Heaviness	
	Obesity	
	Obese	
	Large size	
	Excess fat	
	Fatness	
	Least Desirable	Morbidly obese

TABLE 2 Key communication tips for communicating with children and adolescents about weight^{12,13}

DO	<ul style="list-style-type: none"> • Use simple language • Ask open-ended questions • Practice reflective listening • Praise positive behaviors and results • Keep the focus on the patient, not the problem • Empathize • Emphasize autonomy • Use the 5As to guide the conversation
DON'T	<ul style="list-style-type: none"> • Give unsolicited advice • Confront • Show disapproval

Abbreviation: 5As, assess (or ask), advise, agree, assist, arrange.

desire, ability, reasons, or need for change, their past actions, or their barriers to change is likely to be motivating and to lead to a discussion about making a change (change talk).¹³ Moreover, emphasizing patient autonomy and personal choice is closely associated with the initiation of change talk by adolescents about their weight-related behaviors.

HOW SHOULD A PATIENT'S MOTIVATION LEVEL AND READINESS FOR CHANGE BE ASSESSED?

Assessing the motivation level and readiness for change of a patient with obesity is especially important because of the well-entrenched behaviors that shape an individual's lifestyle

and the need and ability to lose, and then maintain, weight loss. Most measures to assess motivation relate to the Trans-theoretical Model for addiction developed by DiClemente and Prochaska, which is based on readiness to change and the stages of change.¹⁴

One method is to ask patients to rate their readiness to change on a scale of 1 to 10. A rating of 1 to 3 indicates low readiness to change or precontemplation, while a rating of 8 to 10 indicates high readiness to change or action. Other measurement tools that seem well suited for obesity are the University of Rhode Island Change Assessment scale (URICA),¹⁵ the Stages of Change (S-Weight) and Processes of Change (PWeight)¹⁶ questionnaires, and the Decisional Balance Inventory (DBI).¹⁷ These measures differ with respect to number of questions and their focus on stages of change or readiness to change (TABLE 3).¹⁸ Among these measures, the combination of the S-Weight and P-Weight questionnaires may be preferred in the clinical setting because together they assess the relationship between the stages and the processes of change in weight management; they also have good consistency and validity in the weight management setting.¹⁸ However, the use of statistical software (eg, PASW Statistics 17 and AMOS 17.0; SPSS Ltd.) is advisable to calculate the processes of change scores across the stages of change.¹⁸

In addition to the use of written questionnaires, patients should be asked about their reasons for wanting to lose weight, as well as their reasons for seeking medical assistance. Previous attempts at weight loss should be determined, including the treatments used and the factors contributing to success and failure.

WHAT DO YOU DO IF YOUR PATIENT IS NOT MOTIVATED TO BEGIN A COMPREHENSIVE WEIGHT LOSS PROGRAM (DIET, PHYSICAL ACTIVITY, BEHAVIOR THERAPY) OR TO MAKE THE NEEDED CHANGES TO LOSE WEIGHT?

The self-management nature of obesity makes it clear that patients are in control of their health and that little will change until they are ready and able to take the necessary steps. The provider can use the OARS process to help their patients move forward.

- Open-ended questions
- Affirm
- Reflective listening
- Summarizing

This may be implemented by asking, "What things would change if you were able to lose 5% of your weight?" or "May I

TABLE 3 Self-report measures of motivation and readiness to change¹⁸

Measurement tool	No. of items	Time to complete/ time to score (min)	Stages of change	Readiness to change	RTC scale	Score
URICA scale	32	5–10/5–10	<ul style="list-style-type: none"> • Precontemplation • Contemplation • Action • Maintenance 	N/A	1 (strong disagreement) to 5 (strong agreement)	1-80: low RTC 81-160: high RTC
S-Weight questionnaire	1	<1/<1	<ul style="list-style-type: none"> • Precontemplation • Contemplation • Preparation • Action • Maintenance 	N/A	N/A	Asks individual to self-allocate to 1 stage of change
P-Weight questionnaire	34	<10/15	N/A	<ul style="list-style-type: none"> • Emotional reevaluation • Weight management actions • Environmental restructuring • Weight consequences evaluation 	1 (strong disagreement) to 5 (strong agreement)	>50: high use of a RTC process (each of the 4 processes is scored separately)
DBI	20	5–10/0	N/A	<ul style="list-style-type: none"> • Pro • Con 	1 (not at all important) to 5 (extremely important)	–40 to 40; the higher the score, the greater the motivation

Abbreviations: DBI, Decisional Balance Inventory; N/A, not applicable; P-Weight, Processes of Change; RTC, Readiness to Change; S-Weight, Stages of Change; URICA, University of Rhode Island Change Assessment.

offer you suggestions based on what you've told me?" Patients are likely to become motivated and feel weight loss is possible if they feel supported, such as by stating, "Let's work together to create a plan that will work best for you."⁶

CASE EXAMPLE

One of my patients with obesity recently confided that she knew she needed to lose weight, but that current issues in her life were causing stress that prevented her from taking the first steps. I affirmed that losing weight was important to her. Using open-ended questions and reflective listening, I was able to determine that she believed these events would be resolved within a few months. I asked her if she would commit to taking the first step to lose weight after these events resolved. Upon her agreement, I suggested that a few weeks after the current issues began resolving, she begin to think about what she would like to do first and how she would like me to help her. I asked if one of my staff members could call her in 8-12 weeks to schedule a follow-up office visit, to which she agreed.

HOW SHOULD CULTURAL BELIEFS BE IDENTIFIED AND ADDRESSED?

Along with other factors, such as education level, socioeconomic status, and health literacy and numeracy, cultural beliefs can play a major role in a patient's health, beginning with deciding to seek medical care, through the patient visit, and during self-management. Recognizing this fact and managing patients within their cultural beliefs fosters patient trust and collaboration, which can lead to improved treatment adherence.

To identify cultural and other beliefs, the patient might be asked, "Tell me more about the traditions you have with your family. Where do food and physical activity play a role?"⁶ This information gathering should be done in a formal and respectful, but warm and friendly, manner.¹⁹ As with other behaviors, once identified, cultural beliefs can be considered in a collaborative discussion regarding treatment.

SHOULD THE FAMILY OR CAREGIVER BE INCLUDED IN PATIENT VISITS?

Absolutely, especially if the patient is a child/adolescent or

if someone other than the patient is primarily responsible for buying and preparing the patient's food.^{20,21} A benefit of including family members in patient visits, particularly for children and adolescents, is that it enables the provider to address poor lifestyle behaviors of parents, who usually serve as strong role models for their children regarding dietary and physical activity habits.²²⁻²⁵

Adult patients with strong cultural beliefs also should be encouraged to bring family members to visits, as it is not uncommon for patients to delay treatment decisions because they want to talk with family members. This tactic may result not only in treatment delays but also in the possibility of treatment nonadherence.¹⁹ When family members are present during the visit, they may be able to facilitate patient acceptance and change.

ARE THERE EFFECTIVE METHODS FOR COMMUNICATING WITH PATIENTS OUTSIDE OF THE OFFICE VISIT?

Because overweight or obesity as a disease is largely self-managed by the patient, ongoing communication and support from the provider to the patient, including between office visits, is important for long-term weight loss.²⁶ Reimbursement for communication outside of office visits may not be available, however.

Treatment reminders can be sent by telephone and email, and through the use of smartphone applications. These same technologies, as well as face-to-face, print, and Internet communication, can be used to provide patient education.²⁷⁻³¹ Delivery mechanisms and formats that provide greater patient engagement, such as face-to-face discussion and computer-based avatars, are associated with greater long-term weight loss.^{26,28,32,33}

Many patients find text messages that provide recipe ideas and weight loss strategies that have been used successfully by their peers to be helpful. Text messaging can also be used by providers to request feedback regarding patient progress. When using text messaging, providers should be aware that patients generally prefer positive, encouraging, and direct messages, but not messages that are informal or include any mention of unhealthy foods or behaviors.²⁹

WHAT ARE SOME GOOD RESOURCES FOR PATIENT EDUCATION TOOLS?

Numerous organizations provide excellent resources to educate patients about weight-related issues, lifestyle management, behavior therapy, medications, and surgery. Some of these organizations are listed below. It is suggested that providers become familiar with the patient education resources they recommend so that the education they offer can be indi-

vidualized based on patient need, literacy, and culture. Providers should also follow up with the patient to answer questions and to reinforce the importance of the education. The follow-up can be done via telephone or email or at the next patient visit.

- National Heart, Lung, and Blood Institute (<http://www.nhlbi.nih.gov/health/resources/heart#obesity>)
- Obesity Action Coalition (<http://www.obesityaction.org/educational-resources>)
- Obesity Medicine Association (<http://obesitymedicine.org/clinicians/resources/>)
- The Obesity Society (<http://www.obesity.org/publications/clinical-resources>)
- US Centers for Disease Control and Prevention (<http://www.cdc.gov/obesity/index.html>) ●

REFERENCES

1. Puhl RM, Andreyeva T, Brownell KD. Perceptions of weight discrimination: prevalence and comparison to race and gender discrimination in America. *Int J Obes (Lond)*. 2008;32:992-1000.
2. Epling JW, Morley CP, Ploutz-Snyder R. Family physician attitudes in managing obesity: a cross-sectional survey study. *BMC Res Notes*. 2011;4:473.
3. Gudzone KA, Beach MC, Roter DL, et al. Physicians build less rapport with obese patients. *Obesity (Silver Spring)*. 2013;21:2146-2152.
4. Khandalavala BN, Rojanala A, Geske JA, et al. Obesity bias in primary care providers. *Fam Med*. 2014;46:532-535.
5. Hebl MR, Xu J. Weighing the care: physicians' reactions to the size of a patient. *Int J Obes Relat Metab Disord*. 2001;25:1246-1252.
6. STOP Obesity Alliance. Why weight? A guide to discussing obesity & health with your patients. <http://www.stopobesityalliance.org/wp-content/themes/stopobesity-alliance/pdfs/STOP-Provider-Discussion-Tool.pdf>. Published 2014. Accessed May 26, 2016.
7. Dutton GR, Tan F, Perri MG, et al. What words should we use when discussing excess weight? *J Am Board Fam Med*. 2010;23:606-613.
8. Gray CM, Hunt K, Lorimer K, et al. Words matter: a qualitative investigation of which weight status terms are acceptable and motivate weight loss when used by health professionals. *BMC Public Health*. 2011;11:513.
9. Volger S, Vetter ML, Dougherty M, et al. Patients' preferred terms for describing their excess weight: discussing obesity in clinical practice. *Obesity (Silver Spring)*. 2012;20:147-150.
10. Swift JA, Choi E, Puhl RM, et al. Talking about obesity with clients: preferred terms and communication styles of U.K. pre-registration dietitians, doctors, and nurses. *Patient Educ Couns*. 2013;91:186-191.
11. Puhl R, Peterson JL, Luedicke J. Motivating or stigmatizing? Public perceptions of weight-related language used by health providers. *Int J Obes (Lond)*. 2013;37:612-619.
12. Bravender T, Tulskey JA, Farrell D, et al. Teen CHAT: development and utilization of a web-based intervention to improve physician communication with adolescents about healthy weight. *Patient Educ Couns*. 2013;93:525-531.
13. Carcone AI, Naar-King S, Brogan KE, et al. Provider communication behaviors that predict motivation to change in black adolescents with obesity. *J Dev Behav Pediatr*. 2013;34:599-608.
14. DiClemente CC, Prochaska JO. Self-change and therapy change of smoking behavior: a comparison of processes of change in cessation and maintenance. *Addict Behav*. 1982;7:133-142.
15. University of Rhode Island. Psychotherapy: URICA. <http://web.uri.edu/cprc/psychotherapy-urica/>. Published 2015. Accessed May 26, 2016.
16. Andres A, Saldana C, Gomez-Benito J. Establishing the stages and processes of change for weight loss by consensus of experts. *Obesity (Silver Spring)*. 2009;17:1717-1723.
17. O'Connell D, Velicer WF. A decisional balance measure and the stages of change model for weight loss. *Int J Addict*. 1988;23:729-750.
18. Ceccarini M, Borrello M, Pietrabissa G, et al. Assessing motivation and readiness to change for weight management and control: an in-depth evaluation of three sets of instruments. *Front Psychol*. 2015;6:511.
19. Campos C. Addressing cultural barriers to the successful use of insulin in Hispanics with type 2 diabetes. *South Med J*. 2007;100:812-820.

20. Bauer KW, Neumark-Sztainer D, Fulkerson JA, et al. Familial correlates of adolescent girls' physical activity, television use, dietary intake, weight, and body composition. *Int J Behav Nutr Phys Act.* 2011;8:25.
21. Schalkwijk AA, Bot SD, de Vries L, et al. Perspectives of obese children and their parents on lifestyle behavior change: a qualitative study. *Int J Behav Nutr Phys Act.* 2015;12:102.
22. Lindqvist AK, Kostenius C, Gard G, et al. Parent participation plays an important part in promoting physical activity. *Int J Qual Stud Health Well-being.* 2015;10:27397.
23. Reicks M, Banna J, Cluskey M, et al. Influence of parenting practices on eating behaviors of early adolescents during independent eating occasions: Implications for obesity prevention. *Nutrients.* 2015;7:8783-8801.
24. Schneider EM, Wilson DK, Kitzman-Ulrich H, et al. The associations of parenting factors with adolescent body mass index in an underserved population. *J Obes.* 2013;2013:715618.
25. Wright MS, Wilson DK, Griffin S, et al. A qualitative study of parental modeling and social support for physical activity in underserved adolescents. *Health Educ Res.* 2010;25:224-232.
26. American College of Cardiology/American Heart Association Task Force on Practice Guidelines, Obesity Expert Panel, 2013. Expert panel report: guidelines (2013) for the management of overweight and obesity in adults. *Obesity (Silver Spring).* 2014;22(suppl 2):S41-S410.
27. Huber JM, Shapiro JS, Wieland ML, et al. Telecoaching plus a portion control plate for weight care management: a randomized trial. *Trials.* 2015;16:323.
28. LeRouge C, Dickhut K, Lisetti C, et al. Engaging adolescents in a computer-based weight management program: avatars and virtual coaches could help. *J Am Med Inform Assoc.* 2016;23:19-28.
29. Woolford SJ, Barr KL, Derry HA, et al. OMG do not say LOL: obese adolescents' perspectives on the content of text messages to enhance weight loss efforts. *Obesity (Silver Spring).* 2011;19:2382-2387.
30. Flores Mateo G, Granado-Font E, Ferre-Grau C, et al. Mobile phone apps to promote weight loss and increase physical activity: a systematic review and meta-analysis. *J Med Internet Res.* 2015;17:e253.
31. Watson S, Woodside JV, Ware LJ, et al. Effect of a web-based behavior change program on weight loss and cardiovascular risk factors in overweight and obese adults at high risk of developing cardiovascular disease: randomized controlled trial. *J Med Internet Res.* 2015;17:e177.
32. Appel LJ, Clark JM, Yeh HC, et al. Comparative effectiveness of weight-loss interventions in clinical practice. *N Engl J Med.* 2011;365:1959-1968.
33. Digenio AG, Mancuso JP, Gerber RA, et al. Comparison of methods for delivering a lifestyle modification program for obese patients: a randomized trial. *Ann Intern Med.* 2009;150:255-262.

Principles of Patient Management

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The successful treatment of patients with obesity—a chronic disease—ultimately depends on helping patients modify behaviors. This requires a systematic approach involving extensive collaboration between the patient and the health care team. Because each patient's needs and characteristics are unique, the principal role for the health care provider is to evaluate the patient's risk status and provide guidance on appropriate treatment options and intensities. While improvement in some risk factors may begin with modest weight loss (as little as 3%), greater amounts of weight loss generally translate into greater improvements in risk factors and comorbidities.¹

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DISCLOSURES

Dr. Horn discloses that she is on the advisory board and speakers' bureaus for Novo Nordisk Inc. and Takeda Pharmaceuticals. **Dr. Ryan** discloses that she is on the advisory board and speakers' bureau for Eisai Co., Ltd.; Novo Nordisk Inc.; and Takeda Pharmaceuticals. She is on the advisory board for Amgen; CVK; Janssen Pharmaceuticals, Inc.; Pfizer Inc, and Real Appeal, Inc.; and has ownership interest in Gila Therapeutics, Inc. and Scientific Intake Limited Co.

The generally accepted initial goal of 5% to 10% weight loss usually brings important health benefits and is achievable for most patients with a comprehensive weight loss management program of dietary management, physical activity, and intensive behavioral therapy.¹ For patients with more severe complications and greater health risk associated with obesity, more intense approaches, including long-term medications or bariatric surgery, may be indicated. Still, comprehensive lifestyle intervention is the foundation for these approaches.^{1,2}

WHAT ARE THE KEY PRINCIPLES OF WEIGHT LOSS MANAGEMENT?

There are several key principles to guide the management of people with overweight and obesity.

- Although improvement of physical appearance is a primary motivating factor for patients, the fundamental purpose of weight loss is to improve health.
- Patients should be managed in the context of a chronic disease, taking a systematic approach to treatment.
- Lifestyle modification is the cornerstone of weight management.
- Successful weight management is ultimately the result of modifying behaviors around diet and physical activity, and helping the patient with those modifications is the health care provider's responsibility.
- Collaboration between the patient and the primary care provider and health care team is imperative.

- Motivating the patient through coaching and engagement is a key provider skill.
- The intensity of the treatment approach chosen is based on the patient's level of risk for weight-related complications.

WHAT ARE THE GOALS OF TREATMENT?

The overarching goal of weight loss is to improve health—to ameliorate symptoms and to reduce the risks associated with obesity-related diseases such as type 2 diabetes mellitus, coronary artery disease, and hypertension.³⁻⁵ Other health benefits include improvements in symptoms of depression, obstructive sleep apnea, and sexual dysfunction, as well as improved mobility.⁶⁻⁹

Although patients often express a desire to lose 20% or more of their body weight, weight loss of 5% to 10% over 6 months is the preferred initial goal as this results in health benefits and can enhance patient motivation by building on success.¹ Because greater health benefits can be achieved with weight loss beyond 5% to 10%, patients can be encouraged to set further goals once the initial goal is achieved. Risk reduction is accomplished by achieving and maintaining weight loss over the long term using a treat-to-target approach, as is done with diabetes and hypertension.

WHAT IS MEANT BY A COMPLICATIONS-CENTRIC APPROACH TO MANAGEMENT?

Instead of focusing treatment decisions on reduction of body size (how one looks), a complications-centric approach to obesity management focuses on the health risks associated with excess body fat, including the presence of comorbidities and risk factors.¹⁰ Treatment decisions are based on a patient's risk status. This approach recognizes that the correlation between body mass index (BMI) and health risk may not be robust in some individuals (see *Screening and Diagnosis*, page S3). For example, up to 30% of people with a BMI of 30 kg/m² or more are relatively insulin sensitive and do not have manifestations of cardiometabolic disease, while up to 30% of people with a BMI of 25 kg/m² or less are insulin resistant with manifestations of cardiometabolic disease.^{11,12}

The complications-centric approach directs treatment at people with obesity who will benefit the most from weight loss, particularly individuals with the highest severity of complications that are remediable using weight loss therapy.^{10,13} With this approach, the existence and severity of complications at baseline are more important than the baseline BMI; the diagnosis of obesity prioritizes organ dysfunction, resulting in identifiable complications as a marker of disease and disease severity.¹³ Patients with more severe complications are managed with more aggressive therapy. In optimiz-

ing patient outcomes, the benefit-to-risk ratio and cost-effectiveness of interventions are taken into account.^{10,13}

ARE THE PRINCIPLES OF WEIGHT MANAGEMENT FOR CHILDREN OR ADOLESCENTS THE SAME AS THOSE USED FOR ADULTS?

Generally, yes, but with 2 important caveats. First, because the child's environment is primarily determined by the parents, the involvement of the family is even more important when the patient is a child. Thus, in addition to those of the child, the beliefs and behaviors of the parents need to be identified and addressed appropriately (see *Communication and Patient Self-Management*, pages S5 and S7). Education and management strategies that separately target the child and the parents may be needed.

Second, the treatment of children with obesity involves a greater focus on lifestyle management because lifestyle behaviors in children are not as well entrenched as they are in adults and may be more easily modified.¹⁴ In addition, only one of the medications approved for long-term use (orlistat) by the US Food and Drug Administration (FDA) has been approved in children 12 years of age or older. Moreover, although bariatric surgery is used in carefully selected adolescents with obesity, its long-term effectiveness and safety are unclear in this population.¹⁵⁻¹⁷

WHAT CAN BE DONE TO REDUCE THE COSTS ASSOCIATED WITH TREATMENT?

The costs of the treatment options available for weight loss range from a few dollars per month for the least expensive commercial weight loss program (**TABLE 1**) to several thousand dollars for the copay required for bariatric surgery. One approach to lower the out-of-pocket cost for the patient is to use lower cost tools whenever possible, such as store-brand versions of meal replacements and portion-controlled entrees. However, no generic versions are available for medications approved for long-term use. Obesity is one disease in which off-label prescribing should be avoided. Coupons and discounts are available for most obesity medications, and some patients qualify for prescription assistance through various sources (**TABLE 2**). Reduced out-of-pocket costs for medications may also be available through the patient's insurance company.

ARE THE PRINCIPLES OF DIAGNOSIS AND TREATMENT THE SAME IF THE PATIENT IS PREGNANT?

Absolutely not. Weight loss is not recommended in women who are pregnant because of the possible risk to the fetus.¹⁸ Instead, weight loss prior to pregnancy is preferred for

TABLE 1 Commercial weight loss programs

Program ^a	Coaching and support	Food
Jenny Craig http://www.jennycraig.com/	\$19/month	\$15–\$23/day
Nutrisystem http://www.nutrisystem.com/jsps_hmr/home/index.jsp	\$10–\$12/day	
Take Off Pounds Sensibly http://www.tops.org/	\$34/year	N/A
Weight Watchers https://www.weightwatchers.com/us/	\$4–\$11/week	N/A

Abbreviation: N/A, not applicable.

^aAs of May 27, 2016. Prices are without rebates or other promotional discount.

TABLE 2 Prescription assistance programs

Source	Medication(s)	For more information
Manufacturer	Liraglutide	https://www.saxenda.com/savings.html
Manufacturer	Lorcaserin	http://www.eisaireimbursement.com/patient/belviq/
Manufacturer	Naltrexone/bupropion extended-release	http://www.takeda.us/responsibility/patient_assistance_program.aspx https://www.contrave.com/savings
Manufacturer	Phentermine/topiramate extended-release	https://qsymia.com/patient/getting-started/money-saving-offers/
Individual states	All	https://www.medicare.gov/pharmaceutical-assistance-program/state-programs.aspx
Partnership for Prescription Assistance	All	https://www.pparx.org/prescription_assistance_programs/list_of_participating_programs#top

women with overweight or obesity. In 2009, the Institute of Medicine updated its recommendations for weight gain during pregnancy based on a woman's prepregnancy BMI, with less weight gain recommended for women with prepregnancy obesity (**TABLE 3**).¹⁹ The American Congress of Obstetrics and Gynecology recommends individualized care and clinical judgment for a woman with overweight or obesity who is gaining less weight or wishes to gain less weight than is recommended but who has an appropriately growing fetus.¹⁸

Recently, a study involving 293 Finnish women at high risk for gestational diabetes was conducted to assess whether the disease can be prevented with moderate lifestyle intervention.²⁰ High-risk pregnant women at less than 20 weeks of gestation were randomized to standard care with or without lifestyle intervention offered 3 times during the pregnancy. Lifestyle intervention included counseling on implementing a low-fat, high-fiber diet and engaging in at least 150 minutes of moderate-intensity physical activity per week. Women with a prepregnancy BMI of 30 kg/m² or more were encouraged to gain no weight during the first 2 trimesters.

In this study, women in the lifestyle intervention group were less likely to develop gestational diabetes (relative risk,

0.64; *P*=.044) and to gain weight (7.6 vs 7.7 kg; *P*=.037) from baseline to the third trimester. No significant differences were noted between the 2 groups in maternal (eg, preeclampsia, Cesarean delivery) or neonatal (eg, birth weight, size, gestational age, respiratory distress) outcomes.²⁰

HOW DO YOU DEAL WITH A PATIENT COMING TO YOU FOR WEIGHT LOSS BUT WHO ONLY WANTS MEDICATION?

Many individuals who have struggled with their weight feel frustrated as well as defeated, and are hoping that a medication alone will be the solution to their chronic battle with obesity. However, results from antiobesity medication clinical trials and recommendations offered in current treatment guidelines clearly indicate that greater success is achieved when medication is used adjunctively with intensive lifestyle intervention.^{1,2,21-25} The combination of lifestyle intervention and pharmacologic treatment helps improve the risk-to-benefit ratio and the likelihood of reaching the outcomes agreed upon by the patient and provider.

The 5As of obesity management—ask or assess, advise, agree, assist, arrange—can be a great tool for guiding such

TABLE 3 Institute of Medicine recommendations for total weight gain during pregnancy¹⁹

Prepregnancy BMI (kg/m ²)	Total weight gain range (lb)
<18.5	28–40
18.5–24.9	25–35
25.0–29.9	15–25
≥30	11–20

Abbreviation: BMI, body mass index.

patients back to a comprehensive treatment approach (**TABLE 4**).²⁶ For the patient seeking weight loss with medication alone, the “Ask” is implicit; the patient is already seeking/asking for help. For the next step, “Assess,” the initial assessment should be done to ensure that the patient meets the FDA minimum requirements for antiobesity medication, such as a BMI of at least 30 kg/m² or a BMI of at least 27 kg/m² with one or more obesity-related comorbidities. The patient must also be assessed for contraindications and complementary effects for each medication. For example, some antiobesity medications cannot be used when uncontrolled hypertension is present. Another medication may not only treat the obesity, but also demonstrate duality of benefit if there is underlying depression or glucose regulation problems. After a thorough assessment, the patient should then be “Advised” of the risks, benefits, and side effect profiles of the medication, as well as the role of lifestyle and behavior management in combination with pharmacologic treatment.

The provider and the patient can then “Agree” on the best comprehensive treatment strategy to achieve the weight and health goals of the patient. Finally, the provider can “Assist” the patient by providing resources and education. The patient will then be better able to confidently move forward with the treatment plan. It is helpful to remind the patient that behavior and habit change do not need to be perfect to be successful in improving health. It is more important for the patient to be consistent and to make the effort on a daily basis to be mindful and improve nutrition, physical activity, stress, and sleep choices every day.

WHAT ARE THE BENEFITS OF GROUP MEDICAL VISITS FOR WEIGHT LOSS?

Introduced nearly 2 decades ago, group medical visits have been used successfully by health care providers for many chronic diseases, notably diabetes. Group medical visits can provide greater frequency of patient-provider contact in a time-efficient manner. Obesity-related studies have demonstrated that increased frequency of patient-provider contact can lead to more successful maintenance of weight loss. For example, in the Look AHEAD trial, patients who lost at least

TABLE 4 The 5As of obesity management²⁶

- **ASK** for permission to discuss weight and explore readiness
- **ASSESS** obesity-related risks and other “root causes” of obesity
- **ADVISE** on health risks and treatment options
- **AGREE** on health outcomes and behavioral goals
- **ASSIST** in accessing appropriate resources and providers

10% of their body weight in the first year of a medical intervention and then kept it off or lost more weight by years 2 to 4 had a treatment contact in some form 26 times per year, or approximately every other week.²⁷ These contacts were not all group medical visits, but a group visit would be one way of managing the volume of patients that need to be seen with this frequency and intensity of treatment.

Limited observations in the treatment of people with obesity demonstrated that individuals who participated in a series of group meetings experienced significantly greater weight loss than did people who were treated with usual care interventions.^{27–31} These group meetings generally consisted of provider-led lectures, which is different from the usual format for group medical visits. Generally, in a group medical visit, patients meet individually with a provider and discuss their care just as they would during an individual office visit, except that it is done in front of the group. This format enables patients to learn from each other’s experiences. In addition, much of the time in a group medical visit is spent by patients asking questions and sharing their experiences with one another, with the provider serving as a facilitator and, when needed, providing professional input and advice. This patient-to-patient interaction allows patients to connect on an emotional level, which may be helpful in motivating them to change behaviors that contribute to their obesity. The greatest challenges around group interactions for many providers include (1) acquiring the skills needed to facilitate a group discussion; (2) adjusting their clinical schedule; (3) arranging for the meeting space and other resources needed to accommodate a group experience; and (4) ensuring patient privacy. ●

REFERENCES

1. American College of Cardiology/American Heart Association Task Force on Practice Guidelines, Obesity Expert Panel. 2013. Expert panel report: guidelines (2013) for the management of overweight and obesity in adults. *Obesity (Silver Spring)*. 2014;22(suppl 2):S41–S410.
2. Apovian CM, Aronne LJ, Bessesen DH, et al. Pharmacological management of obesity: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2015;100:342–362.
3. Pi-Sunyer X, Blackburn G, Brancati FL, et al. Reduction in weight and cardiovascular disease risk factors in individuals with type 2 diabetes: one-year results of the look AHEAD trial. *Diabetes Care*. 2007;30:1374–1383.
4. Knowler WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2

- diabetes with lifestyle intervention or metformin. *N Engl J Med*. 2002;346:393-403.
5. Knowler WC, Fowler SE, Hamman RF, et al. 10-year follow-up of diabetes incidence and weight loss in the Diabetes Prevention Program Outcomes Study. *Lancet*. 2009;374:1677-1686.
 6. Faulconbridge LF, Wadden TA, Rubin RR, et al. One-year changes in symptoms of depression and weight in overweight/obese individuals with type 2 diabetes in the Look AHEAD study. *Obesity (Silver Spring)*. 2012;20:783-793.
 7. Foster GD, Borradaile KE, Sanders MH, et al. A randomized study on the effect of weight loss on obstructive sleep apnea among obese patients with type 2 diabetes: the Sleep AHEAD study. *Arch Intern Med*. 2009;169:1619-1626.
 8. Wing RR, Bond DS, Gendrano IN III, et al. Effect of intensive lifestyle intervention on sexual dysfunction in women with type 2 diabetes: results from an ancillary Look AHEAD study. *Diabetes Care*. 2013;36:2937-2944.
 9. Rejeski WJ, Ip EH, Bertoni AG, et al. Lifestyle change and mobility in obese adults with type 2 diabetes. *N Engl J Med*. 2012;366:1209-1217.
 10. Daniel S, Soleymani T, Garvey WT. A complications-based clinical staging of obesity to guide treatment modality and intensity. *Curr Opin Endocrinol Diabetes Obes*. 2013;20:377-388.
 11. Ferrannini E, Balkau B, Coppock SW, et al. Insulin resistance, insulin response, and obesity as indicators of metabolic risk. *J Clin Endocrinol Metab*. 2007;92:2885-2892.
 12. Wildman RP, Muntner P, Reynolds K, et al. The obese without cardiometabolic risk factor clustering and the normal weight with cardiometabolic risk factor clustering: prevalence and correlates of 2 phenotypes among the US population (NHANES 1999-2004). *Arch Intern Med*. 2008;168:1617-1624.
 13. Garvey WT, Garber AJ, Mechanick JL, et al. American Association of Clinical Endocrinologists and American College of Endocrinology position statement on the 2014 advanced framework for a new diagnosis of obesity as a chronic disease. *Endocr Pract*. 2014;20:977-989.
 14. Katzmarzyk PT, Barlow S, Bouchard C, et al. An evolving scientific basis for the prevention and treatment of pediatric obesity. *Int J Obes (Lond)*. 2014;38:887-905.
 15. Michalsky M, Reichard K, Inge T, et al. ASMBS pediatric committee best practice guidelines. *Surg Obes Relat Dis*. 2012;8:1-7.
 16. Kelly AS, Barlow SE, Rao G, et al. Severe obesity in children and adolescents: identification, associated health risks, and treatment approaches: a scientific statement from the American Heart Association. *Circulation*. 2013;128:1689-1712.
 17. Lennerz BS, Wabitsch M, Lippert H, et al. Bariatric surgery in adolescents and young adults—safety and effectiveness in a cohort of 345 patients. *Int J Obes (Lond)*. 2014;38:334-340.
 18. American College of Obstetricians and Gynecologists. ACOG Committee opinion no. 548: weight gain during pregnancy. *Obstet Gynecol*. 2013;121:210-212.
 19. Rasmussen KM, Abrams B, Bodnar LM, et al. Institute of Medicine. Weight gain during pregnancy: reexamining the guidelines. <https://iom.nationalacademies.org/-/media/Files/Report%20Files/2009/Weight-Gain-During-Pregnancy-Reexamining-the-Guidelines/Report%20Brief%20-%20Weight%20Gain%20During%20Pregnancy.pdf>. Published May 2009. Accessed May 27, 2016.
 20. Koivusalo SB, Rono K, Klemetti MM, et al. Gestational diabetes mellitus can be prevented by lifestyle intervention: the Finnish Gestational Diabetes Prevention Study (RADIEL): a randomized controlled trial. *Diabetes Care*. 2016;39:24-30.
 21. Wadden TA, Berkowitz RI, Sarwer DB, et al. Benefits of lifestyle modification in the pharmacologic treatment of obesity: a randomized trial. *Arch Intern Med*. 2001;161:218-227.
 22. Fidler MC, Sanchez M, Raether B, et al. A one-year randomized trial of lorcaserin for weight loss in obese and overweight adults: the BLOSSOM trial. *J Clin Endocrinol Metab*. 2011;96:3067-3077.
 23. Garvey WT, Ryan DH, Look M, et al. Two-year sustained weight loss and metabolic benefits with controlled-release phentermine/topiramate in obese and overweight adults (SEQUENCE): a randomized, placebo-controlled, phase 3 extension study. *Am J Clin Nutr*. 2012;95:297-308.
 24. Astrup A, Carraro R, Finer N, et al. Safety, tolerability and sustained weight loss over 2 years with the once-daily human GLP-1 analog, liraglutide. *Int J Obes (Lond)*. 2012;36:843-854.
 25. Wadden TA, Foreyt JP, Foster GD, et al. Weight loss with naltrexone SR/bupropion SR combination therapy as an adjunct to behavior modification: the COR-BMOD trial. *Obesity (Silver Spring)*. 2011;19:110-120.
 26. Vallis M, Piccinini-Vallis H, Sharma AM, et al. Clinical review: modified 5 As: minimal intervention for obesity counseling in primary care. *Can Fam Physician*. 2013;59:27-31.
 27. Wadden TA, Neiberg RH, Wing RR, et al. Four-year weight losses in the Look AHEAD study: factors associated with long-term success. *Obesity (Silver Spring)*. 2011;19:1987-1998.
 28. Nakata Y, Okada M, Hashimoto K, et al. Weight loss maintenance for 2 years after a 6-month randomised controlled trial comparing education-only and group-based support in Japanese adults. *Obes Facts*. 2014;7:376-387.
 29. Nakata Y, Okada M, Hashimoto K, et al. Comparison of education-only versus group-based intervention in promoting weight loss: a randomised controlled trial. *Obes Facts*. 2011;4:222-228.
 30. Palaniappan LP, Muzaffar AL, Wang EJ, et al. Shared medical appointments: promoting weight loss in a clinical setting. *J Am Board Fam Med*. 2011;24:326-328.
 31. Benyamini Y, Geron R, Steinberg DM, et al. A structured intentions and action-planning intervention improves weight loss outcomes in a group weight loss program. *Am J Health Promot*. 2013;28:119-127.

Lifestyle Management

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DISCLOSURES

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Lifestyle modification for patients with overweight or obesity, with improved nutrition and increased physical activity, leads to many health benefits, including a decrease in the development of coronary artery disease, type 2 diabetes, depression, breast and colon cancer, and osteoporosis.¹⁻⁷ Health benefits are seen with just a 5% to 10% reduction in body weight.^{8,9} Improved nutrition and increased physical activity can help reduce weight, improve body composition, and increase an individual's fitness level.

Lifestyle modification is not a short-term endeavor, and maintaining a healthy weight requires sustained changes in dietary and physical activity. Intensive behavioral intervention can help modify deep-rooted behaviors and pro-

vide the support required to both initiate and maintain the behavioral changes that are needed to achieve weight loss goals.

WHAT ARE THE COMPONENTS OF LIFESTYLE MANAGEMENT?

The primary components of an effective, high-intensity, comprehensive lifestyle management program include a moderately reduced-calorie diet and increased physical activity.⁹ Because dietary and physical activity behaviors are often well entrenched, a thoughtful approach to lifestyle modification with intensive behavioral therapy (IBT) is an important part of successful lifestyle counseling. Primary care physicians are in a position to help support patients with their lifestyle changes by providing counseling and offering a referral to formal, comprehensive lifestyle management programs. Successful lifestyle modification approaches include techniques that the patient can employ, such as regular self-monitoring of food intake, physical activity, and body weight; modifying food cues; using portion control; and implementing reminders to exercise.⁹

For most patients with obesity, the goal is to achieve an energy deficit of at least 500 kcal per day along with at least 150 minutes of moderately intense physical activity per week. But it is important to individualize a program, as the dietary needs of a 6-foot 4-inch man are different than that of a 5-foot 3-inch woman. Very-low-calorie diets that provide less than 800 kcal per day can be safe and effective for carefully selected patients under carefully supervised medical monitoring.⁹ To overcome compensatory physiologic mechanisms associated with weight loss, 200 to 300 minutes of physical activity per week may be helpful to maintain weight loss or minimize weight regain in the long term.⁹

IS ONE DIETARY APPROACH PREFERRED OVER OTHERS?

The best diet is the one to which a patient will adhere.^{9,10} Adherence to the dietary plan is the greatest challenge patients face in losing weight; thus, efforts to support dietary adherence outweigh the small differences among diet plans. Fortunately, there is a wide variety of effective dietary approaches that allows for individualization to meet the patient's needs, cultural beliefs, lifestyle, and other preferences. Behavioral counseling is also important in helping to sustain long-term dietary changes.

Clinical trials and meta-analyses demonstrate small but nonimportant differences among dietary approaches in both metabolic parameters and the degree of weight loss achieved.^{9,11} A notable difference is that high-protein, low-

carbohydrate, low-glycemic index diets and the Mediterranean diet have been found to result in greater improvements in glycemic control than have low-fat and low-protein diets.¹² Further information on diets can be found in the 2015-2020 Dietary Guidelines for Americans (<http://health.gov/dietaryguidelines/2015/guidelines/>).

HOW CAN I GET A PATIENT STARTED ON A PHYSICAL ACTIVITY PROGRAM SAFELY AND EFFECTIVELY?

Techniques such as motivational interviewing, in which patients are asked what they think the benefits of lifestyle change may be for them and why it might be important for them, are more effective at creating patient buy-in and enhancing patient motivation than simply telling patients that they need to exercise more. It is helpful to assess a patient's current activity level, previous attempts to increase his or her physical activity level, and the difficulties that were encountered in order to help the patient formulate a plan that is personally relevant and one with a greater chance of adherence. It is also important to build both on the habit of exercise and on any success achieved by suggesting that the patient start with low amounts of physical activity that are easily achieved and then slowly increase the amount of exercise to the recommended 150 minutes per week of moderately vigorous activity.¹³

Patients should be asked about symptoms of coronary artery disease, with further evaluation as appropriate. Otherwise, routine screening for coronary artery disease is not needed in asymptomatic patients prior to beginning low- to moderate-intensity exercise.¹⁴ Sedentary individuals and patients with cardiovascular risk factors should start their exercise programs with low-intensity exercise performed for a relatively short time and slowly increase the intensity and duration of exercise over time.

ARE COMMERCIAL WEIGHT LOSS PROGRAMS EFFECTIVE? WHAT ARE THE DIFFERENCES AMONG THE PROGRAMS?

Many commercial weight loss programs, including Jenny Craig, NutriSystem, Take Off Pounds Sensibly, and Weight Watchers, have been shown to be effective and are good approaches for dietary intervention for many patients (**TABLE 1**).⁹ A recent meta-analysis showed that the Jenny Craig program resulted in at least a 4.9% greater weight loss compared with routine care or patient education at 12 months, and that the Weight Watchers program resulted in at least a 2.6% greater weight loss.¹⁵ At 3 months, the NutriSystem program resulted in at least a 3.8% greater weight loss than control/education.

TABLE 1 Features of commercial weight loss programs⁹

Program ^a	Education/support			Food
	Online resources	Live chat	Local conference	
Jenny Craig http://www.jennycraig.com/	X	X	X	Prepackaged
NutriSystem http://www.nutrisystem.com/jsps_hmr/home/index.jsp	X	X		Prepackaged
Take Off Pounds Sensibly http://www.tops.org/	X		X	Patient supplied
Weight Watchers https://www.weightwatchers.com/us/	X	X	X	Patient supplied

^aType(s) of education/support typically vary by membership level.

TABLE 2 Schedule of visits for intensive behavioral therapy required by Medicare¹⁷

<ul style="list-style-type: none"> • One face-to-face visit every week for the first month • One face-to-face visit every other week for months 2–6 • One face-to-face visit every month for months 7–12, provided that the beneficiary has achieved ≥ 3 kg weight loss during the first 6 months <ul style="list-style-type: none"> • If the beneficiary has not achieved this 6-month benchmark, a reassessment of the patient's readiness to change and his or her BMI is appropriate after an additional 6-month period
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Abbreviation: BMI, body mass index.

WHAT IS A REASONABLE WEIGHT LOSS GOAL AND EXPECTED DURATION WHEN THE TREATMENT IS LIFESTYLE MANAGEMENT ALONE?

Comprehensive lifestyle management with diet and exercise that is provided in a formal program with frequent visits and by trained staff, often including a registered dietitian, a psychologist, and an exercise specialist, produces an average initial weight loss of 8 kg or approximately 5% to 10% of initial weight over 6 to 12 months.⁹ After 1 year of comprehensive lifestyle management with bimonthly or more frequent intervention, weight regain of 1 to 2 kg per year is common for many, but not all, patients.⁹ While many patients regain weight after an initial weight loss, approximately one-quarter of patients continue to lose weight or maintain their weight loss long term.¹⁶

WHAT ARE THE US CENTERS FOR MEDICARE & MEDICAID SERVICES (CMS) REQUIREMENTS FOR PROVIDING INTENSIVE BEHAVIORAL THERAPY FOR OBESITY?

Since November 2011, CMS has provided health care coverage for IBT to Medicare beneficiaries with obesity. Coverage requires that counseling be provided by a qualified primary care provider in a primary care setting, such as an indepen-

dent clinic, an outpatient hospital, a physician's office, or a state or local public health clinic.¹⁷

IBT for obesity consists of the following features:

- screening for obesity in adults, using BMI
- dietary (nutritional) assessment
- IBT counseling and behavioral therapy to promote sustained weight loss through high-intensity interventions using diet and exercise.

Each IBT session for obesity should be consistent with the 5As approach—ask (or assess), advise, agree, assist, and arrange—adopted by the US Preventive Services Task Force. Medicare provides for a maximum of 22 IBT sessions for obesity in a 12-month period, according to the schedule listed in **TABLE 2**.¹⁷

Specific billing requirements have been established by CMS (https://www.cms.gov/Medicare/Prevention/Prevntion/GenInfo/Downloads/MPS_QuickReferenceChart_1.pdf). Effective January 2015, CMS expanded coverage to include a 30-minute session provided to a group of 2 to 10 patients (HCPCS code G0473) (<https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLN/MattersArticles/downloads/MM8874.pdf>). Previously, reimbursement was approximately \$25 for a 15-minute session provided to an individual patient (HCPCS code G0447).

An analysis of the potential cost-effectiveness of Medicare's IBT for obesity program (22 sessions over 12 months) was recently conducted.¹⁷ The model estimated the long-term health benefits and health care system costs of IBT for obesity relative to usual care in the Medicare population that did not have diabetes.¹⁸ IBT was found to provide a cost savings at the CMS reimbursement rate. Assuming IBT is implemented as prescribed by CMS, the cost-effectiveness ratio was estimated to be \$20,912 per quality-adjusted life-year (2012 US dollars). ●

REFERENCES

- Berry JD, Willis B, Gupta S, et al. Lifetime risks for cardiovascular disease mortality by cardiorespiratory fitness levels measured at ages 45, 55, and 65 years in men. The Cooper Center Longitudinal Study. *J Am Coll Cardiol*. 2011;57:1604-1610.
- Knowler WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med*. 2002;346:393-403.
- Pahor M, Guralnik JM, Ambrosius WT, et al. Effect of structured physical activity on prevention of major mobility disability in older adults: the LIFE study randomized clinical trial. *JAMA*. 2014;311:2387-2396.
- Cooney GM, Dwan K, Greig CA, et al. Exercise for depression. *Cochrane Database Syst Rev*. 2013;(9):CD004366.
- Kushi LH, Doyle C, McCullough M, et al. American Cancer Society Guidelines on nutrition and physical activity for cancer prevention: reducing the risk of cancer with healthy food choices and physical activity. *CA Cancer J Clin*. 2012;62:30-67.
- Ernst E. Exercise for female osteoporosis. A systematic review of randomised clinical trials. *Sports Med*. 1998;25:359-368.
- Myers J, Prakash M, Froelicher V, et al. Exercise capacity and mortality among men referred for exercise testing. *N Engl J Med*. 2002;346:793-801.
- Leblanc ES, O'Connor E, Whitlock EP, et al. Effectiveness of primary care-relevant treatments for obesity in adults: a systematic evidence review for the U.S. Preventive Services Task Force. *Ann Intern Med*. 2011;155:434-447.
- American College of Cardiology/American Heart Association Task Force on Practice Guidelines, Obesity Expert Panel. 2013. Expert panel report: guidelines (2013) for the management of overweight and obesity in adults. *Obesity (Silver Spring)*. 2014;22(suppl 2):S41-S410.
- Pagoto SL, Appelbans BM. A call for an end to the diet debates. *JAMA*. 2013;310:687-688.
- Johnston BC, Kanters S, Bandayrel K, et al. Comparison of weight loss among named diet programs in overweight and obese adults: a meta-analysis. *JAMA*. 2014;312:923-933.
- Ajala O, English P, Pinkney J. Systematic review and meta-analysis of different dietary approaches to the management of type 2 diabetes. *Am J Clin Nutr*. 2013;97:505-516.
- American Diabetes Association. Foundations of care and comprehensive medical evaluation. *Diabetes Care*. 2016;39(suppl 1):S23-S35.
- American Diabetes Association. Cardiovascular disease and risk management. *Diabetes Care*. 2016;39(suppl 1):S60-S71.
- Gudzune KA, Doshi RS, Mehta AK, et al. Efficacy of commercial weight-loss programs: an updated systematic review. *Ann Intern Med*. 2015;162:501-512.
- Sacks FM, Bray GA, Carey VJ, et al. Comparison of weight-loss diets with different compositions of fat, protein, and carbohydrates. *N Engl J Med*. 2009;360:859-873.
- Centers for Medicare & Medicaid Services. US Department of Health and Human Services. Intensive behavioral therapy (IBT) for obesity. <https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/downloads/MM7641.pdf>. Revised March 9, 2012. Accessed May 27, 2016.
- Hoerger TJ, Crouse WL, Zhuo X, et al. Medicare's intensive behavioral therapy for obesity: an exploratory cost-effectiveness analysis. *Am J Prev Med*. 2015;48:419-425.

Pharmacologic Management

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The recent approval of liraglutide, lorcaserin, naltrexone/bupropion extended-release, and phentermine/topiramate extended-release, brings the number of medications for long-term weight loss to 5 (including orlistat).

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stat). Indicated for the treatment of patients with overweight (body mass index [BMI] ≥ 27 kg/m² with ≥ 1 weight-related comorbidity) or obesity (BMI ≥ 30 kg/m²), these medications provide new opportunities to address this burgeoning health problem. Medications approved for long-term use are used in conjunction with lifestyle management and to support behavioral interventions.

Generally speaking, these medications should be initiated at the lowest recommended dose to improve tolerability, with the dose increased, if needed and as described in the package insert, to achieve the targeted weight loss of about 3% to 5% within 12 to 16 weeks. If treatment is successful, these medications should be continued for several months or more.

ARE THERE RECOMMENDATIONS REGARDING WHICH IS THE BEST CHOICE FOR INITIATING PHARMACOLOGIC TREATMENT FOR CHRONIC WEIGHT MANAGEMENT?

Numerous factors should be considered when selecting

TABLE 1 Weight effects of medications approved for long-term use⁶⁻¹⁹

Medication	Dose/duration	Study	Change relative to baseline vs placebo			
			ΔWeight (%)	Percent of patients achieving ≥5% or ≥10% weight loss	ΔBMI (kg/m ²)	ΔWaist circumference (inches)
Liraglutide 3.0 mg	3 mg QD × 56 weeks	SCALE Maintenance ⁶	-6.2 vs -0.2	≥5%: 50.5% vs 21.8% ≥10%: 26.1% vs 6.3%	-2.1 vs 0	-1.9 vs -0.5
		SCALE Diabetes ⁷	-6.0 vs -2.0	≥5%: 54.3% vs 21.4% ≥10%: 25.2% vs 6.7%	-2.2 vs -0.8	-2.4 vs -1.1
		SCALE Obesity and PreDiabetes ⁸	-8.0 vs -2.6	≥5%: 63.2% vs 27.1% ≥10%: 33.1% vs 10.6%	-3.0 vs -1.0	-3.2 vs -1.5
Lorcaserin	10 mg BID × 1 year	BLOOM ⁹	-5.8 vs -2.2	≥5%: 47.5% vs 20.3% ≥10%: 22.6% vs 7.7%	-2.1 vs -0.8	-2.7 vs -1.5
		BLOSSOM ¹⁰	-5.8 vs -2.8	≥5%: 47.2% vs 25.0% ≥10%: 22.6% vs 9.7%	-2.1 vs -1.0	-2.5 vs -1.6
		BLOOM-DM ¹¹	-4.5 vs -1.5	≥5%: 37.5% vs 16.1% ≥10%: 16.3% vs 4.4%	-1.6 vs -0.6	-2.2 vs -1.3
Naltrexone/bupropion	32 mg/360 mg × 56 weeks	COR-I ¹²	-6.1 vs -1.3	≥5%: 48% vs 16% ≥10%: 25% vs 7%	NR	-2.4 vs -1.0
		COR-II ¹³	-6.4 vs -1.2	≥5%: 50.5% vs 17.1% ≥10%: 28.3% vs 5.7%	NR	-2.6 vs -0.8
		COR-BMOD ¹⁴	-9.3 vs -5.1	≥5%: 66.4% vs 42.5% ≥10%: 41.5% vs 20.2%	NR	-3.9 vs -2.6
		COR-Diabetes ¹⁵	-5.0 vs -1.8	≥5%: 44.5% vs 18.9% ≥10%: 18.5% vs 5.7%	NR	-2.0 vs -1.1
Orlistat	120 mg TID × 4 years	XENDOS ¹⁶	-5.3 vs 2.7	≥5% ^a : 52.8% vs 37.3% ≥10% ^a : 26.2% vs 15.6%	NR	-2.5 vs -1.7
Phentermine/topiramate	7.5 mg/46 mg QD × 52-56 weeks	CONQUER ¹⁷	-7.8 vs -1.2	≥5%: 62% vs 21% ≥10%: 37% vs 7%	NR	-3 vs -0.9
		SEQUEL ¹⁸	-9.3 vs -1.8	≥5%: 75.2% vs 30.0% ≥10%: 50.3% vs 11.5%	NR	-3.9 vs -1.4
	15 mg/92 mg × 56 weeks	EQUIP ¹⁹	-10.9 vs -1.6	≥5%: 66.7% vs 17.3% ≥10%: 47.2% vs 7.4%	NR	-4.3 vs -1.2

Abbreviations: Δ, change; BID, twice daily; BMI, body mass index; NR, not reported; QD, each day; TID, 3 times a day.

^aPatients who completed the study.

therapy, including expected weight loss, contraindications, safety, tolerability, mechanism of action, and cost. From an efficacy perspective, all 5 medications that are now approved for long-term use (ie, several months or longer) appear to be similarly effective at 1 year, and have an average placebo-adjusted weight loss of 3% to 5% at recommended maintenance doses.¹⁻⁵ One exception may be phentermine/topiramate extended-release based on data from phase 3 clinical trials (TABLE 1).⁶⁻¹⁹ Lack of head-to-head trials, however, preclude comparison; thus, a hierarchy of usage based

on weight loss effectiveness is not possible. It should be kept in mind that the weight loss observed in an individual patient with any of these medications may differ from the average weight loss observed in clinical trials.

Each of the long-term weight loss medications has important contraindications and other factors that affect its use in certain patient types (TABLE 2).²⁰⁻²⁴ Therefore, as discussed below, the selection of a medication requires matching the needs and characteristics of the patient with the benefits and limitations of each medication.

TABLE 2 Contraindications and other considerations in selecting a medication to promote long-term weight loss

Medication ^a	Contraindications	Safety	Tolerability
Liraglutide ²⁰	Personal or family history of medullary thyroid carcinoma or multiple endocrine neoplasia 2; pregnancy	Boxed warning: rodent thyroid C-cell tumors Warnings: acute pancreatitis; acute gallbladder disease; hypoglycemia; ↑ heart rate; renal impairment; suicidality	Nausea, hypoglycemia, diarrhea, constipation, vomiting, headache, dyspepsia, fatigue, dizziness, abdominal pain, increased lipase
Lorcaserin ²¹	Pregnancy	Warnings: serotonin syndrome (use with extreme caution with serotonergic medications); valvular heart disease could not be definitively excluded, although there was no signal on echocardiograms; cognitive impairment; euphoria; dissociation; depression; hypoglycemia; priapism (rodents)	Headache, dizziness, fatigue, nausea, dry mouth, constipation
Naltrexone/bupropion extended-release ²²	Uncontrolled hypertension; seizure disorder; anorexia, bulimia; abrupt discontinuation of alcohol, benzodiazepines, barbiturates, anticonvulsants; chronic opioid use; MAOIs; pregnancy	Boxed warning: suicidality; neuropsychiatric events Warning: ↑ blood pressure, ↑ heart rate, ↑ seizure risk; glaucoma; hepatotoxicity; hypoglycemia; angle-closure glaucoma	Nausea, constipation, headache, vomiting, dizziness, insomnia, dry mouth, diarrhea
Orlistat ²³	Chronic malabsorption; gall bladder disease	Warning: ↑ cyclosporine exposure; rare liver failure; ↑ urinary oxalate; multivitamin advised	Oily spotting, flatus with discharge, fecal urgency, increased defecation, fecal incontinence
Phentermine/topiramate extended-release ²⁴	Glaucoma; hyperthyroidism, MAOIs; pregnancy	Warning: fetal toxicity; ↑ heart rate; suicidality; acute myopia, secondary angle closure glaucoma; mood and sleep disorders; cognitive impairment; metabolic acidosis and kidney stones; elevated creatinine; hypoglycemia	Paresthesias, dizziness, dysgeusia, insomnia, constipation, dry mouth

Abbreviation: ↑, increased; MAOIs, monoamine oxidase inhibitors.

^aDoes not include drug interactions.

The primary mechanism of action of the medications for long-term use (except orlistat) is appetite suppression, although differences in appetite regulation and reward appear to exist. These differences enable treatment individualization based on hunger and eating patterns, as well as patient comorbidities and use of concomitant medications (see questions below).

Medication cost is often an important consideration. Because the out-of-pocket cost to an individual patient can be substantially less than the wholesale cost based on insurance coverage, the patient’s insurance company should be contacted prior to prescribing a medication. In addition, some patients may qualify for prescription assistance through the manufacturer or their state’s program (see *Principles of Patient Management*, page S11).

IS THERE A SPECIFIC MEDICATION SUGGESTION FOR PATIENTS WHOSE LATE-NIGHT APPETITE ISSUES ARE MUCH GREATER THAN AT ANY OTHER TIME OF DAY?

Four of the 5 long-term weight loss medications affect appetite through different mechanisms, thereby enabling treatment individualization based on hunger and eating patterns. Orlistat is the exception, because it has no effect on appetite.

For individuals who do not have late-night eating syndrome (ie, the patient wakes up in the middle of the night and eats) but who routinely feel hungry and eat in the evening or before going to bed, liraglutide or lorcaserin may be preferred for appetite suppression if insomnia is a concern.^{20,21} When insomnia is not a concern, but the patient experiences food cravings, limited published data and clinical experience

suggest that naltrexone/bupropion extended-release may be preferred.^{25,26} The effectiveness of naltrexone/bupropion appears to be due to a reduced association between trait-like reward-driven eating and daily food-craving intensity rather than to a reduction in craving intensity.²⁵ If the patient has difficulty with binge eating in the evening or before going to bed, liraglutide or phentermine/topiramate extended-release may be preferred.^{27,28}

These recommendations apply for similar hunger and eating patterns at other times of the day. For patients with delayed satiety, liraglutide or lorcaserin are preferred because both promote satiety, resulting in decreased caloric intake.^{29,30} For patients with frequent hunger during the day, lorcaserin or liraglutide may provide good appetite control.^{29,31,32} Naltrexone/bupropion extended-release or phentermine/topiramate extended-release also could work for patients with frequent daytime hunger.

IS THERE A ROLE FOR COMBINING MEDICATIONS APPROVED FOR LONG-TERM USE?

An evolving understanding of the pathophysiology of obesity makes it clear that many pathways and neurotransmitters are involved.³³ This observation parallels other diseases, such as hypertension and type 2 diabetes, wherein treatment that targets multiple pathophysiologic mechanisms may be desirable.^{34,35} Notably, the “Limitations of Use” section in the package inserts of each of the 4 most recently approved weight loss medications states that the safety and efficacy of that medication has not been established when combined with other weight loss agents. The studies looking at safety and efficacy using combinations of different weight loss medications are just now beginning to take place.

Combination therapy may be an option for selected patients who would gain significant benefit from weight loss and who have significant comorbidities that justify the added risks of multiple weight loss medications. Examples of such patients are those who meet the criteria for bariatric surgery but either are not good surgical candidates or simply do not want to have the surgery. Another group that would benefit includes patients with obesity who are unresponsive to conventional therapy and who are complicated by significant comorbidities that would be improved with weight loss.

Evidence to support combination treatment with weight loss medications (at least one of which is approved for long-term use) is limited to 2 studies presented in abstract form during Obesity Week 2015.

- Smith et al assessed serotonergic adverse events with the addition of phentermine to lorcaserin in patients (N=238) with obesity or overweight and a comorbidity other than type 2 diabetes.³⁶ After 12 weeks of treat-

ment, the incidence of serotonergic adverse events was the same in all groups, ranging from 37.2% to 42.3%. Weight loss of at least 5% was achieved by 33.3% of lorcaserin patients, 68.2% of patients treated with lorcaserin plus phentermine once daily, and 84.2% of patients treated with lorcaserin plus phentermine twice daily.

- Cadejani et al initiated quadruple therapy, consisting of a glucagon-like peptide-1 receptor agonist, orlistat, metformin, and a sodium glucose cotransporter-2 inhibitor, in patients (N=28) with a BMI of 27 kg/m² or more who were refractory to diet and physical activity.³⁷ After 6 months to 2 years of treatment with the 4 medications, patients lost an average of 14% of initial body weight and BMI, and waist circumference decreased by 15%. Improvements in body fat, blood glucose, and blood lipids also were observed.

HOW SHOULD TREATMENT BE INDIVIDUALIZED?

In addition to selecting treatment based on hunger and eating patterns (see questions above), the diverse characteristics of each of the 5 medications approved for long-term use enable further treatment individualization. As part of the process of individualizing a patient’s obesity treatment plan, a complete history of current medications should be taken. If the patient is taking medications that promote weight gain, they should be discontinued, if possible, and alternative treatments initiated.

CONSIDERATION OF COMORBIDITIES

- **Comorbid hypertension:** Although none of these medications is indicated for hypertension, it may be preferable to treat patients with obesity and hypertension with liraglutide, lorcaserin, or phentermine/topiramate, because each provides modest reductions (~1–3 mm Hg) of systolic and diastolic blood pressure.^{10,11,18,19,38,39}
- **Comorbid type 2 diabetes:** For patients with obesity and type 2 diabetes, liraglutide 3.0 mg/day (Saxenda) may be preferred because of its efficacy in lowering blood glucose levels, particularly fasting blood glucose, although liraglutide (Saxenda) is not indicated for glycemic control.⁴⁰ Moreover, liraglutide at a dose of 1.2 or 1.8 mg/day (Victoza) is approved for use as an adjunct to diet and exercise to lower blood glucose in adults with type 2 diabetes, but is not approved for weight loss, as this lower dose was unable to produce substantial weight loss in clinical trials.⁴¹ Lorcaserin, phentermine/topiramate extended-release, and naltrexone/bupropion extended-release all have positive effects on glucose control that is believed to be due mainly to weight loss; however, liraglutide is the only medication in this newer group that has specific positive effects on glucose control.

TABLE 3 Dosing considerations of weight loss medications approved for long-term use

Medication	Route of administration	Frequency of administration	Notes
Liraglutide ²⁰	SQ	1/day	Take any time of day with/without food
Lorcaserin ²¹	PO	2/day	Take with/without food
Naltrexone/bupropion extended-release ²²	PO	2/day	Avoid taking with high-fat meal
Orlistat ²³	PO	3/day	Take with each main meal; meal to consist of ~30% of calories from fat
Phentermine/topiramate extended-release ²⁴	PO	1/day	Take in the morning with/without food

Abbreviations: PO, by mouth; SQ, subcutaneous.

- **Comorbid depression:** Although not indicated for depression, women with overweight or obesity and a DSM-IV diagnosis of major depressive disorder (N=25) were treated with open-label naltrexone 32 mg/bupropion 360 mg in combination with dietary and behavioral counseling.⁴² After 12 and 24 weeks, depressive symptoms were significantly improved, while weight loss declined -4.0% and -5.3%, respectively.
- **Comorbid obstructive sleep apnea:** Although not indicated for obstructive sleep apnea, patients with obesity and moderate to severe obstructive sleep apnea who were not receiving positive airway pressure treatment received phentermine 15 mg/topiramate 92 mg extended-release or placebo in combination with lifestyle modification counseling.⁴³ After 28 weeks, patients treated with phentermine/topiramate extended-release experienced significant improvement in the apnea-hypopnea index compared with patients receiving placebo. In addition, patients treated with phentermine/topiramate extended-release experienced greater weight loss than did patients receiving placebo (-10.2% vs -4.3%, respectively; $P=.0006$). Beneficial effects also have been observed with liraglutide in a post hoc analysis of the SCALE Sleep Apnea trial.⁴⁴ Patients with moderate or severe obstructive sleep apnea who were treated with liraglutide 3 mg/day for 32 weeks experienced a greater reduction in the apnea-hypopnea index from baseline (49.2 events/hour) than did those receiving placebo (-12.2 vs -6.1 events/hour; $P=.015$). A greater reduction in body weight was also observed with liraglutide than with placebo (-5.7% vs -1.6%; $P<.0001$). Greater weight loss was significantly associated with greater improvements in quality-of-life endpoint measures.
- **Comorbid substance abuse disorder:** While bupropion is indicated as an aid to smoking cessation treatment, naltrexone/bupropion extended-release is not.

Nonetheless, preliminary investigations with naltrexone alone and with the combination of naltrexone and bupropion show benefits in terms of smoking cessation.⁴⁵⁻⁴⁷ In addition, patients treated with naltrexone ± bupropion gained no weight or less weight compared with patients receiving placebo. Liraglutide and orlistat also may be reasonable choices in patients with overweight or obesity and substance abuse disorder, as these medications have not been shown to have an abuse potential; lorcaserin and phentermine/topiramate extended-release are controlled substances.^{20,21,23,24}

Consideration of work, lifestyle

The characteristics of each of the 5 weight loss medications approved for long-term use are a consideration in individualizing treatment (TABLE 3).²⁰⁻²⁴ Phentermine/topiramate extended-release and liraglutide may be the most convenient, as they can be taken once daily without regard to meals. While liraglutide can be taken at any time of the day, phentermine/topiramate extended-release should be taken in the morning to minimize the risk of insomnia. Although liraglutide requires an injection, the flexibility in dose time may be advantageous for individuals with erratic schedules or who work day/night shifts. Lorcaserin, orlistat, and naltrexone/bupropion extended-release are given orally, but they require multiple daily dosing. Dietary fat should not exceed 30% of daily calories with orlistat, while administration of naltrexone/bupropion extended-release with a high-fat meal increases the risk of a seizure.

WHAT PRECAUTIONS SHOULD BE TAKEN PRIOR TO INITIATING TREATMENT WITH ONE OF THE MEDICATIONS APPROVED FOR LONG-TERM USE?

In addition to potential drug interactions, patient comorbidities and other characteristics must be considered before initi-

TABLE 4 Patient factors in selecting a medication to promote long-term weight loss²⁰⁻²⁴

Patient factor	Recommendations
Who is likely to become or is already pregnant	Do not prescribe (category X) Obtain negative pregnancy test before prescribing PHEN/TPM and monthly while on therapy due to teratogenicity
Who is breast feeding	Do not prescribe
With a history of seizure	Contraindicated: NB Taper PHEN/TPM slowly when discontinuing to avoid precipitating a seizure
With a history of kidney stones	Avoid orlistat, PHEN/TPM
With history of pancreatitis	Avoid liraglutide
With personal or family history of medullary thyroid cancer or MEN type 2	Contraindicated: liraglutide
With glaucoma	Contraindicated: PHEN/TPM Angle closure glaucoma associated with NB
With hypertension	NB can increase blood pressure Monitor BP if being treated for hypertension; if symptoms of low BP occur after starting PHEN/TOP, adjust antihypertensive drug regimen
With arrhythmia	Liraglutide, NB, PHEN/TPM can increase heart rate
With moderate renal impairment	Use with caution: liraglutide, lorcaserin Do not exceed NB 16/180 mg Do not exceed PHEN/TOP 7.5/46 mg
With moderate hepatic impairment	Use with caution: liraglutide, lorcaserin Do not exceed NB 8/90 mg Do not exceed PHEN/TOP 7.5/46 mg
With depression receiving an SSRI	Extreme caution: lorcaserin Caution: NB Note: Phase 3 studies of PHEN/TPM included patients with depression treated with a SSRI
Age >65 years	Limited experience: liraglutide, lorcaserin, NB, PHEN/TPM

Abbreviations: MEN, multiple endocrine neoplasia; NB, naltrexone/bupropion extended-release; PHEN/TPM, phentermine/topiramate extended-release; SSRI, selective serotonin reuptake inhibitor.

TABLE 5 Criteria to assess response to long-term medications for weight loss

2015 Endocrine Society ⁴⁹	Package inserts	
Discontinue if <5% weight loss after 3 months	Liraglutide ²⁰	Discontinue if <4% weight loss after 16 weeks (4 weeks titration followed by 3 mg/d for 12 weeks)
	Lorcaserin ²¹	Discontinue if <5% weight loss after 12 weeks
	Naltrexone/bupropion extended-release ²²	Discontinue if <5% weight loss after 12 weeks (4 weeks titration followed by 2 tablets BID for 8 weeks)
	Orlistat ²³	Not stated
	Phentermine/topiramate extended-release ²⁴	3.75/23 mg/d for 14 days followed by 7.5/46 mg/d. If <3% weight loss after 12 weeks on 7.5/46 mg, increase to 15/92 mg or discontinue after 12 weeks at maximum dose. Discontinue if <5% weight loss after 12 weeks on 15/92 mg.

Abbreviation: BID, twice daily

ating treatment with one of the medications approved for long-term use (TABLE 4).²⁰⁻²⁴ One key contraindication is pregnancy, because weight loss offers no potential benefit to a pregnant woman and may result in fetal harm (see *Principles of Patient Management*, page S10). Moreover, topiramate is known to increase the risk of oral clefts after fetal exposure during the first trimester of pregnancy.²⁴ Liraglutide has been shown to be teratogenic in rats and to cause reduced growth and increased total major abnormalities in rabbits.²⁰ Naltrexone has been shown to increase the incidence of early fetal loss in rats.²²

WHEN SHOULD TREATMENT RESPONSE BE ASSESSED? WHAT ARE THE ENDPOINTS?

The 2000 National Heart, Lung, and Blood Institute threshold for treatment response of 2 kg weight loss after 4 weeks⁴⁸ has been replaced by the threshold of 5% at 3 months recommended in the 2015 Endocrine Society guidelines.⁴⁹ Slightly different criteria are outlined in the package inserts of the 5 medications approved for long-term use (TABLE 5).²⁰⁻²⁴ According to the package inserts, treatment should be reassessed 12 to 16 weeks after initiating pharmacologic therapy to determine if an adequate response has been accomplished. If the responsiveness criterion for liraglutide, lorcaserin, or naltrexone/bupropion extended-release has not been met, the medication should be discontinued and an alternate weight loss medication initiated. For phentermine/topiramate extended-release, the initial dose of 7.5/46 mg per day can be increased, if needed, based on treatment response.

In addition to body weight, blood glucose and blood pressure should be closely monitored because reductions in these parameters are to be expected when weight is lost. Doses of related medications should be adjusted appropriately. Patients with type 2 diabetes, particularly individuals receiving concomitant treatment with insulin or insulin secretagogues (eg, sulfonylurea) are at increased risk of hypoglycemia and may need to have their medications titrated accordingly. ●

REFERENCES

- US Food and Drug Administration. FDA briefing document: NDA 206321, liraglutide injection 3 mg. <http://www.fda.gov/downloads/AdvisoryCommittees/Committees-MeetingMaterials/Drugs/EndocrinologicandMetabolicDrugsAdvisoryCommittee/UCM413317.pdf>. Published September 11, 2014. Accessed May 27, 2016.
- US Food and Drug Administration. FDA briefing document: NDA 22529, lorcaserin hydrochloride tablets, 10 mg. <http://www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/Drugs/EndocrinologicandMetabolicDrugsAdvisoryCommittee/UCM303198.pdf>. Published May 10, 2012. Accessed May 27, 2016.
- US Food and Drug Administration. VI-0521 (QNEXA) Advisory Committee briefing document: NDA 022580. <http://www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/Drugs/EndocrinologicandMetabolicDrugsAdvisoryCommittee/UCM292317.pdf>. Published February 22, 2012. Accessed May 27, 2016.
- US Food and Drug Administration. FDA briefing document: NDA 200063, Contrave (naltrexone 4mg, 8mg/bupropion HCL 90mg extended release tablet). <http://www.fda.gov/downloads/advisorycommittees/committeesmeetingmaterials/drugs/endocrinologicandmetabolicdrugsadvisorycommittee/ucm235671.pdf>. Published December 7, 2010. Accessed May 27, 2016.
- US Food and Drug Administration. FDA Advisory Committee briefing document: Orlistat 60 mg capsules, NDA 21-887. http://www.fda.gov/ohrms/dockets/ac/06/briefing/2006-4201B1_01_GSK-Brief.pdf. Published January 23, 2006. Accessed May 27, 2016.
- Wadden TA, Hollander P, Klein S, et al. Weight maintenance and additional weight loss with liraglutide after low-calorie-diet-induced weight loss: the SCALE Maintenance randomized study. *Int J Obes (Lond)*. 2013;37:1443-1451.
- Davies MJ, Bergenstal R, Bode B, et al. Efficacy of liraglutide for weight loss among patients with type 2 diabetes: the SCALE Diabetes randomized clinical trial. *JAMA*. 2015;314:687-699.
- Pi-Sunyer X, Astrup A, Fujioka K, et al. A randomized, controlled trial of 3.0 mg of liraglutide in weight management. *N Engl J Med*. 2015;373:11-22.
- Smith SR, Weisman NJ, Anderson CM, et al. Multicenter, placebo-controlled trial of lorcaserin for weight management. *N Engl J Med*. 2010;363:245-256.
- Fidler MC, Sanchez M, Raether B, et al. A one-year randomized trial of lorcaserin for weight loss in obese and overweight adults: the BLOSSOM trial. *J Clin Endocrinol Metab*. 2011;96:3067-3077.
- O'Neil PM, Smith SR, Weissman NJ, et al. Randomized placebo-controlled clinical trial of lorcaserin for weight loss in type 2 diabetes mellitus: the BLOOM-DM study. *Obesity (Silver Spring)*. 2012;20:1426-1436.
- Greenway FL, Fujioka K, Plodkowski RA, et al. Effect of naltrexone plus bupropion on weight loss in overweight and obese adults (COR-I): a multicentre, randomised, double-blind, placebo-controlled, phase 3 trial. *Lancet*. 2010;376:595-605.
- Apovian CM, Aronne L, Rubino D, et al. A randomized, phase 3 trial of naltrexone SR/bupropion SR on weight and obesity-related risk factors (COR-II). *Obesity (Silver Spring)*. 2013;21:935-943.
- Wadden TA, Foreyt JP, Foster GD, et al. Weight loss with naltrexone SR/bupropion SR combination therapy as an adjunct to behavior modification: the COR-BMOD trial. *Obesity (Silver Spring)*. 2011;19:110-120.
- Hollander P, Gupta AK, Plodkowski R, et al. Effects of naltrexone sustained-release/bupropion sustained-release combination therapy on body weight and glycemic parameters in overweight and obese patients with type 2 diabetes. *Diabetes Care*. 2013;36:4022-4029.
- Torgerson JS, Hauptman J, Boldrin MN, et al. XENical in the prevention of diabetes in obese subjects (XENDOS) study: a randomized study of orlistat as an adjunct to lifestyle changes for the prevention of type 2 diabetes in obese patients. *Diabetes Care*. 2004;27:155-161.
- Gadde KM, Allison DB, Ryan DH, et al. Effects of low-dose, controlled-release, phentermine plus topiramate combination on weight and associated comorbidities in overweight and obese adults (CONQUER): a randomised, placebo-controlled, phase 3 trial. *Lancet*. 2011;377:1341-1352.
- Garvey WT, Ryan DH, Look M, et al. Two-year sustained weight loss and metabolic benefits with controlled-release phentermine/topiramate in obese and overweight adults (SEQUEL): a randomized, placebo-controlled, phase 3 extension study. *Am J Clin Nutr*. 2012;95:297-308.
- Allison DB, Gadde KM, Garvey WT, et al. Controlled-release phentermine/topiramate in severely obese adults: a randomized controlled trial (EQUIP). *Obesity (Silver Spring)*. 2012;20:330-342.
- Saxenda [package insert]. Plainsboro, NJ: Novo Nordisk; 2015.
- Belviq [package insert]. Woodcliff Lake, NJ: Eisai Inc.; 2014.
- Contrave [package insert]. Deerfield, IL: Takeda Pharmaceuticals America, Inc.; 2014.
- Xenical [package insert]. South San Francisco, CA: Genentech, Inc.; 2015.
- Qsymia [package insert]. Mountain View, CA: Vivus, Inc.; 2014.
- Mason AE, Laraia B, Daubenmier J, et al. Putting the brakes on the "drive to eat": pilot effects of naltrexone and reward-based eating on food cravings among obese women. *Eat Behav*. 2015;19:53-56.
- Billes SK, Sinnayah P, Cowley MA. Naltrexone/bupropion for obesity: an investigational combination pharmacotherapy for weight loss. *Pharmacol Res*. 2014;84:1-11.
- Robert SA, Rohana AG, Shah SA, et al. Improvement in binge eating in non-diabetic obese individuals after 3 months of treatment with liraglutide - a pilot study. *Obes Res Clin Pract*. 2015;9:301-304.
- Guerdjikova AI, Fitch A, McElroy SL. Successful treatment of binge eating disorder with combination phentermine/topiramate extended release. *Prim Care Companion CNS Disord*. 2015;17. doi: 10.4088/PCC.1401708.
- van Can J, Sloth B, Jensen CB, et al. Effects of the once-daily GLP-1 analog liraglutide on gastric emptying, glycemic parameters, appetite and energy metabolism in obese, non-diabetic adults. *Int J Obes (Lond)*. 2014;38:784-793.
- Martin CK, Redman LM, Zhang J, et al. Lorcaserin, a 5-HT(2C) receptor agonist, reduces body weight by decreasing energy intake without influencing energy expenditure. *J Clin Endocrinol Metab*. 2011;96:837-845.
- Thomas D, Martin C, Redman L. Lorcaserin improves dietary adherence: new insights from an energy balance analysis. Paper presented at: Obesity Week 2015; November 4, 2015; Los Angeles, CA.
- Greenway F, Pilson R, Ma T, Kung T. The impact of weight loss therapy on control of eating: an exploratory analysis from a 12-week pilot safety study. Paper presented at: Obesity Week 2015; November 4, 2015; Los Angeles, CA. Abstract T-P-3153.
- Skolnik NS, Ryan DH. Pathophysiology, epidemiology, and assessment of obesity in adults. *J Fam Pract*. 2014;63(7 suppl):S3-S10.

34. James PA, Oparil S, Carter BL, et al. 2014 Evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). *JAMA*. 2014;311:507-520.
35. Inzucchi SE, Bergenstal RM, Buse JB, et al. Management of hyperglycemia in type 2 diabetes, 2015: a patient-centered approach: update to a position statement of the American Diabetes Association and the European Association for the Study of Diabetes. *Diabetes Care*. 2015;38:140-149.
36. Smith S, Garvey WT, Greenway F, et al. Multi-center, double-blind, randomized, parallel-group, 12-week pilot study to assess short-term safety and tolerability of lorcaserin plus two doses of immediate-release phentermine-HCl compared with lorcaserin alone in overweight and obese adults. Paper presented at: Obesity Week 2014; November 2-7, 2014; Boston, MA.
37. Cadegiani F, Macedo G. A quadruple anti-diabetic association may prevent significant results in patients unresponsive to diet and exercise. Paper presented at: Obesity Week 2015; November 5, 2015; Los Angeles, CA.
38. Buse JB, Rosenstock J, Sesti G, et al. Liraglutide once a day versus exenatide twice a day for type 2 diabetes: a 26-week randomised, parallel-group, multinational, open-label trial (LEAD-6). *Lancet*. 2009;374:39-47.
39. Garber A, Henry R, Ratner R, et al. Liraglutide versus glimepiride monotherapy for type 2 diabetes (LEAD-3 Mono): a randomised, 52-week, phase III, double-blind, parallel-treatment trial. *Lancet*. 2009;373:473-481.
40. Buse JB, Sesti G, Schmidt WE, et al. Switching to once-daily liraglutide from twice-daily exenatide further improves glycemic control in patients with type 2 diabetes using oral agents. *Diabetes Care*. 2010;33:1300-1303.
41. Victoza [package insert]. Princeton, NJ: Novo Nordisk Inc.; 2015.
42. McElroy SL, Guerdjikova AI, Kim DD, et al. Naltrexone/bupropion combination therapy in overweight or obese patients with major depressive disorder: results of a pilot study. *Prim Care Companion CNS Disord*. 2013;15(3). doi: 10.4088/PCC.12m01494.
43. Winslow DH, Bowden CH, DiDonato KP, et al. A randomized, double-blind, placebo-controlled study of an oral, extended-release formulation of phentermine/topiramate for the treatment of obstructive sleep apnea in obese adults. *Sleep*. 2012;35:1529-1539.
44. Zammit G, Aronne LJ, Foster G, et al. Improvements in sleep apnoea endpoints and quality of life are related to the degree of weight loss: results from the randomized, double-blind scale sleep apnoea trial. *Eur J Obesity*. 2015;8(suppl 1):31.
45. King AC, Cao D, O'Malley SS, et al. Effects of naltrexone on smoking cessation outcomes and weight gain in nicotine-dependent men and women. *J Clin Psychopharmacol*. 2012;32:630-636.
46. Toll BA, Leary V, Wu R, et al. A preliminary investigation of naltrexone augmentation of bupropion to stop smoking with less weight gain. *Addict Behav*. 2008;33:173-179.
47. Wilcox CS, Oskooilar N, Erickson JS, et al. An open-label study of naltrexone and bupropion combination therapy for smoking cessation in overweight and obese subjects. *Addict Behav*. 2010;35:229-234.
48. National Heart, Lung, and Blood Institute. *The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*. http://www.nhlbi.nih.gov/guidelines/obesity/prctgd_c.pdf. Published October 2000. Accessed May 27, 2016.
49. Apovian CM, Aronne LJ, Bessesen DH, et al. Pharmacological management of obesity: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2015;100:342-362.

Bariatric Surgery

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Bariatric surgery is an important treatment option in the control of obesity. Similar to cardiac bypass, bariatric surgery falls along a continuum of care that begins with intensive lifestyle intervention, progresses to medical therapy, and advances to surgical therapy, as needed, balanced by the risk-to-benefit ratio of each patient. The role of bariatric surgery in the management of patients with obesity is expanding owing to the amount of data that are accumulating; these data demonstrate significant short- and long-term health benefits, including control or remission of obesity-related complications, as well as acceptable long-term safety.

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DISCLOSURES

Dr. Braverman-Panza discloses that she is on the advisory board for Salix Pharmaceuticals, Inc. and the speakers' bureaus for Janssen Pharmaceuticals, Inc.; Novo Nordisk Inc.; and Takeda Pharmaceuticals. She is a board member at Living Resources Foundation and St Peter's Health Partners Medical Associates and owns stock in GlaxoSmithKline and Pfizer Inc. **Dr. Horn** discloses that she is on the advisory board and speakers' bureaus for Novo Nordisk Inc. and Takeda Pharmaceuticals.

Several surgical options are available, each with its benefits and limitations. The most common bariatric surgeries performed in the United States are Roux-en-Y gastric bypass (RYGB), sleeve gastrectomy (SG), and adjustable gastric banding (AGB). Primary care providers (PCPs) play a critical role both before and after surgery in the care of their patients who choose bariatric surgery.

WHICH PATIENTS ARE CANDIDATES FOR BARIATRIC SURGERY?

Patients who meet the following requirements may be considered as candidates for bariatric surgery¹:

- Patients with a body mass index (BMI) of 40 kg/m² or more without coexisting medical problems or excessive surgical risk
- Patients with a BMI of 35 kg/m² or more and one or more severe obesity-related comorbidities, such as type 2 diabetes mellitus, hypertension, hyperlipidemia, obstructive sleep apnea, or severe urinary incontinence, or patients with a considerably impaired quality of life

Select patients with a BMI of 30 to 34.9 kg/m² may be considered specifically for laparoscopic AGB (LAGB); these include patients with type 2 diabetes mellitus who do not achieve glycemic control with medical therapies, especially in the pres-

ence of other major comorbidities.^{1,2} Clinical studies demonstrating short-term efficacy of LAGB in patients with mild to moderate obesity led the US Food and Drug Administration to approve LAGB for patients with a BMI of 30 to 34.9 kg/m² and type 2 diabetes mellitus or other obesity-related comorbidity.

Patients for whom bariatric surgery is not appropriate and/or is contraindicated include anyone with a substance abuse issue; bulimia nervosa; poorly controlled psychiatric illness, such as major depression; a life-threatening illness; or an inability to comply with nutritional requirements after surgery.^{1,3}

WHAT ARE THE EXPECTED WEIGHT LOSS AND OTHER RESULTS AFTER BARIATRIC SURGERY?

Numerous short- and long-term benefits are observed after bariatric surgery, although complications may also occur. In the Longitudinal Assessment of Bariatric Surgery (LABS) Consortium, 3-year data from 2458 adults showed a mean weight loss of 32% of total body weight (TBW) from baseline (BMI 45.9 kg/m²) after RYGB, which occurred mostly during the first postsurgical year, and a mean weight loss of 16% of TBW after LAGB surgery.⁴ Among the patients managed with surgery, 68% of patients with preexisting diabetes who underwent RYGB and 29% of patients with preexisting diabetes who underwent LAGB experienced partial short-term remission; dyslipidemia resolved short-term in 61% of patients who underwent RYGB and 27% of patients who underwent LAGB; and hypertension resolved in 38% of patients who underwent RYGB and 17% of patients who underwent LAGB.

In the Swedish Obese Subjects (SOS) study (N=4047), long-term weight loss from baseline (BMI 40.1–42.4 kg/m²) to 15 years was 27% for RYGB, 13% for AGB, and less than 2% for conventionally treated controls.⁵ In the SOS subset of patients with diabetes, the short-term remission rate of 73% was similar to that in the LABS Consortium study. Long-term results of the SOS study showed that at 15 years the diabetes remission rate decreased to 30% in the combined surgical groups compared with 7% in the control group.⁶ The cumulative incidence of microvascular complications in these patients was 20.6 and 41.8 per 1000 person-years for bariatric surgery and control patients, respectively (hazard ratio 0.44; $P<.001$).⁶ Macrovascular complications were 31.7 and 44.2 per 1000 person-years, respectively (hazard ratio 0.68; $P=.001$).

Similar weight loss and improvement in comorbidities were observed in a meta-analysis of 11 studies involving a total of 796 patients.⁷ The meta-analysis also showed greater improvements in quality of life for patients managed with bariatric surgery than for patients who received nonsurgical treatment. Recent studies have also demonstrated improvement in depression and urinary incontinence after bariatric surgery.^{8,9}

Adolescents achieve similar improvements in weight and comorbidities as do adults, as well as an improved quality of life. Three years after undergoing RYGB or SG, adolescents achieved a mean weight loss of 27% (baseline BMI 53 kg/m²).¹⁰

Another benefit of bariatric surgery is reduced mortality. A retrospective analysis of 2500 patients who underwent bariatric surgery showed a 10-year all-cause mortality rate of 13.8% compared with 23.9% for control patients.¹¹ In the SOS study, the 16-year mortality was 101 deaths (5.0%) in the surgical group versus 129 deaths (6.3%) in the conventional treatment group.⁵

The weight loss results cited in this section are the percentage of *total* body weight lost rather than the percentage of *excess* body weight lost, as is often reported for bariatric surgery. The reporting of TBW allows for a clearer comparison of intensive lifestyle, medical, and surgical interventions.

WHAT ROLE CAN A PCP PLAY FOR A PATIENT WHO MAY BE A CANDIDATE FOR BARIATRIC SURGERY?

Bariatric surgery is not first-line therapy for patients with obesity. Thus, a key role for PCPs is to ensure that patients have been treated with supervised intensive lifestyle intervention and that, if appropriate, pharmacologic therapy has been attempted to help patients reach their health goals. Along this continuum of care, collaboration with the patient is essential and should include a discussion regarding the benefits, limitations, and risks of all treatment strategies, including bariatric surgery, to optimize an individualized treatment approach. Patients need to know that all treatment options are important to consider when managing obesity.

WHAT ROLE CAN A PCP PLAY FOR A PATIENT WHO HAS UNDERGONE BARIATRIC SURGERY?

After bariatric surgery, the PCP plays an important role in the long-term management of patients with obesity. One key aspect is to provide continuous support to help the patient achieve and maintain the greatest weight loss possible. The PCP can also assist the patient in adapting to the dietary restrictions imposed by the surgical procedure. For example, patients who undergo RYGB and then consume high-fat and high-sugar foods can experience dumping syndrome. At the same time, because of the risk of malabsorptive complications, especially with biliopancreatic diversion with duodenal switch and RYGB, patients must be educated about the importance of adequate intake of protein, vitamins, and minerals. The PCP is in a good position to monitor electrolytes and vitamins (including vitamins D and B₁₂, and folate) and watch for the development of iron deficiency anemia (ferritin and iron studies).

Close monitoring by the PCP is advised to identify the development of any complications that may arise after bariatric surgery, as discussed above. Another concern is the potential for cross-addiction, also called addiction transfer, which occurs in 5% to 30% of patients who undergo bariatric surgery. Addiction transfer takes place when a patient substitutes one addiction (food) with another addiction after their surgery.¹²⁻¹⁵ Postsurgical addictions include alcohol, smoking, illicit drug use, gambling, sex, and shopping. Disordered eating also may occur.¹³

Finally, because weight loss is likely to affect the management of comorbidities, doses of medications to treat disorders such as hypertension, type 2 diabetes mellitus, and dyslipidemia may need to be decreased or discontinued immediately after surgery or even months later. ●

REFERENCES

1. Mechanick JL, Youdim A, Jones DB, et al. Clinical practice guidelines for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric surgery patient-2013 update: cosponsored by american association of clinical endocrinologists, the obesity society, and american society for metabolic & bariatric surgery. *Endocr Pract.* 2013;19:337-372.
2. Dixon JB, Zimmet P, Alberti KG, et al. Bariatric surgery: an IDF statement for obese Type 2 diabetes. *Diabet Med.* 2011;28:628-642.
3. Youdim A. Merck Manual. Bariatric surgery. <http://www.merckmanuals.com/professional/nutritional-disorders/obesity-and-the-metabolic-syndrome/bariatric-surgery>. Revised February 2014. Accessed May 27, 2016.
4. Courcoulas AP, Christian NJ, Belle SH, et al. Weight change and health outcomes at 3 years after bariatric surgery among individuals with severe obesity. *JAMA.* 2013;310:2416-2425.
5. Sjostrom L, Narbro K, Sjostrom CD, et al. Effects of bariatric surgery on mortality in Swedish obese subjects. *N Engl J Med.* 2007;357:741-752.
6. Sjostrom L, Peltonen M, Jacobson P, et al. Association of bariatric surgery with long-term remission of type 2 diabetes and with microvascular and macrovascular complications. *JAMA.* 2014;311:2297-2304.
7. Gloy VL, Briel M, Bhatt DL, et al. Bariatric surgery versus non-surgical treatment for obesity: a systematic review and meta-analysis of randomised controlled trials. *BMJ.* 2013;347:f5934.
8. Dawes AJ, Maggard-Gibbons M, Maher AR, et al. Mental health conditions among patients seeking and undergoing bariatric surgery: a meta-analysis. *JAMA.* 2016;315:150-163.
9. Subak LL, King WC, Belle SH, et al. Urinary incontinence before and after bariatric surgery. *JAMA Intern Med.* 2015;175:1378-1387.
10. Inge TH, Courcoulas AP, Jenkins TM, et al. Weight loss and health status 3 years after bariatric surgery in adolescents. *N Engl J Med.* 2016;374:113-123.
11. Arterburn DE, Olsen MK, Smith VA, et al. Association between bariatric surgery and long-term survival. *JAMA.* 2015;313:62-70.
12. Steffen KJ, Engel SG, Wonderlich JA, et al. Alcohol and other addictive disorders following bariatric surgery: prevalence, risk factors and possible etiologies. *Eur Eat Disord Rev.* 2015;23:442-450.
13. Ross CC. Obesity Action Coalition. Weight-loss surgery and cross addiction: a look at binge eating disorder. <http://www.obesityaction.org/educational-resources/resource-articles-2/weight-loss-surgery/weight-loss-surgery-and-cross-addiction-a-look-at-binge-eating-disorder>. Published 2013. Accessed May 27, 2016.
14. Blum K, Bailey J, Gonzalez AM, et al. Neuro-genetics of reward deficiency syndrome (RDS) as the root cause of "addiction transfer": a new phenomenon common after bariatric surgery. *J Genet Syndr Gene Ther.* 2011;2012(1).
15. Reslan S, Saules KK, Greenwald MK, et al. Substance misuse following Roux-en-Y gastric bypass surgery. *Subst Use Misuse.* 2014;49(4):405-417.

Practice Redesign and Reimbursement

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DISCLOSURES

Dr. Braverman-Panza discloses that she is on the advisory board for Salix Pharmaceuticals, Inc. and the speakers' bureaus for Janssen Pharmaceuticals, Inc.; Novo Nordisk Inc.; and Takeda Pharmaceuticals. She is a board member at Living Resources Foundation and St Peter's Health Partners Medical Associates and owns stock in GlaxoSmithKline and Pfizer Inc. **Dr. Horn** discloses that she is on the advisory board and speakers' bureaus for Novo Nordisk Inc. and Takeda Pharmaceuticals. **Dr. Kuritzky** discloses that he is on the advisory boards for Allergan; Boehringer-Ingelheim GmbH; Eli Lilly and Company; Janssen Pharmaceuticals, Inc.; Novo Nordisk Inc.; and sanofi aventis U.S. LLC.

In addition to appropriate and effective communication (see *Communication and Patient Self-Management*, page S5), many other factors related to the practice setting may affect the successful treatment of patients with obesity. When delivered in a setting designed to address a patient's specific needs, care and satisfaction with treatment are improved. As is the case with many other chronic diseases, the involvement of other health care professionals and the office staff can support not only the patient but also the primary care provider (PCP). Individualizing treatment and promoting patient adherence are essential in managing patients with obesity.

Determining what treatment options the patient's insurance will cover and considering the patient's out-of-pocket costs are important actions to be taken while collaborating with the patient and other team members and during the development and implementation of the treatment plan. Reimbursement is available to PCPs for some obesity-related services.

HOW SHOULD I DESIGN MY PRACTICE SO AS TO PROVIDE OPTIMAL CARE TO PATIENTS WITH OBESITY?

The care of patients with obesity should be provided with the same respect, thoroughness, and privacy as is done for patients with any other chronic disease. The management of these patients typically involves multiple components—lifestyle, behavioral, pharmacologic, and surgical—and patients with obesity often have several comorbidities. This means that the primary care practice must be capable of meeting the diverse needs of this patient population. Care is often best provided at frequent intervals by a team of providers and office staff with varied skills working in close collaboration. Much of this care involves providing patient education to promote behavioral change and treatment adherence. All providers and staff who come in contact with the patient, whether in person or via telephone, e-mail, text, or online, must have a positive attitude, be friendly but professional, and use weight-related terminology that is acceptable to the patient (see *Communication and Patient Self-Management*, pages S5 and S6). It is suggested that magazines and other information available in patient areas be balanced and should not include publications that stigmatize individuals with obesity or glamorize being thin.

WHAT EQUIPMENT SHOULD I HAVE?

No special equipment is needed to care for patients with obesity, but all equipment, including chairs and examination tables, should be appropriate for patients weighing up to 600 pounds. In addition, appropriately sized equipment, such as scales and blood pressure cuffs, should be readily available within the office. Patients should not be asked their height and weight, as answers may be unreliable. Instead, patients should be asked for their permission to measure their height and weight. This should be done privately and the measurements should be recorded silently without judgment.

Because patients with obesity may have difficulty ambulating due to musculoskeletal disorders, ramps with hand rails or elevators should be available. Physical spaces, such as doorways and bathrooms, should be large enough to accommodate people with obesity.

HOW DO I GO ABOUT WORKING COLLABORATIVELY WITH OTHER HEALTH CARE PROFESSIONALS?

Collaborative team-based care for patients with obesity is much the same as for people with other chronic diseases. Team members must exhibit a positive attitude, exercise good communication skills, understand their role in patient management, and share the same patient-centered goals.

Although customary, it is not necessary for the PCP to head the team; but it is important that the team establishes and follows processes for quality control and improvement.

As with other chronic diseases, the paths for referral to other team members should be smooth and established. Easy referral to other team members is comforting to the patient and indicates that the other team members are “approved” by the PCP, share similar attitudes and capabilities, and are valued by the PCP. Similarly, the path and process for the team member to provide feedback to the PCP must be smooth and established. It is, of course, critical that the PCP be familiar with the feedback from other team members before meeting with the patient.

WHAT ROLE SHOULD MY OFFICE STAFF PLAY?

Appropriately trained office staff can play critical roles in the care of patients with obesity. Their responsibilities can range from taking vital signs and verifying current medications to arranging referrals and ensuring feedback is received from other team members. Office staff can also verify insurance coverage for each patient and communicate to the PCP what services are covered. In this way, the treatment plan can be developed based on coverage, unless the patient is willing to pay out of pocket for certain services. It is vitally important that office staff execute their responsibilities discretely and confidentially.

WHAT ARE SOME PITFALLS TO AVOID REGARDING INSURANCE COVERAGE AND REIMBURSEMENT, INCLUDING PRIOR AUTHORIZATION?

Medication coverage can vary widely among insurance companies, from plan to plan within an insurance company, and over time. It is important to establish the patient’s level of coverage at the initial visit and to discuss with the patient the current availability of care under their insurance versus other care options. Office visit and medication copay requirements are an important consideration, because the cost per day for the medications approved for long-term use in the treatment of obesity ranges from \$6.50 to \$35.

Determining coverage

It is important to identify the services that are covered by insurance within the primary care setting, as well as the specialist and surgical settings, and services that are not covered in any setting. As an example, under the Affordable Care Act, 5 states provide coverage for the medical treatment of obesity and 27 states provide coverage for bariatric surgery. The Centers for Medicare and Medicaid Services currently provide some coverage for the treatment of obesity in the primary care setting by the PCP.

Authorization requirements

Although Medicare and some insurance companies cover bariatric surgery, the patient's responsibility or deductible is often a financial barrier to care. The requirements for prior authorization for both surgery and medication vary among insurance plans and providers.

An important pitfall to avoid is a gap in treatment due to a declined reauthorization for antiobesity medication. A gap in treatment can be avoided by planning ahead with the patient for an appropriately timed evaluation of response to therapy, according to the medication's package insert. Prior authorization for bariatric surgery often requires several pre-surgical tests and evaluations. A bariatric surgeon's office staff can be of assistance with these requirements.

Correct coding

Correct coding for proper reimbursement is essential. The ICD-10-CM code for overweight and obesity is E66, with several subcategories available (<https://www.cms.gov/medicare-coverage-database/staticpages/icd10-code-range.aspx?DocType=LCD&DocID=33756&ver=5&Group=1&RangeStart=E66.01&RangeEnd=E66.9>):

- E66.01: morbid (severe) obesity due to excess calories
- E66.09: other obesity due to excess calories
- E66.1: drug-induced obesity
- E66.2: morbid (severe) obesity with alveolar hypoventilation
- E66.3: overweight
- E66.8: other obesity
- E66.9: obesity, unspecified
- BMI codes (Z68.30–Z68.39, Z68.41–Z68.45)

WHEN SHOULD A PATIENT BE CONSIDERED FOR REFERRAL TO AN OBESITY SPECIALIST?

For all patients with obesity, as well as overweight, the PCP plays a critical role by initiating a dialogue about obesity

and its health consequences using the 5As—Ask or Assess, Advise, Agree, Assist, Arrange.¹ If the office staff has adequate resources to follow through after the initial discussion with the patient, referral to an obesity specialist may not be necessary. If, however, the PCP is unable to provide the support and guidance needed, early referral to an obesity specialist should be considered for initiation and implementation of care.

Conditions for which patients with obesity might be referred to an obesity specialist should parallel the referral patterns for patients with other chronic diseases, such as diabetes. A referral may be initiated when the patient presents with difficult management issues or the PCP has insufficient resources or knowledge to provide optimal care.

Referral to an obesity specialist also may be appropriate after some initial care has been provided in the primary care setting if the disease continues to progress or escalates. As an example, a patient who continues to experience significant obesity-related complications or whose weight loss has plateaued despite optimized medical therapy may need to be referred to an obesity specialist (see *Bariatric Surgery*, page S23).

Specialists in obesity medicine and obesity surgery may be found through the following resources:

- American Board of Obesity Medicine (<https://abom.org>)
- American Society for Metabolic and Bariatric Surgery (<https://asmbs.org/patients/find-a-provider>)
- Obesity Medicine Association (<http://obesitymedicine.org/patients/>)
- The Obesity Society (<http://www.obesity.org/resources/clinician-directory>) ●

REFERENCE

1. Vallis M, Piccinini-Vallis H, Sharma AM, et al. Clinical review: modified 5 As: minimal intervention for obesity counseling in primary care. *Can Fam Physician*. 2013;59:27-31.

Summary

Obesity is a widely prevalent disease with major health and socioeconomic consequences. Because weight loss results in improved health outcomes and reduced health care costs, timely identification of patients with obesity allows earlier initiation of effective, comprehensive care. Identification of these patients is best accomplished through annual measurement of both body mass index and waist circumference, as this combination of measurements better estimates cardiovascular, metabolic, and other weight-related risks than either individual measurement. In patients who are overweight or obese and therefore at increased risk, asking for permission to discuss weight is recommended. Using acceptable weight-related terms, the patient's motivation for and previous attempts at weight loss should be assessed; several tools are available to assess a patient's readiness to change.

To achieve the overarching goal of weight management, which is to improve health, several key principles should be considered, with the intensity of treatment based on the patient's risk of weight-related complications. Effective weight management is ultimately the result of successfully modifying behaviors around diet and physical activity, and those behaviors are the patient's primary responsibility. The principal role of the primary care provider (PCP) is to coach, motivate, and support the patient in implementing the treatment plan and modifying it, as necessary. This process is often best done in collaboration with other members of the health care team, including dietitians, physical therapists, pharmacists, and nurses, as well as the office staff, in a setting that supports patient self-management. Resources for patient education on weight management are available from the National Heart, Lung, and Blood Institute and the US Centers for Disease Control and Prevention, as well as patient and professional organizations, such as Obesity Action Coali-

tion, Obesity Medicine Association, and The Obesity Society.

While lifestyle management is the cornerstone of treatment, lifestyle management alone may not result in long-term weight loss. In appropriate patients, the addition of medications and bariatric surgery to the treatment plan are increasingly recognized as safe and effective options for long-term weight loss. Five medications are now available for long-term weight loss in the United States. Each medication produces similar weight loss, generally 3% to 5% at 1 year at recommended maintenance doses. Thus, the selection of medication for long-term use is based on factors such as mechanism of action, contraindications, and adverse events, as well as patient factors such as hunger and eating patterns, presence of kidney or liver disease, pregnancy or nursing, comorbidities and their management, and personal preference.

Several surgical procedures are available for bariatric management, each with its benefits and limitations. The PCP plays a key role in identifying patients who may be candidates for surgery because of their weight, and in conducting a risk assessment. In addition, the PCP can ensure that patients have been treated with optimized lifestyle management and, if appropriate, pharmacologic therapy before surgery is considered. After surgery, the role of the PCP is to provide continuous support to help the patient achieve and maintain the greatest weight loss possible. The PCP also has the opportunity to monitor the patient's electrolyte, vitamin, and iron levels, manage the patient's comorbidities, and evaluate the patient for the possibility of addiction transfer to alcohol, smoking, illicit drugs, gambling, sex, or shopping.

With early identification of patients with obesity and comprehensive treatment with lifestyle modification and adjunctive pharmacologic and surgical treatment, as necessary, patients can effectively self-manage their weight to achieve weight loss and improved health outcomes. ●

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