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## Primary Care Interventions for Obesity: Review of the Evidence

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### Abstract

**Purpose of review:** This review describes the results of randomized controlled trials that have evaluated the efficacy of behavioral interventions for obesity in primary care settings.

**Recent findings:** Most studies have found that high-intensity behavioral counseling (providing 12 or more sessions per year, as defined by the US Preventative Services Task Force), when delivered in-person, by phone, or electronically, produced clinically meaningful weight loss (4 to 7 kg). Low- to moderate-intensity behavioral counseling and counseling that did not include behavioral strategies (e.g., motivational interviewing) produced modest losses of 1 to 2 kg. The addition of weight loss medication increased mean losses relative to behavioral treatment alone.

**Summary:** Consistent with national guidelines, the largest weight losses were achieved with high-intensity counseling, either alone or in combination with obesity pharmacotherapy. Primary care providers can support their patients by inviting them to discuss their weight concerns and referring interested individuals to appropriate interventions.

### Keywords

obesity; weight management; primary care; lifestyle modification; interventions

### Introduction

The past decade has brought several important advances in the field of obesity medicine, including the American Medical Association's decision in 2013 to characterize obesity as a

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Conflict of Interest

Adam Gilden Tsai declares that he has no conflict of interest.

Human and Animal Rights and Informed Consent

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chronic disease (1). With this recognition, obesity became the most prevalent chronic disease in the United States, with 37.9% of adult men and 41.1% of women having a body mass index (BMI) of 30 kg/m<sup>2</sup> or higher (2). Obesity is associated with increased risk for other chronic diseases (e.g., type 2 diabetes), disability, and mortality (3). Thus, better control of obesity has the potential to dramatically reduce the burden of chronic illnesses treated by primary care physicians (PCPs) and other healthcare providers.

The field of obesity also has shown an increasing consensus regarding appropriate treatment goals and techniques, and steps have been taken to improve access to evidence-based interventions. In 2003, and again in 2012, the US Preventive Services Task Force (USPSTF) recommended that clinicians screen all adults for obesity and offer or refer patients with BMI of 30 kg/m<sup>2</sup> or higher to intensive, multicomponent behavioral interventions (4,5). The Task Force gave this recommendation a grade of B, indicating that there is high certainty that the net benefit is moderate, or that there is moderate certainty that the net benefit is moderate to substantial. In 2018, the USPSTF again reaffirmed this recommendation and rating (3). Importantly, the 2010 Patient Protection and Affordable Care Act mandated that any service receiving an “A” or a “B” grade recommendation from the USPSTF be covered without patient co-pays (6). Following this, in 2011, the Centers for Medicare and Medicaid Services (CMS) created a new benefit for the treatment of obesity, allowing for 21–22, 15-minute counseling visits in the primary setting over 1 year (7).

During this same period, several professional societies published updated obesity treatment guidelines. These include the 2013 American Heart Association (AHA)/American College of Cardiology (ACC)/The Obesity Society (TOS) (8) guidelines covering the behavioral and surgical treatment of obesity and The Endocrine Society’s 2015 guidelines on the use of medications to treat obesity (including four medications approved by the Food and Drug Administration [FDA] since 2012) (9).

Despite these developments, the diagnosis and treatment of obesity in primary care may be in decline. The results of a national survey found that, relative to 2008–2009, height and weight were more likely to be measured in primary care visits occurring between 2012–2013 (54% vs. 73% of visits, respectively) (10•). However, approximately 5% fewer patients with a BMI of 30 kg/m<sup>2</sup> or higher received a diagnosis of obesity. Only 21% of patients with obesity were provided with weight-related counseling in 2012–2013, compared with 33% in 2008–2009. With the majority of healthcare visits occurring in primary care (11), PCPs have a unique opportunity to facilitate access to effective obesity treatments. The persistence of suboptimal diagnosis and treatment of obesity is likely attributable to multiple patient and provider barriers, including a mismatch between the resources needed to implement the recommended intensive behavioral interventions and the current structure and capacity of primary care practices.

The present review first describes the potential benefit of primary care interventions for obesity, with a focus on intensive behavioral treatment delivered using different modalities (e.g., in-person visits, telephone calls, digital technology). We provide a narrative review that highlights seminal studies and representative research from the past five years in the context

of data from several recent systematic reviews. We then discuss recommendations for how PCPs can best support patients in their weight control efforts.

## Behavioral Treatment of Obesity

The USPSTF's 2018 review of 122 primary care-relevant randomized trials found that behavioral interventions produced mean weight losses that were 2.4 kg greater than control conditions at 12 to 18 months (12••). This analysis combined the results of programs comprised of varying intervention components, delivered using several different modalities, and with different visit frequencies. Recent obesity guidelines consistently recommend that patients with obesity be offered a high-intensity comprehensive behavioral treatment that includes a reduced calorie diet, increased physical activity, and behavioral strategies to facilitate adherence to diet and activity goals (3,8; Table 1). The results of previous systematic reviews suggest that interventions that contain these three components are superior to those that contain only one or two components and to those that employ alternative intervention strategies (13). Several systematic reviews also have concluded that intensity (i.e., frequency of visits), and not delivery modality, is most strongly associated with weight loss (8,13,14). The USPSTF's 2012 review of primary care-relevant studies found that patients who participated in intensive behavioral interventions that offered 12 to 26 in-person or telephone sessions in the first year achieved weight losses of 4 to 7 kg (6% of baseline weight), while those who participated in low- to moderate-intensity programs with fewer than 12 sessions per year achieved losses of 1.5 to 4 kg (2.8% of baseline weight) (14). We therefore focus our attention on describing studies that meet the 2012 USPSTF standard for high-intensity treatment (i.e., 12 or more sessions per year) before briefly summarizing alternative methods.

### High-Intensity Behavioral Treatment

**In-person interventions.**—Most studies have shown that high-intensity behavioral treatments delivered in primary settings produce clinically significant weight loss. Two large trials conducted as part of a collaborative funding effort by the National Heart, Lung, and Blood Institute (NHLBI) reported weight losses of 4 to 5 kg at 2 years among participants who received intensive behavioral counseling. Appel and colleagues (16) recruited participants with one or more cardiovascular disease risk factor from primary care offices affiliated with an academic medical center. Participants were randomized to usual care, telephone-delivered counseling, or in-person counseling (group and individual sessions). Treatment in both counseling groups was delivered weekly for the first 3 months and one to two times per month thereafter by trained coaches external to the primary practices. Both counseling groups also had access to a web-based program that contained learning modules and self-monitoring tools. Weight losses at 2 years were 0.8, 4.6, and 5.1 kg, respectively ( $p<0.001$  for both counseling groups versus usual care).

In the second 2-year trial, Wadden and colleagues (17) assigned individuals with at least two out of five criteria for the metabolic syndrome to: usual care; brief lifestyle counseling (25 monthly 10–15 minute visits over 2 years with a trained medical assistant from the primary care practice); or “enhanced” brief lifestyle counseling (the same 25 counseling visits,

combined with the patients' choice of either meal replacements, orlistat, or sibutramine). Weight losses at year 2 in the three groups were 1.7, 2.9, and 4.6 kg, respectively ( $p=0.22$  for usual care vs brief counseling;  $p=0.003$  for usual care vs enhanced counseling).

An additional study by Kumanyika et al. (18,19) compared a "basic" lifestyle intervention consisting of visits with a primary care clinician once every 4 months to a "basic plus" intervention that included the clinician visits plus monthly 10–15 minute individual sessions with a trained coach (typically a medical assistant) following a curriculum based on the Diabetes Prevention Program (DPP). Participants' weight losses were 0.6 kg in the basic group and 1.6 kg in the basic plus group at 1 year ( $p=0.15$ , 28% attrition), and 1.2 kg and 1.3 kg, respectively, at 2 years ( $p=0.87$ ; 39% attrition). The authors noted that 69% of basic plus participants attended less than half of the provided coaching sessions, and that each additional coaching visit was associated with a 0.4 kg greater mean weight loss. Although these latter studies meet the 2012 USPSTF's definition of high-intensity treatment (monthly or greater visits), the interventions would be considered to be of only moderate-intensity by other guidelines such as those of the AHA/ACC/TOS, which define high-intensity treatment as providing at least 14 sessions in 6 months (8).

Of note, none of these treatment programs followed the visit schedule now covered by the CMS benefit (weekly visits in month 1, every-other-week visits in month 2 to 6, and monthly visits through month 12 for patients who lose 3 kg at 6 months). A recent study employed primary care practitioners (a physician, nurse practitioners, and registered dietitians) to deliver a structured intensive behavioral treatment in 15-minute, individual sessions using the CMS schedule of 21 visits over 1 year (20). Participants were randomly assigned to receive behavioral counseling, either alone, combined with the medication liraglutide 3.0 mg, or combined with both liraglutide and a 12-week meal replacement diet ("multi-component"). Weight losses at 1 year in the three groups were 6.6, 12.2, and 13.3 kg, respectively ( $p=0.004$  for counseling alone vs counseling plus liraglutide;  $p=0.001$  counseling alone vs multi-component). This study demonstrated that intensive behavioral treatment delivered in brief sessions following the CMS visit schedule can produce a clinically meaningful weight loss; 44% of patients treated by intensive behavioral treatment alone lost at least 5% of baseline weight at 1 year. However, we note that the study did not include a usual care group, was not conducted in a primary care setting, and did not principally include older adults who are typically covered by CMS. Thus, these findings await replication in a larger effectiveness trial.

**Remotely-delivered, intensive coaching interventions.**—In addition to the study by Appel and colleagues discussed above, several trials have used remotely-delivered intensive interventions to reduce the burden on PCPs and their patients. In a third study funded by the NHLBI initiative, Bennett and colleagues (21) randomized patients to usual care or to a multimodal intervention that included individual counseling calls provided by trained coaches (monthly in year 1 and every other month in year 2), 12 optional group meetings, and electronic tools for self-monitoring. At 2 years, intervention participants had lost a significantly greater 1.5 kg compared to the 0.5 kg lost by usual care participants. In a subsequent study (22), Bennett and colleagues again assigned patients to usual care or to an intervention that provided 12 monthly calls (without optional in-person groups). The

electronic intervention was enhanced, and participants were provided with a smart scale and access to a digital application (app) integrated with their electronic health record that prescribed behavior change goals, provided tools for self-monitoring, and generated personalized feedback. Clinicians also were asked to counsel intervention participants during routine visits using the app data. Intervention participants lost 4.0 kg at 1 year, compared to 0.1 kg in the usual care group. Engagement rates were high, with participants completing 93% of weekly self-monitoring records, 89% of coaching calls, and 2.8 self weigh-ins per week.

In a study by Weinstock and colleagues (23), primary care patients with metabolic syndrome were randomly assigned to receive the DPP curriculum delivered by trained primary care staff (typically nurse practitioners) in either individual or group telephone calls. The first five calls were delivered weekly, and monthly calls were then provided for the remainder of the study. At year 2, mean weight loss with group calls was 6.2 kg, compared with 2.2 kg in the individual call group ( $p<0.001$ ). (Only 52.5% of participants, however, completed the 2-year assessment, which may limit the generalizability of the findings.) Weight loss in the two groups did not differ at 6 months (4.5 vs 4.3 kg) or 1 year (4.9 vs. 4.6 kg).

In a study by Ma et al. (24), primary care patients who had either pre-diabetes or metabolic syndrome were randomly assigned to: usual care; a 12 session, dietitian-delivered, weekly, in-person, group version of the DPP; or to the DPP curriculum, delivered via a self-directed DVD. Participants in both intervention groups were provided orientation and access to an online site for goal setting and self-monitoring, standardized every-other-week reminder messages, and the ability to contact a coach via the web portal. Participants in the in-person group also received at least monthly personalized feedback based on their monitoring records. At year 2, weight losses in the usual care, in-person, and self-directed groups were 2.4, 5.4, and 4.5 kg, respectively ( $p=0.001$  for in-person vs control;  $p=0.03$  for self-directed vs control) (24,25).

Remotely-delivered intensive counseling also may enhance weight loss maintenance. In a trial by Tsai and colleagues (26), 106 individuals recruited from primary care offices were provided with 12 in-person visits during the first 6 months of treatment. Of these, 84 persons completed the first 6 months and were randomized to a standard maintenance group (written materials via email or mail) or an intensive maintenance group, involving one in-person and one individualized phone or e-mail contact per month. All participants were given access to a subsidized program of portion-controlled foods (Nutrisystem®) throughout the trial. Those in the intensive group lost 6.1 kg at month 18, compared to 2.2 kg in the standard maintenance arm ( $p<0.001$ ).

**Entirely digital interventions.**—More recently, researchers have begun to investigate whether fully digitalized structured behavioral interventions, which require no or minimal provider-delivered coaching, can produce similar results to those achieved with in-person and telephone contacts. Comprehensive programs delivered via the web, text message, or smartphone app have been shown to produce losses of 2 to 5 kg in academic medical centers, with the largest losses typically achieved by programs that include individualized, electronic feedback from a counselor (27,28). Thomas, Leahey, and Wing (29•) investigated

the efficacy of an online program that provided 12 weekly interactive lessons, self-monitoring tools, and fully automated weekly feedback (generated based on self-monitoring data via an algorithm) to participants who were referred to the program by their PCP. At 6 months, intervention participants had lost 5.4 kg, compared to a 1.3 kg loss for control participants who received static online lessons about the benefits of weight loss (that did not include behavioral strategies;  $p < .001$ ). The results of comprehensive digital programs are promising; however, it is important to note that most commercially available websites and apps include only a small fraction of the behavioral strategies featured in intensive lifestyle interventions (30), and most do not provide personalized feedback. A PCP's referral and assistance with downloading a popular commercial weight loss app, MyFitnessPal, produced a mean loss of only 0.03 kg in primary care patients (compared with +0.3 kg for controls) (31). This finding highlights the need to integrate such apps with comprehensive behavioral programs.

**Summary.**—Taken together, the majority of the studies described above found that high-intensity counseling, using different modalities, produced clinically meaningful weight loss. Some studies described above would be considered to be of moderate-intensity by other guidelines (i.e., 1 session per month (8)), and these interventions produced smaller mean losses (17,18). Only a limited number of trials have been able to deliver high-intensity weight loss counseling to patients recruited from primary care settings, and, in many cases, counseling was not delivered by primary care practitioners. This contrasts sharply with the CMS benefit for intensive counseling in primary care, which only provides coverage for on-site, face-to-face visits delivered by a physician, nurse practitioner, clinical nurse specialist, or physician assistant, or for auxiliary personnel (e.g., dietitians) who are under direct supervision of the other providers (7). The small number of trials that have employed primary care practitioners to deliver high-intensity treatment is likely a consequence of the logistical and financial barriers to delivering such treatment in the physical setting of the primary care office (e.g., limited space for frequent counseling visits) and the already pressed demands and high workload of a primary care medical practice. Several studies have used multimodal interventions that combined interventionist contact with electronic resources, meal replacements, or medication. Such interventions might be used to reduce provider burden. Advances in computer programming have enabled the development of remotely-delivered interventions that include fully-automated, personalized feedback. More studies are needed to determine whether comprehensive behavioral programs can be effectively delivered in this format.

### **Low- to Moderate-Intensity Counseling and Alternative Treatments**

A number of studies have offered low- to moderate-intensity behavioral counseling (i.e., 1 session/month). Although this format reduces provider burden, low- to moderate-intensity counseling, whether delivered by PCPs themselves or by other providers, produces only modest weight loss (approximately 1–2 kg greater than standard care). For example, Christian and colleagues conducted two randomized trials in primary care using PCPs to deliver counseling (32,33). Both studies employed low-intensity counseling, with visits conducted quarterly in one trial and twice per year in the second trial. In both trials, the intervention group also completed a computer-based assessment that produced personalized

recommendations for participants to discuss with their PCPs. The low-intensity intervention groups had small mean weight losses after 1 year (−0.1 kg intervention vs +0.6 kg control in the first study,  $p=0.23$ ; and −1.5 kg intervention vs +0.2 kg control in the second study;  $p=0.002$ ).

Alternative counseling methods, defined as interventions that used primarily motivational interviewing (MI) (34) or stages of change (35) without including specific behavioral targets for calorie intake or physical activity, also have been shown to produce only modest weight losses of 0.5 to 2 kg (13,36). In a systematic review of 24 randomized trials of MI in primary care, only nine studies (37.5%) revealed significantly improved weight loss with a MI-based intervention compared to a control group (36). The provision of low- or moderate-intensity counseling in a majority of these studies may have contributed to the modest mean weight losses that were observed (13,36).

Thus, for the majority of patients, lower intensity and alternative interventions are not likely to produce a clinically meaningful improvement in weight and health (although the likelihood of harm from such interventions is probably minimal). PCPs should counsel their patients that such interventions are unlikely to produce significant weight loss and recommend that they seek a structured behavioral intervention with frequent support.

## Medical and Surgical Options for PCPs to Consider

### Adding Medication to Behavioral Treatment

The AHA/ACC/TOS guidelines recommend the consideration of obesity medications for patients who have not achieved a loss of 5% or more of initial weight with behavioral treatment (8). In 2015, the Endocrine Society, together with TOS, published guidelines on medications to treat obesity that should be useful to interested PCPs (9). Five medications are currently approved by the FDA for chronic weight management. These medications vary in their efficacy, with phentermine-topiramate producing the largest placebo-subtracted mean weight losses at 1 year (8.8 kg), followed by liraglutide (5.3 kg), and naltrexone-bupropion (5.0 kg) (37). Lorcaserin and orlistat are associated with smaller 1-year net weight losses of 3.2 and 2.6 kg, respectively (37).

Multiple trials have demonstrated that when medication is added to high-intensity counseling, it nearly doubles the weight loss achieved with medication alone (38–41). This consistent finding again highlights the benefit of high-intensity behavioral treatment for obesity. PCPs should explain to patients that weight management medications are likely to be most beneficial when used as a tool to facilitate adherence to behavior change goals undertaken with the support of a structured program.

### Surgical Treatment of Obesity

Bariatric surgery is by far the most effective treatment for obesity, producing long-term (i.e., 3–15 year) losses of 20–25% of initial body weight (42,43). Weight loss surgery is much safer now than when it was first developed, in part due to the use of laparoscopic procedures (44). PCPs should consider referring patients for evaluation for bariatric surgery if desired weight loss outcomes or improvements in health have not been achieved by high-intensity

behavioral treatment, alone or in combination with medication. All patients referred for bariatric surgery undergo a multidisciplinary medical and behavioral evaluation before they are approved for a procedure. Thus, the PCP does not have the burden of making a determination of a patient's appropriateness for surgery before providing such a referral.

## Key Messages for PCPs Concerning Obesity

The studies reviewed above have highlighted the consistent evidence supporting the efficacy of high-intensity behavioral treatments for improving weight and health in primary care patients. This evidence served as the foundation for the USPSTF and relevant professional societies' recommendations that PCPs assess patients' weight status and offer those with obesity intensive counseling or a referral for this treatment. However, as noted above, providing an intensive behavioral intervention may not be realistic in most primary care practices. Frequently cited barriers include lack of time, insufficient reimbursement, lack of training, lack of referral resources, and ongoing belief that obesity is not a medical issue (45). In light of these concerns, we offer below several key messages that PCPs can share with their patients, building on those discussed by Rutledge and colleagues (46).

Often, a PCP's first challenge is to broach the topic of weight control with patients who have not asked for assistance. A PCP's acknowledgement of a patient's obesity may increase an individual's desire to lose weight and likelihood of attempting weight loss (47,48). However, patients may be upset by practitioners' comments about their weight if the topic is not introduced in a neutral manner (49). Practitioners can use open-ended questions to invite patients to discuss their concerns, for example: "We have not talked about your weight in a while. What are your thoughts about your weight at this time?" Another option is to summarize physical examination results to include a discussion of weight. A PCP might state, "Your weight today was 225 pounds, and your HbA1c was 5.9%, which puts you at risk for developing diabetes. I bet you could reduce your blood sugar by losing just 10 – 15 pounds. Would you like to consider this?" These approaches show respect for the patient and invite the individual's participation in treatment decision-making. It is also important to use preferred language (i.e. "weight", rather than "obesity") when discussing these issues with patients (50,51).

When discussing weight control, we believe the first message to emphasize is the value of patients' engaging in high-intensity behavioral treatment. As described above, low- to moderate-intensity interventions do not benefit most patients. Thus, patients who state that they have already met with a dietitian for a one-time consultation likely still can benefit from more intensive support. PCPs who work in settings where high-intensity treatment is not offered can refer patients to weight control programs in the community. The 2013 AHA/ACC/TOS guidelines indicate that commercial programs can be considered as an option for high-intensity treatment, as long as the programs have published peer-reviewed evidence of their safety and efficacy (8). Weight Watchers, Jenny Craig, Nutrisystem, Medifast, Optifast, and Health Management Resources are among the structured commercial and meal replacement programs supported by a recent review (52,53). Self-directed meal plans such as Atkins and Slim-fast also have published evidence supporting their safety and efficacy (52,53). PCPs also may consider referring patients to low-cost programs, such as



Take Off Pounds Sensibly (TOPS) (54). This program has not been evaluated in a published randomized trial, but the authors believe that it is a reasonable option for providing high-intensity behavioral treatment when participation in other programs is not feasible. For individuals who report significant psychological symptoms such as depression or binge eating, additional referrals to specialty treatment (e.g., cognitive behavioral therapy) or self-help resources (e.g., [55]) also may be appropriate.

PCPs also can support their patients by underscoring the benefits of moderate weight loss. Several studies have shown that patients tend to have unrealistic weight loss goals of losing 25% or more of their initial weight (56,57). Some PCPs may unwittingly endorse these expectations by suggesting that patients must achieve a BMI less than 25 kg/m<sup>2</sup> to improve their health. For most patients with obesity, this goal is unrealistic, relative to the average losses achieved with behavioral, pharmacologic, and surgical treatments. A 5–10% loss of initial body weight can produce significant improvement in co-morbid health conditions, including hypertension, diabetes, obstructive sleep apnea, and osteoarthritis of weight-bearing joints (8,58). After achieving this initial goal, they can evaluate whether further weight loss is necessary to produce desired improvements in co-morbid conditions, reduce medication use, or improve functional status. Of note, in elderly patients with sarcopenic obesity, increases in physical activity appear to be as effective as weight loss for improving functional status (59).

A third message that PCPs can deliver is the challenge of maintaining lost weight. Most patients, even in high-intensity programs, will hit a “plateau” after losing 5–10% of initial body weight. After an initial weight reduction, metabolic adaptations occur (60,61), along with potential physiological and psychological effects such as increases in appetite (62). Thus, ongoing weight control efforts are necessary for the maintenance of lost weight. Patients who experience no noticeable weight loss benefit despite ongoing attempts to restrict calorie intake and engage in physical activity may abandon their efforts, thereby regaining weight. The PCP can help patients to understand the compensatory biological and psychological response that engenders weight regain and can emphasize the value of changes in diet and physical activity for long-term weight loss success.

A fourth way in which PCPs can support their patients is to discuss the risks and benefits of medications and bariatric surgery for weight loss. Patients may hold stereotypical views of these biological treatments as highly unsafe or as taking “the easy way out.” In the context of discussing the challenge of weight loss maintenance, PCPs can explain that medications and surgery can support long-term weight loss by reducing hunger and responsiveness to food cues (63,64). It should be noted that weight loss medications also are most effective if used chronically to maintain lost weight, much like anti-hypertensive medications are prescribed to maintain improvements in blood pressure. PCPs can help their patients understand the chronic nature of obesity and make it feel more acceptable to use these biological therapies.

## Conclusions

Recent advances in the field of obesity have included clarifying the status of obesity as a chronic disease and increasing consensus from national and professional guidelines regarding the potential benefit of intensive behavioral interventions. The studies reviewed above show that such treatment delivered in-person or by phone in primary care can produce clinically meaningful weight loss. However, this treatment format can be difficult to implement in a primary setting due to the time and resources required. If unable to provide intensive behavioral counseling, PCPs should discuss weight control with their patients and refer interested individuals to appropriate interventions available in their health care institution or in the greater community. The key goal is for patients to engage in a high-intensity treatment, regardless of the delivery modality used, provided that the intervention offers personalized counseling and feedback from a trained interventionist (8). The development of comprehensive digital interventions that provide fully-automated individualized feedback may improve the dissemination of these effective interventions in the future.

PCPs also can serve a critical role by praising the patient's weight control efforts, even when the patient reports frustration with not having achieved a larger weight loss goal, and re-focusing the conversation on health status rather than the number on the scale. Above all, clinicians can help to support their patients by inviting them to discuss their weight concerns in the context of treating the medical co-morbidities of excess weight. PCPs will have the most success with managing obesity in their practices by employing a combination of sensitivity, behavioral techniques, and scientific knowledge when counseling their patients.

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**Table 1.**

Recommended components of a high-intensity comprehensive behavioral intervention to achieve and maintain a 5 to 10% reduction in body weight.

Component	Weight Loss	Weight-loss Maintenance
Counseling	14* in-person or telephone counseling sessions (individual or group) with a trained interventionist during a 6-mo period; recommendations for similarly structured, comprehensive Web-based interventions, as well as evidence-based commercial programs	Monthly or more frequent in-person or telephone sessions for 1 yr with a trained interventionist
Diet	Low-calorie diet (typically 1200–1500 kcal per day for women and 1500–1800 kcal per day for men), with macronutrient composition based on patient's preferences and health status	Reduced-calorie diet, consistent with reduced body weight, with macronutrient composition based on patient's preferences and health status
Physical activity	150 min per week of aerobic activity (e.g., brisk walking)	200–300 min per week of aerobic activity (e.g., brisk walking)
Behavior therapy	Daily monitoring of food intake and physical activity, facilitated by paper diaries or smartphone applications; weekly monitoring of weight; structured curriculum of behavioral change (e.g., DPP), including goal setting, problem solving, and stimulus control; regular feed-back and support from a trained interventionist	Occasional or frequent monitoring of food intake and physical activity, as needed; weekly-to-daily monitoring of weight; curriculum of behavioral change, including problem solving, cognitive restructuring, and relapse prevention; regular feedback from a trained interventionist

Data are from the AHA/ACC/TOS Guidelines (2013) for the Management of Overweight and Obesity in Adults (8).

\*The 2012 US Preventive Services Task Force defined high-intensity behavioral treatment as including 12 or more sessions per year. DPP = Diabetes Prevention Program.

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