AHA/ACC/TOS Treatment Algorithm

Chronic Disease Management Model for Primary Care of Patients with Overweight and Obesity

This algorithm applies to the assessment of overweight and obesity and subsequent decisions based on that assessment. Each step (designated by a box) in this process is reviewed in Section 2.2 and expanded on in subsequent sections.

†BMI cutpoint determined by the FDA and listed on the package inserts of FDA-approved obesity medications.

BOX 1: Patient Encounter for Obesity Prevention and Management
A patient encounter for prevention and management is defined as an interaction with a PCP who assesses a patient’s weight status to determine presence of overweight or obesity and need for further assessment and treatment.

BOX 2: Measure Weight and Height; Calculate BMI
With the patient wearing light clothing or an examination gown and no shoes, weight and height are measured and the BMI calculated. BMI can be calculated manually (weight in kg/height in meters$^2$) or electronically by using the EMR or other resources. The BMI should be documented in the patient medical record.

BOX 3: BMI 25-29.9 (overweight), BMI 30-34.9 (class I obese), BMI 35-39.9 (class II obese), or BMI ≥40 (class III obese [extreme obesity])
These BMI cutpoints define overweight and class I to III obese individuals and identify adults who may be at increased risk for CVD and other obesity-related conditions. Within these categories, additional personal risk assessment is needed because degree of risk can vary.

BOX 4: Assess and Treat Cardiovascular Risk Factors and Obesity-related Comorbidities
Assess risk of CVD and/or presence of obesity-related comorbidities. Risk assessment for CVD and diabetes in a person with overweight or class I to III obesity includes history, physical examination, and clinical and laboratory assessments, including BP, fasting blood glucose, and fasting lipid panel (expert opinion). A waist circumference measurement is recommended for individuals with BMI 25-34.9 kg/m$^2$ to provide additional information on risk. It is unnecessary to measure waist circumference in patients with BMI 35 kg/m$^2$ because the waist circumference will likely be elevated and will add no additional risk information. The Expert Panel recommends, by expert opinion, using the current cutpoints (>88 cm [>35 cm] for women and >102 cm [>40 cm] for men) as indicate of increased cardiometabolic risk.

Because obesity is associated with increased risk of hypertension, dyslipidemia, diabetes, and a host of other comorbidities, the clinician should assess for associated conditions. The Expert Panel recommends, by expert opinion, that intensive management of cardiovascular risk factors (hypertension, dyslipidemia, prediabetes, or diabetes) or other obesity-related medical conditions (e.g., sleep apnea) be instituted if they are found, regardless of weight loss efforts.

BOX 5: Assess Weight and Lifestyle Histories
The Expert Panel recommends, by expert opinion, that the clinician assess weight and lifestyle histories and determine other potential contributing factors. Ask questions about history of weight gain and loss over time, details of previous weight loss attempts, dietary habits, physical activity, family history of obesity, and other medical conditions or medications that may affect weight. Answers to these questions may provide useful information about the origins of or maintaining factors for overweight and obesity, including success and difficulties with previous weight loss or maintenance efforts. This information can help the clinician determine any adjustments to the patient’s medical regimen that can assist weight management efforts and provide appropriate advice on lifestyle change. The information may also impact recommendations for treatment.

BOX 6: Assess Need to Lose Weight
YES: BMI ≥30 or BMI 25-29.9 with additional risk factor(s):
Weight loss treatment is indicated for 1) obese individuals and 2) overweight individuals with ≥1 indicators of increased cardiovascular risk (e.g., diabetes, prediabetes, hypertension, dyslipidemia, elevated waist circumference) or other obesity-related comorbidities.

NO: BMI <25 or BMI 25-29.9 without additional risk.
Normal-weight patients (BMI 18.5-24.9 kg/m$^2$) should be advised to avoid weight gain (Box 7).

Patients who are overweight (BMI 25-29.9 kg/m²) who do not have indicators of increased cardiovascular risk (e.g., diabetes, prediabetes, hypertension, dyslipidemia, elevated waist circumference) or other obesity-related comorbidities should be advised to avoid additional weight gain (Box 7).

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**NO: BMI <25 or BMI 25-29.9 without additional risk.**

Normal-weight patients (BMI 18.5-24.9 kg/m²) should be advised to avoid weight gain (Box 7). Patients who are overweight (BMI 25-29.9 kg/m²) who do not have indicators of increased cardiovascular risk (e.g., diabetes, prediabetes, hypertension, dyslipidemia, elevated waist circumference) or other obesity-related comorbidities should be advised to avoid additional weight gain (Box 7).

**BOX 7: Advise to Avoid Weight Gain and Address Other Risk Factors**

A. **Normal weight:** Individuals who are normal weight (BMI 18.5-24.9 kg/m²) and do not have a history of overweight or obesity should be counseled on the desirability of avoiding weight gain to prevent the health risks of increased body weight.

B. **Overweight without additional risk factors or normal weight with a history of overweight or obesity:** For individuals who are overweight (BMI 25-29.9 kg/m²) and who do not have indicators of increased cardiovascular risk (e.g., diabetes, prediabetes, hypertension, dyslipidemia, elevated waist circumference) or other obesity-related comorbidities, and for individuals who have a history of overweight and are now normal weight with risk factors at acceptable levels, advise patients to frequently measure their own weight and to avoid weight gain by adjusting their food intake if they start to gain more than a few pounds. Also, advise patients that engaging in regular physical activity will help them avoid weight gain.

C. **Overweight or obese individuals who would benefit from weight loss but who are not currently prepared or able to lose weight:** For Periodically assess the patient’s interest in and readiness for weight loss as shown in Box 8, and counsel the patient on the desirability of avoiding additional weight gain to prevent greater health risk. Regardless of patient’s interest in or readiness for weight loss intervention, any cardiovascular risk factors and obesity-related health conditions should be evaluated and treated.

**BOX 8: Assess Readiness to Make Lifestyle Changes to Achieve Weight Loss and Identify Barriers to Success**

The Expert Panel advises (expert opinion) that the clinician and patient agree on whether weight loss is appropriate. The clinician, together with the patient, should assess whether the patient is prepared and ready to undertake the measures necessary to succeed at weight loss before beginning comprehensive counselling efforts. The clinician can ask “How prepared are you to make changes in your diet, to be more physically active, and to use behavior-change strategies such as recording your weight and food intake?” These are the components of a comprehensive lifestyle intervention. The decision to undertake weight loss efforts must be made in the context of competing priorities (e.g., smoking cessation may supersede a weight loss effort; life events may make the effort at weight reduction futile until a future time). If the patient is not prepared to undertake these changes, attempts to counsel the patient on how to make lifestyle changes are likely to be counterproductive.

**BOX 9: Determine Weight Loss and Health Goals and Intervention Strategies**

Clinician and patient devise weight loss and health goals and comprehensive lifestyle treatment strategies to achieve these goals.

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**Recommended goals for weight loss:** A realistic and meaningful weight loss goal is an important first step. Although sustained weight loss of as little as 3%-5% of body weight may lead to clinically meaningful reductions in some cardiovascular risk factors, larger weight losses produce greater benefits. The Expert Panel recommends as an initial goal the loss of 5%-10% of baseline weight within 6 months.

Recommended methods for weight loss: Weight loss requires creating an energy deficit through caloric restriction, physical activity, or both. An energy deficit of >500 kcal/d typically may be achieved with dietary intake of 1,200-1,500 kcal/d for women and 1,500-1,800 kcal/d for men. The choice of calorie-restricted diet can be individualized to the patient’s preferences and health status. Very-low calorie diets (<800 kcal/d) should be used only in limited circumstances in a medical care setting where medical supervision and a high-intensity lifestyle intervention can be provided. If a specialized diet for CVD risk reduction, diabetes, or other medical conditions is also prescribed, referral to a nutrition professional is recommended.

**Recommendations for management of medical conditions during weight loss:** While weight loss treatment is ongoing, manage risk factors such as hypertension, dyslipidemia, and other obesity-related conditions. This includes monitoring the patient’s requirements for medication change as weight loss progresses, particularly for antihypertensive medications and diabetes medications that can cause hypoglycemia.

**BOX 10: Weight Loss Options – Comprehensive Lifestyle Intervention Alone or With Adjunctive Therapies**

All patients for whom weight loss is recommended should be offered or referred for comprehensive lifestyle intervention (Box 11a and 11b). Comprehensive lifestyle intervention, preferably with a trained interventionist or a nutrition professional, is foundational to weight loss (Box 11a) regardless of augmentation by medications or bariatric surgery.

By expert opinion, if the weight and lifestyle history indicates that the patient has never participated in a comprehensive lifestyle intervention program as defined in Box 11a, it is recommended that he or she be encouraged to undertake such a program before the addition or adjunctive therapies since a substantial proportion of patients will lose sufficient weight to improve health with comprehensive lifestyle alone. This recommendation may be modified by the availability of comprehensive lifestyle intervention or by patient factors, such as medical conditions that warrant earlier initiation of more intensive treatment.

If the patient has been unable to lose weight or sustain weight loss with comprehensive lifestyle intervention and he or she has a BMI ≥30 kg/m² or BMI≥27 kg/m² with comorbidity, adjunctive therapies may be considered.

Patients who are otherwise appropriate candidates for obesity drug treatment or bariatric surgery, whose weight and lifestyle history indicate a history of inability to achieve or sustain weight loss and who have previously participated in a comprehensive lifestyle intervention, may be offered the option to add pharmacotherapy at the time of initiation of a lifestyle intervention program (BMI ≥30 kg/m² or BMI≥27 kg/m² with comorbidity) or to be referred for evaluation for bariatric surgery (BMI ≥40 kg/m² or BMI≥35 kg/m² with comorbidity) (expert opinion).

**BOX 11a: Offer or Refer for High-intensity Comprehensive Lifestyle Intervention**

The most effective behavioral weight loss treatment is an in-person, high-intensity (i.e., ≥14 sessions in 6 months) comprehensive weight loss intervention provided in individual or group sessions by a trained interventionist. The principal components of an effective high-intensity, on-site comprehensive lifestyle intervention include 1) prescription of a moderately reduced-calorie diet, 2) a program of increased physical activity, and 3) the use of behavioral strategies to facilitate adherence to diet and activity recommendations. Comprehensive lifestyle intervention consisting of diet, physical activity, and behavior therapy produces average weight losses of approximately 8 kg in a 6-

month period of frequent, in-person treatment. This approximates losses of 5%-10% of initial weight. The observed average weight loss of approximately 8 kg includes people who have variable weight loss (i.e., some more and some less than average), so accurate prediction of individual weight loss is not possible. After 6 months, most patients will equilibrate (caloric balancing energy expenditure) and will require adjustment of energy balance if they are to lose additional weight. Continued intervention contact after initial weight loss treatment is associated with better maintenance of lost weight (Box 15).

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**BOX 11b: Options for Alternative Modes of Delivery of Lifestyle Intervention**
In primary care offices where frequent, in-person individual or group sessions led by a trained interventionist or a nutrition professional are not possible or available for referral, the physician may consider alternative modes of delivery. Emerging evidence supports the efficacy, albeit with less weight loss, of electronically-delivered interventions (i.e., by internet or telephone) that provide personalized feedback by a trained interventionist and of some commercial programs that provide counselling (face-to-face or telephonic) with or without prepacked meals. The Expert Panel recommends, by expert opinion, that physicians refer to these alternative sources provided their outcomes are supported by scientific evidence of safety and efficacy. An additional option if a high-intensity comprehensive lifestyle intervention program is not available or feasible is referral to a nutrition professional for dietary counselling.

**BOX 12: Option for Adding Pharmacotherapy as an Adjunct to Comprehensive Lifestyle Intervention**
The Expert Panel did not review comprehensive evidence of pharmacotherapy for weight loss. On the basis of expert opinion, the panelists recommend that for individuals with BMI ≥30 kg/m² or BMI ≥27 kg/m² with ≥1 obesity-associated comorbid condition(s) who are motivated to lose weight, pharmacotherapy can be considered as an adjunct to comprehensive lifestyle intervention to help achieved targeted weight loss and health goals. Medications should be FDA approved, and clinicians should be knowledgeable about the product label. The provider should weigh the potential risks of the medication being considered against the potential benefits of successful weight loss for the individual patient. The rationale for use of medications is to help patients adhere to a lower-calorie diet more consistently to achieve sufficient weight loss and health improvements when combined with increased physical activity. The available medications work through effects on appetite or fat absorption. Medications work to reinforce lifestyle change and should be prescribed as an adjunct to lifestyle interventions as defined in Boxes 11a and 11b.

**BOX 13: Offer Referral to an Experienced Bariatric Surgeon for Consultation and Evaluation**
For adults with a BMI ≥40 kg/m² or BMI ≥35 kg/m² with obesity-related comorbid conditions who are

motivated to lose weight and who have not responded to behavioral treatment (with or without pharmacotherapy) with sufficient weigh loss to achieve targeted health outcome goals, advise that bariatric surgery may be an appropriate option to improve health and offer referral to an experienced bariatric surgeon for consultation and evaluation. Because bariatric surgery leads to improvements in both weight-related comorbid conditions, the benefit-to-risk ratio may be favorable in appropriately selected patients at high risk for obesity-related morbidity and mortality. In the absence of RTCs to identify the optimal duration and weight loss outcomes of non-surgical treatment before bariatric surgery is recommended, the decision to proceed to surgery should be based on multiple factors: patient motivation, treatment adherence, operative risk, and optimization of comorbid conditions, among others. Bariatric surgery should be considered an adjunct to lifestyle treatment: behavioral treatment, appropriate dietary modification, and physical activity.

**BOX 14: Weight Loss ≥5% of Initial Body Weight and Sufficient Improvement in Health Targets?**
Achieving the goals noted in Box 9 of approximately 5%-10% of initial weight with a comprehensive lifestyle intervention should be considered successful weight reduction that leads to decreased risk of development of or amelioration of obesity-related medical conditions and cardiovascular risk factors for many patients. Some patients will require additional weight loss to achieve targeted health outcomes goals.

If the patient achieves the weight loss and health outcome goals previously identified by clinician and patient, the clinician should consider the weight loss maintenance strategies described in Box 15 using the disease management model of obesity treatment. If these weigh loss or health outcome goals are not achieved with current treatment, the clinician can consider intensification of behavioral treatment (Box 16), and/or the addition or reevaluation of obesity pharmacotherapy (Box 12), or referral for evaluation for bariatric surgery (Box 13) in patients otherwise meeting BMI and comorbidity criteria.

**BOX 15: Weight Loss Maintenance**
Typically, obesity is a chronic condition that develops over an individual’s lifestyle. The prevalence of obesity has greatly increased over the past 30 years, most likely because of environmental changes that promote increased consumption of high-calorie palatable foods, decreased physical activity, and more sedentary behavior. In this environment, it is difficult to maintain a healthy weight and prevent weight gain. Long-term research has shown that continuing weight loss maintenance interventions produce better long-term results than limited-term intervention programs. Clinicians must acknowledge the lifelong challenge that patients experience with obesity, provide support and encouragement, be prepared to assist patients with addressing small weight gains before they become larger ones, and reinstitute weight management efforts as early as possible in the course of regain.

The usual pattern of weight loss in patients undergoing a lifestyle intervention is that maximum weight loss is achieved at 6 months, followed by a plateau and gradual regain over time. This is also true for medication-assisted weight loss, although weight regain may be slower with continued medication use. For bariatric surgery patients, it may take much longer for weight to plateau. The strategies for weight maintenance after successful loss differ from strategies for achieving weight loss. Flexibility and willingness to try different approaches are recommended. Patients should be advised that participation in a long-term (≥1 year) comprehensive weight loss maintenance program with monthly or more frequent contact, in person or by telephone, can improve successful weight maintenance. Strategies such as frequent self-weighing (at least weekly), consumption of a reduced-calorie diet, and high levels of physical activity (>200 min/week) are associated with better weight maintenance over time.

BOX 16: Unable to Lose Enough Weight with Current Treatment to Meet Weight or Targeted Health Goals
By expert opinion, if patients are unable to lose enough weight to meet weight or targeted health outcome goals with their current treatment, consider offering or referring for more intensive behavioral treatment than is currently being attempted, an alternative diet including options for meal replacement, referral to a nutrition professional, addition of obesity pharmacotherapy, or referral for evaluation for bariatric surgery if otherwise appropriate. The clinician should also assess the patient’s medication regimen for drugs that may contribute to weight gain and consider adjustments if medically appropriate. If the patient is currently taking an obesity medication but has not loss at least 5% of initial body weight after 12 weeks on a maximal dose of the medication, the provider should reassess the risk-to-benefit ratio of that medication for the patient and consider discontinuation of that drug.

BOX 17: Measure Weight and Calculate BMI Annually or More Frequently
Weight should be measured and BMI calculated and documented by the clinician at least annually in all patients. For those who have never been overweight or who are weight stable, a 1-year interval is appropriate for the reassessment of BMI. For overweight or obese individuals or those of normal weight with a history of overweight, more frequent monitoring may be appropriate. Although these follow-up intervals are not evidenced based, they are a reasonable compromise between the need to identify weight gain at an early stage and he need to limit the time, effort, and cost of repeated measurements.

BOX 18: Weight Loss ≥5% of Initial Body Weight and Sufficient Improvement in Health Targets?
Determine if the intensified treatment strategies instituted in Box 16 have led to both successful weight loss and sufficient risk factor/comorbidity reduction to achieve the health goals determined by patient and clinician.

BOX 19: Continued Intensive Medical Management of Cardiovascular Risk Factors and Obesity-Related Conditions and Periodic Assessment of Weight Management Options
Actively and intensively manage cardiovascular risk factor and obesity-related conditions, regardless of the patient’s ability to achieve or sustain weight loss. Periodically reassess and address medical or other contributory factor and the potential to institute or reinstitute additional weight management options as show in Box 16.