

Treatment of Childhood and Adolescent Obesity: An Integrative Review of Recent Recommendations From Five Expert Groups

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Objective: To compare and contrast 5 sets of expert recommendations about the treatment of childhood and adolescent obesity. **Method:** We reviewed 5 sets of recent expert recommendations: 2007 health care organizations' four stage model, 2007 Canadian clinical practice guidelines, 2008 Endocrine Society recommendations, 2009 seven step model, and 2010 U.S. Preventive Task Force recommendations. We described an empirically based sequential model by which expert recommendations may affect weight loss outcomes and then examined the recommendations pertaining to 4 treatments (self-help groups, outpatient cognitive behavior therapy [CBT], immersion CBT, and surgery). **Results:** All of the expert committees supported using intensive dietary, physical activity, and cognitive-behavioral counseling; 2 of the 5 groups discouraged reliance on educational interventions alone; and 2 of the groups advised referring clients to increasingly intensive interventions, a stepped-care approach. **Conclusions:** Expert recommendations that include clear, simple, goal-oriented directions may impact the behaviors of health care providers most effectively and, in turn, help decrease childhood and adolescent obesity. Greatest benefits may accrue by encouraging health care providers and parents to view medical management and education as foundations to change but to pursue increasingly intensive viable options until overweight and obese children make clinically significant progress toward improved health and happiness.

Keywords: child and adolescent obesity, treatment recommendations, preventative interventions, behavioral medicine, health psychology

Obesity has become a global epidemic (World Health Organization [WHO], 1998), with some countries on all six populated continents in the world having at least doubled their rates of obesity in the past three decades (Wang & Beydoun, 2007). Among children in the United States, prevalence rates have tripled over this time period, resulting in a 16% obesity rate among America's children and adolescents; an additional 18% are overweight (Wang & Beydoun, 2007). Epstein (1993) found that these overweight and obese young people are far more likely to become obese adults than their lean peers are. Baker, Olsen, and Sorensen (2007) also found this group is also more likely than thinner peers to develop Type II diabetes, cardiovascular problems, many forms of cancer, and other major health problems. In addition, over-

weight adolescents suffer from remarkably unfavorable stereotypes that can decrease quality of life and increase probability of depression, suicide, academic difficulties, vocational limitations, and social challenges (Barton, Walker, Lambert, Gately, & Hill, 2004; Faith, Saelens, Wilfley, & Allison, 2001; Holt, Bewick, & Gately, 2005). Wang, Beydoun, Liang, Caballero, and Kumanyika's (2008) epidemiological projections indicate that not only will obese adolescents suffer these adverse consequences but all citizens will literally pay dearly due to this health crisis. Wang et al. asserted that 86.3% of American adults will be overweight or obese in less than 20 years. If this prediction holds, total health care costs associated with the obesity epidemic in America would double in each of the next two decades, culminating in 2030 by accounting for 20% of all U.S. health care costs.

Fortunately, treatment can improve weight, health, physical fitness, moods, and psychosocial functioning (Wilfley et al., 2007). However, which types of treatments produce these favorable results most efficiently and effectively remains unclear. Prior reviews consistently showed the promise of certain interventions, particularly intensive cognitive behavior therapy (CBT), contrasting sharply with the disappointing impact of educational approaches (e.g., Goldfield, Raynor, & Epstein, 2002; Haddock, Shadish, Klesges, & Stein, 1994; Kelly & Kirschenbaum, 2011; Latzer et al., 2009; Oude et al., 2009; Wilfley et al., 2007). Some recent expert recommendations definitely reflect these conclusions, whereas others diverge from them. We examine the details of five sets of the most recent and national- and international-level expert recommendations published at the time this article was

This article was published Online First November 5, 2012.

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We are employed, in part, by Wellspring, a company that provides immersion and self-help treatments for overweight young people and adults.

We gratefully acknowledge the very helpful comments and suggestions made by William Bettmann, Daniel Caraher, Kristen Hayes, Kristina Pecora, and Judith Wood.

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written, with a particular focus on the quality of their empirical underpinnings and practical utility. Before that, however, we consider the mechanisms by which expert guidelines may affect childhood and adolescent obesity.

Recommendations From Expert Groups: Can They Promote Change?

Parents and other groups probably pay far more attention to the recommendations of their health care providers than to conclusions drawn in scholarly reviews. Brownell (1993) reported that a survey of 20,000 subscribers to *Consumer Reports* indicated that only 5% of successful adult weight controllers reported using any type of professional support. Studies of the pathways people follow to obtain help for depression, anxiety, and other psychological disorders also show that a clear majority of people seek help not from mental health specialists but instead from their primary care providers (SoRelle, 2000).

These trends suggest that a systematic analysis of recent expert recommendations may reveal current trends in the treatment of childhood and adolescent obesity. After all, if expert recommendations actually impact the advice offered by health care providers, then such recommendations may importantly affect the way health care providers manage obese children medically, attempt to educate them and their parents, and make referrals to specialists. This evaluation of expert guidelines, therefore, seems potentially more useful at this juncture than providing yet another microanalysis of the efficacy of various treatments.

Before we consider the specifics of recent sets of recommendations, the mechanisms by which expert recommendations might affect health care providers are worth exploring. This includes an analysis of the degree to which health care providers' advice affects their patients' behaviors and, ultimately, the weight status of overweight and obese young people.

The flow chart in Figure 1 proposes a temporal sequence depicting how expert recommendations could reduce childhood overweight and obesity. The flow chart indicates that expert recommendations could influence the behaviors of health care providers, including common steps taken with families of obese children (assessment and medical management, education, and referral; McKnight & Herrin, 2009). Providers also make referrals to specialists who offer the four interventions shown in Figure 1.

The dashed arrow from the health care provider box to client behaviors in Figure 1 indicates that most of the evidence suggests that educational interventions per se often fail to produce lasting changes in client behaviors and weight (Stice, Shaw, & Marti, 2006; Wake et al., 2009). For example, Stice et al. (2006) provided the first comprehensive meta-analytic review of the effects of educational interventions designed to decrease body mass indices (BMIs). Many of the 64 programs examined were described as preventive, but most included overweight children and all targeted improvements in BMI. Although most of these programs lasted 6 months or longer, only 21% produced statistically reliable reductions in BMI. The reviewers described the average effect size ($r = .04$) as so small that it "would be considered trivial by most researchers and clinicians" (p. 681). Only three programs—5% of those evaluated—produced significant effects that persisted over time. In a more recent example and the largest randomized-controlled trial ever conducted of this type, Wake et al. (2009) obtained results that coincided with the conclusions from Stice et al.'s meta-analysis. Wake et al. found that family-based educational and behavioral consultations provided by primary care physicians did not improve overweight status of mildly obese 5- to 10-year-olds compared with controls when assessed at 6- or 12-month follow-ups.

Although education alone may prove useful as a foundation for other interventions, clearly, by itself, such advice and information does not often lead to meaningful changes in lifestyles and resultant weight changes. However, as we discuss in more detail below, advice and referrals by health care providers can definitely increase parents' seeking of assistance from specialists (e.g., Dilley et al., 2007; O'Brien, Holubkov, & Reis, 2004).

The specialists depicted in Figure 1 primarily intervene using the four approaches illustrated in the flow chart: self-help groups (e.g., Weight Watchers, Wellspring Journey), outpatient CBT, immersion CBT (i.e., 24/7 treatment at therapeutic weight loss camps or boarding schools), and bariatric surgery. The flow chart shows that these interventions could affect client behaviors (families and targeted children) and biology, which then could decrease obesity in children and teenagers.

Some empirical evidence supports the proposed model. For example, Dunlop, Leroy, Trowbridge, and Kibbe (2007) found that simply providing the 1998 U.S. government health services groups expert recommendations (Barlow & Dietz, 1998) to a group of 38 health care providers had minimal effects on their use of BMI

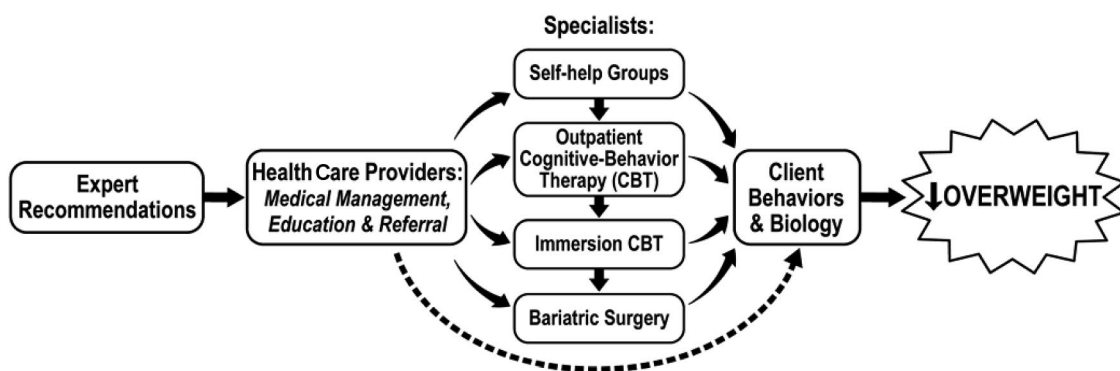


Figure 1. A sequential temporal model of the process by which expert recommendations may lead to improvements in weight status among overweight and obese children and adolescents.

screening and dietary counseling based on a chart review over 3 months. However, the researchers added a training session focused on setting more specific goals with parents of obese children. After receiving the means to help their patients set specific goals, the same health care providers dramatically and significantly increased their documentation of BMIs and provision of dietary advice. Hinchman, Beno, Dennison, and Trowbridge (2005) similarly found that two brief training sessions focused on setting specific goals for change substantially increased frequency of formal diagnoses of BMI status and provision of dietary education by health care providers relative to baseline.

These findings coincide with many other studies on clinician–patient communications (Garrity, 1981). Simple, clear, and specific messages generally increase understanding, recall, and utilization of recommendations. To the extent that expert guidelines describe simple, clear, and specific (measurable, easily remembered) goals that health care providers could recommend, it seems reasonable to expect the providers to use those recommendations more often. In their meta-analysis of provider behaviors and outcomes, Hall, Roter, and Katz (1988) found that providers that ask lots of general questions do not often see improvements in adherence to various suggestions, but those that ask about adherence relative to specific goals do see more positive changes in their patients. Hundreds of studies on goal setting in many other domains support this finding, as well (Locke & Latham, 1990).

Fortunately, when health care providers make referrals, many of their patients take action. For example, O'Brien et al. (2004) found that when pediatricians actually diagnosed obesity in obese children, compared with obese children not formally diagnosed as such, parents took 10 times more of the diagnosed obese children to dietary counselors. Dilley et al. (2007) observed that 3 times more obese children who were diagnosed as such were evaluated for potential comorbidities compared with obese children without formal diagnoses of obesity.

Kreuter, Cheda, and Bull (2000) demonstrated a potentially key mechanism by which advice and referrals impact behaviors of patients. They found that advice by health care providers seems to create a priming effect. Their study involved four family medicine clinics and data on 915 patients. Forty-four percent of these patients had received advice from their physicians in the prior 6 months to make certain lifestyle changes (focused on smoking, exercise, and/or consumption of fat). All of these patients then received educational materials focused on those lifestyle changes. Those people who had received specific recommendations from their physicians about the lifestyle changes prior to receipt of educational materials recalled the information in those materials better and took action more often than did patients who did not receive prior advice. In a study from a different but related domain, Leventhal, Singer, and Jones (1965) found that showing a scary film about tetanus did not promote changes in behavior (getting tetanus shots) by itself. Students became activated (got more inoculations) only if they also received explicit directions about where and when to get the shots. In other words, providing clear directions for change can prime motivated people to make significant changes in behavior.

Conclusions

Although more definitive evidence would prove useful, the extant literature supports the utility of the sequential model pro-

posed in Figure 1. Expert recommendations can impact the behaviors of health care providers. According to the evidence reviewed, especially helpful recommendations will establish clear, specific, and simple goals for health care providers (e.g., to always assess and report BMIs to families, to make appropriate referrals if education fails to achieve goals after 3 months). In turn, referrals to specialists can impact client behaviors and biology, potentially improving weight status, health, and happiness.

Four Recommended Treatments by Specialists

Before we analyze the five sets of expert recommendations, it seems advisable to describe the interventions recommended by expert groups. We discuss the four interventions depicted in Figure 1—self-help groups, outpatient CBT, immersion CBT, and bariatric surgery—as well as present the rationale for excluding pharmacotherapy from this list.

Self-Help Groups

Overweight children, teens, and adults face substantial and chronic resistance from their own bodies (e.g., differential transportation of fat, hormonal challenges, excess fat cells; Kirschenbaum, 2011; Perri, Nezu, & Viegner, 1992), as well as from current obesogenic culture (Brownell & Horgen, 2004), when trying to lose weight. Overcoming these internal and external barriers seems to require a state of chronic vigilance, sometimes described as a healthy obsession (Byrne & Kirschenbaum, 2011; Gierut, Pecora, & Kirschenbaum, 2012; Kirschenbaum, 2000, 2011). Successful weight controllers report valuing ongoing support to help them succeed; many studies show beneficial effects from sustained contact, including participation in self-help support groups (Latner, 2007; Perri et al., 1992). These findings support the value of what has been called a “continuing care model” for the treatment of the chronic disease of obesity (Latner, 2007; Perri et al., 1992).

The desirability of continuing care contrasts sharply with the availability of professionals to provide such care. Consider the possibilities of providing professional treatment for all 25 million overweight or obese children and teens in the United States. Only about one million guidance counselors, professional counselors, social workers, and psychologists currently work in the United States. The numbers simply do not work: Even if all of the professional counselors in the United States devoted themselves only to treating obesity in children and adults (over 100 million potential clients), they could not keep up with the demand. Even if the numbers could work, consider the cost for such services on such a massive scale. Those numbers do not work either.

Self-help groups can dramatically alter the ratio of potential demand to supply of at least decent quality, scientifically based, and low-cost treatment (Latner, 2007). Research on Weight Watchers, Take Off Pounds Sensibly (TOPS), and Trevoze show significant benefits for those who stay involved in these self-help groups. For example, in the Trevoze program in Philadelphia, participants who remained in treatment for 5 years averaged 15.7 kgs (approximately 34.6 lbs) of weight loss (17.3% of initial weight), and even those who discontinued treatment maintained moderate weight losses after 5 years (−4.7% of initial weight or 4.5 kgs [approximately 9.9 lbs]; Latner et al., 2000). In a randomized trial of the most widely used approach to self-help groups,

Heshka et al. (2003) found that, on average, participants in Weight Watchers lost 3.2% of their initial weight, which was substantially better than those who received self-guided parallel information (0% sustained weight reduction, on average).

Teenagers, but not children, can participate in various self-help groups, but their opportunities remain much more limited than those of adults. A recent initiative, Wellspring Journey (<http://www.wellspringjourney.com>), has started to change that by offering separate groups in schools and communities for teens only, as well as groups for adults only. At present, adolescents can accompany their parents to some widely available programs (similar to Weight Watchers) and, in a few cases, can attend such programs on their own.

Outpatient CBT

Wilfley et al.'s (2007) meta-analysis documented average decreases in percentage overweight at follow-up of 8.9% for outpatient CBT programs. These interventions, on average, produced statistically and clinically significant long-term effects, coinciding with conclusions of other reviewers that outpatient CBT often produces positive effects (Haddock et al., 1994; Spear et al., 2007; Stice et al., 2006). However, several studies of outpatient CBT programs have documented little or no change over time, despite high quality CBT interventions (Germann, Kirschenbaum, Rich, & O'Koon, 2006; Goldfield et al., 2002; Haddock et al., 1994).

Factors that contribute to the variability in outcomes in outpatient CBT approaches include practical challenges. Stice et al. (2006) found that shorter educational programs actually produced better effects than longer ones, perhaps suggesting that practical problems associated with long outpatient programs, such as transportation and other commitments, may decrease their potential impact. In addition, relatively modest weight losses and inconsistencies in weight change from week to week in outpatient treatment may frustrate participants and their parents.

Kaplan and Atkins (1987) documented that when participants do not see significant weight losses consistently, they discontinue treatment altogether far more often than when they see consistent changes. Baum, Clark, and Sandler (1991) found that discontinuing treatment generally translates to failure to lose weight. This apparently occurs more often than suggested in many reviews. In a recent article, Skelton, Goff, Ip, and Beech (2011) reviewed rates of attrition in multidisciplinary outpatient clinics. These authors reported an average attrition rate of 54% across five large-scale clinics, including their own. These evaluations defined *attrition* somewhat liberally; for example, Skelton et al.'s clinic provided a 1-year program but defined attrition as dropping out of treatment before the end of the first 4-month phase of treatment.

High attrition alone can account for substantial variability in outcomes in outpatient clinics, particularly with the very high rates of attrition reported by Skelton et al. (2011) as normative. Approaches that produce more dramatic, consistent weight changes and decrease attrition (see the following section on immersion CBT programs) would have a much better chance of demonstrating improved outcomes in the long run (Barton et al., 2004; Baum et al., 1991; Gately et al., 2005; Jelalian et al., 2008; Madlensky et al., 2008; Walker, Gately, Bewick, & Hill, 2003).

Some clinicians and researchers have made important adaptations of the usual outpatient CBT approach to help ameliorate problems associated with high attrition. Golan and Crow (2004)

have demonstrated quite good short- and long-term results using only parents as the agents of change (vs. a child-only comparison condition). This approach decreases some of the logistical barriers that undoubtedly contribute to high attrition rates. In addition, some studies indicate that alternative methods of delivery of CBT, such as Internet and telephone interventions, may produce at least modest improvements in diet, activity, and weight (Celio, 2005; Eakin, Reeves, Winkler, Lawler, & Owen, 2010; Wing, Tate, Gorin, Raynor, & Fava, 2006).

Immersion CBT

Immersion treatment places overweight young people in a therapeutic and educational environment for extended periods of time, thereby removing them from obesogenic environments. In contrast to outpatient treatment, immersion treatments—that is, those involving at least 10 consecutive days and nights of participation—are more easily accessed by people from diverse locations. Immersion also minimizes the attrition problem that clearly limits the potential impact of outpatient treatment (Kirschenbaum, Kelly, & Germann, 2009).

Children routinely attend a wide variety of recreationally oriented summer camps that are located hundreds or even thousands of miles from their homes. Certainly overweight children from many locations could attend therapeutic camps devoted to dietary, activity, and behavioral counseling for improved weight control and fitness. A recent survey showed that currently in the United States, brief immersion treatments cost about the same as high-end camps (Kirschenbaum, 2010). Such costs make them less accessible to lower income families. However, the German government has provided these types of services at no charge to thousands of children per year (Kelly & Kirschenbaum, 2011); if these programs establish a clearly favorable cost/benefit ratio relative to alternative approaches, perhaps insurance companies and public subsidies will determine that the long-term reduction in health care costs and improvements in quality of living justify the expense.

Immersion treatments have also produced promising results. Kelly and Kirschenbaum (2011) provided the first comprehensive review of this research, involving 22 outcome studies. Figure 2 illustrates their primary findings. They concluded that

Compared with results highlighted in a recent meta-analysis of outpatient treatments [Wilfley et al., 2007], these immersion programmes produced an average of 191% greater reductions in per cent-overweight at post-treatment and 130% greater reduction at follow-up. Furthermore, mean attrition rates were much lower when compared with standard out-patient treatment. Inclusion of a cognitive-behavioural therapy (CBT) component seemed especially promising; follow-up evaluations showed decreased per cent-overweight at follow-up by an average of 30% for CBT immersion programs vs. 9% for programs without CBT. (p. 37)

Some limitations of these studies of immersion treatments warrant mention and discussion. Although 10 of 22 studies included follow-ups, only six used control or comparison groups. Only one of those used random assignment to conditions (Braet & Van Winckel, 2000). Also, only one of the 22 studies used intent-to-treat analyses, the current and clearly more conservative statistical approach. One type of intent-to-treat analysis, for example, requires inserting baseline data for dropouts instead of simply analyzing data only from participants who provided follow-up information and implicitly assuming that the dropouts did not regain

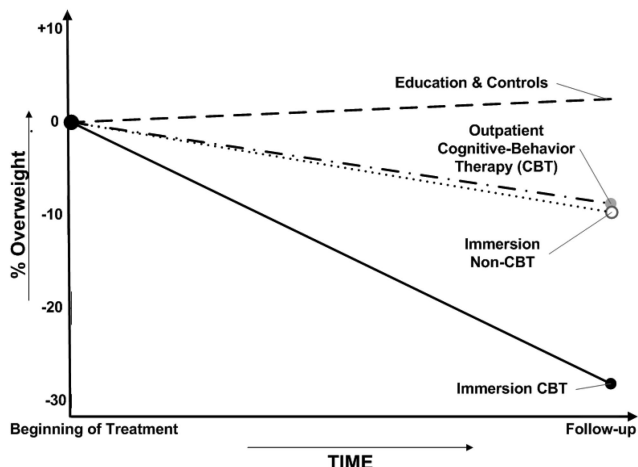


Figure 2. Average changes in percentage overweight at follow-up of educational, outpatient, immersion, and immersion with CBT interventions. Reprinted from “Immersion Treatment of Childhood and Adolescent Obesity: The First Review of a Promising Intervention,” by K. P. Kelly and D. S. Kirschenbaum, 2011, *Obesity Reviews*, 12, p. 45. Copyright 2010 by the International Association for the Study of Obesity.

weight. Therefore, although the magnitude and duration of weight changes for CBT immersion seem promising, without more rigorous randomized trials, the results can only be viewed as promising at this point, not definitive.

Kirschenbaum (2010) proposed the immersion-to-lifestyle change model as an explanation for the seemingly promising results obtained in CBT immersion treatments. As shown in Figure 3, this model suggests that rapid weight loss combined with CBT may help weight controllers attribute their successes to their own efforts. This, in turn, could increase self-efficacy, reinforce enhanced self-regulatory skills, and maximize commitment. The culmination of these effects, in combination with social support, might enhance healthy obsessions, the consistent preoccupation with planning and executing target behaviors to reach a healthy goal (Kirschenbaum, 2011). Both direct and indirect evidence support the vital role of healthy obsessions in successful weight control (Byrne & Kirschenbaum, 2011; Gierut et al., 2012; Kirschenbaum, 2011).

Bariatric Surgery

Bariatric surgery holds some promise, but this extreme intervention may have substantial side effects and is only available for limited numbers of extremely overweight young people. For example, Lawson et al. (2006) estimated that no more than 1 million adolescents between the ages of 13 and 21 years in the United States have a sufficiently high BMI (35 or greater) to justify consideration for bariatric surgery. That is less than 5% of the currently obese and overweight teenagers and young adults in the United States. Furthermore, findings from Collins, Warren, Neve, McCoy, and Stokes (2007) and Buchwald and Williams (2004) found that efficacy and safety concerns of bariatric treatments for youth still require additional research. For example, Flum et al. (2005) found mortality rates for postsurgery adults remain high, with a recent estimate of 2.8% mortality at 90 days and 4.6% at 1 year. Outcomes may be better for children, however. Pratt et al.

(2009) recently concluded, “data indicate that patient safety and weight loss outcomes for adolescents who undergo weight loss surgery are comparable to, or better than, those seen in adults” (p. 902). In view of the irreversible nature of many of these surgeries, other treatments that prove effective deserve close scrutiny.

Rationale for Excluding Pharmacotherapy

In their comprehensive review of the literature for the Endocrine Society, August et al. (2008) summarized the limitations of pharmacotherapy for the treatment of childhood and adolescent obesity quite effectively:

These [limitations] include: 1. The lack of [Food and Drug Administration; FDA] approval for use in preadolescents and younger [children]; 2. reduced efficacy over time . . . 3. a limited number of well-controlled studies; and 4. the need to weigh the relative risk of severe adverse events . . . against long-term potential. (p. 4586)

Only two medications were available for the treatment of obesity for adolescents at the time August et al. (2008) completed their meta-analysis: sibutramine (trade name Meridia) and orlistat. Evidence for the clinical efficacy of Orlistat in adolescents is minimal; even the logic behind its usage seems questionable. Orlistat decreases absorption of about 30% of the fat consumed during digestion (via inhibition of intestinal lipase). This often results in substantial and aversive gastrointestinal side effects. No scientific evidence indicates that adolescents would sustain their use of orlistat enough to produce clinically meaningful improvements in obesity. CBT programs routinely focus effectively on reducing consumption of fat to this degree or more without such side effects.

Research with adolescents did show some additive benefits for sibutramine (Meridia) relative to CBT alone (e.g., Berkowitz, Wadden, Tereshakovec, & Conquist, 2003). However, Abbott Laboratories complied with the request of the FDA on October 8, 2010, and withdrew the medication from the market. According to John Jenkins, director of the FDA’s Office of New Drugs at that time, “Meridia’s continuing availability is not justified when you compare the very modest weight loss that people achieve on this drug to their risk of heart attack or stroke” (Stein, 2010, para. 2).

Five Sets of Recommendations From Expert Groups

We consider all five sets of published recommendations in light of the present conclusions about the efficacy of the four key

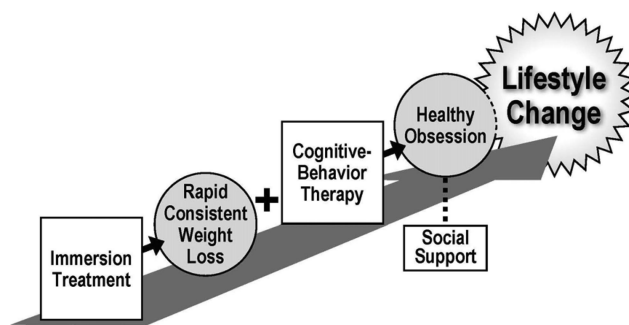


Figure 3. Reprinted from “Weight-Loss Camps and the Immersion-to-Lifestyle Change Model,” by D. S. Kirschenbaum, 2010, *Childhood Obesity*, 6, p. 322. Copyright 2010 by Mary Ann Liebert, Inc.

interventions. It will become apparent that some of these expert groups were selected to represent thousands of constituents in professional organizations, whereas others were invited by editors or otherwise selected in a less representative way. Nonetheless, the publication of their work in peer-reviewed journals gives all of them some potential to influence recommendations made by health care workers. As we discuss each set of recommendations, we also consider the extent to which they provided

simple, clear, and specific goals for action by health care providers, as suggested in the earlier review of the foundation for the sequential model presented in Figure 1. We also examine the degree to which the various expert groups provided specific educational directives and explicitly encouraged referrals to the four primary interventions illustrated in the sequential model. We provide versions of Figure 1 based on the content of each of the five sets of recommendations (summarized in Figures 4) to

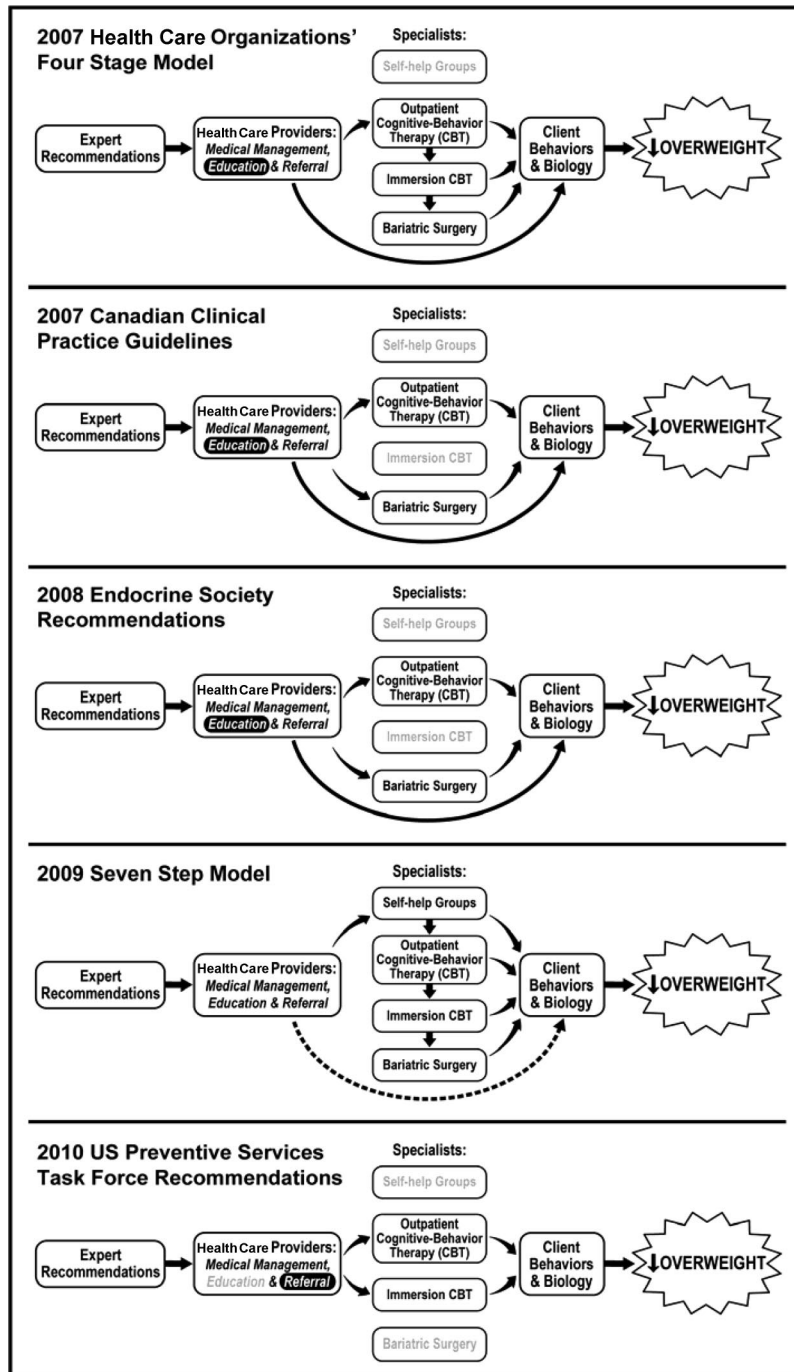


Figure 4. All five of the sequential temporal models based on five sets of expert recommendations.

illustrate their varying emphases on the elements and processes depicted in Figure 1.

2007 Health Care Organizations' Four Stages Model

In 2005, the American Medical Association, the Health Resources and Service Administration, and the Centers for Disease Control and Prevention asked representatives from 15 national health care organizations to form an expert committee and propose recommendations about the treatment of childhood and adolescent obesity. In December 2007, the new expert committee published recommendations focused on a four-staged approach to treatment (Spear et al., 2007):

1. Prevention plus
2. Structured weight management
3. Comprehensive multidisciplinary intervention
4. Tertiary care intervention.

Stage 1, prevention plus, has pediatricians or allied health care professionals provide 3–6 months of educational sessions to families with overweight or obese children. In these sessions, parents are presented with four daily eating and activity goals for their overweight or obese children: Eat more fruits and vegetables, minimize sugary drinks, limit screen time to 2 hr or less, and get 1 hr or more of physical activity. In this stage, parents are advised to allow their children to regulate their own meals and to aim for weight maintenance.

If Stage 1 does not maintain BMIs, then health care providers are to go to Stage 2, structured weight management. In Stage 2, primary care providers are to monitor more closely similar target behaviors and goals, facilitate more explicit planning by parents, and target minimal to modest weight losses for another 6 months.

In Stage 3, comprehensive multidisciplinary intervention, the frequency of sessions increases, specialists become more involved, and the intensity of behavior change strategies increase. Finally, if warranted by lack of progress in Stages 1–3, parents and health care providers are encouraged to pursue Stage 4, tertiary care intervention." This stage involves more intensive and specialized interventions, including potentially more restrictive diets, more intensive and structured activities, medications, therapeutic camps or boarding schools (immersion treatments), and bariatric surgery. Figure 4, top panel, shows the progression recommended through the stages by including downward arrows from Outpatient CBT through Bariatric Surgery.

Education. Figure 4, top panel, emphasizes education by highlighting the term *education* and also by showing a solid arrow from the Health care Providers box to Client Behaviors & Biology. This figure also shows connections in a linear way from Health Care Providers Education to Outpatient CBT to Immersion CBT to Bariatric Surgery, in accord with the advice to continue taking steps of increasing intensity to treat obesity effectively.

The four-stage model clearly emphasizes education and recommends that health care providers suggest specific changes in diet and activity through a series of meetings that could last up to a year. However, the prescribed changes do not share the simple, clear, measurable, and stringent qualities of goals that maximize

behavior change (Locke & Latham, 1990). Regarding eating, obese young people in the recommendations' Stage 1 are advised to eat 5 or more servings of fruits and vegetables and minimize or eliminate sugary drinks. In Stage 2, the recommendations encourage balancing macronutrients, "emphasizing small amounts of energy-dense foods" and increasing the "structure of daily meals and snacks" (Spear et al., 2007, p. S271). These goals are both unclear and difficult to measure. According to current definitions of energy density in foods (Rolls, Drewnowski, & Ledikwe, 2005), all of the following are high in caloric density: pretzels, most cereals, regular fat cheese, and fried foods. Are two pieces of pizza and a small cheeseburger "small amounts" versus a cup of fat-free pretzels or low-fat granola? Are small amounts the same for a 150-lb obese 12-year-old girl and a 350-lb morbidly obese 16-year-old boy?

The ideal goal would allow health care providers to suggest something clear and simple to overweight young people and their families. A very low-fat goal satisfies those criteria (e.g., aim for 0 fat grams, accept 20 or fewer grams of fat; Kirschenbaum, 2011). As noted in the present set of recommendations, however, very low-fat diets show potential for promoting weight loss, but definitive experiments have not yet isolated this dietary strategy from other interventions.

In a related vein, an ideal goal for increasing activity would also use clear, simple, and easily remembered criteria, as suggested in the discussion of the mechanisms by which recommendations might best impact weight loss. This goal would afford immediate feedback and promote energy expenditure in a way that most overweight people would find acceptable. Targeting 10,000 steps per day, recorded on a pedometer, may satisfy those criteria (Kirschenbaum, 2011; Richardson et al., 2008).

Self-help groups. Self-help groups are not mentioned in the four stages model.

Outpatient CBT. The four stages model recommends outpatient CBT clearly and specifically as a primary treatment in Stage 3, after educational efforts fail to produce substantial improvements.

Immersion CBT. Immersion CBT is recommended as an option but is mentioned only in a large table rather than being discussed.

Bariatric surgery. Bariatric surgery is described in detail as an option for Stage 4, when other approaches failed for some substantially overweight adolescents.

2007 Canadian Clinical Practice Guidelines: Steering Committee and Expert Panel

In 1999, Obesity Canada, a not-for-profit organization, convened a panel of experts to create clinical practice guidelines for Canadian health care workers. The steering committee and expert panel began reviewing the research literature on this in 2004 and published their guidelines in 2007 (Lau et al., 2007).

Education. This committee recommended educational approaches in schools for the promotion of healthy lifestyles. They encouraged the improvement of education of clinicians to strengthen their knowledge and skills pertaining to the treatment of obesity.

Dietary recommendations included a nutritionally balanced diet (designed to reduce energy intake) combined with other supportive interventions to achieve a healthy body weight in overweight or

obese people of all ages. They suggested a high-protein or a low-fat diet (within acceptable macronutrient distribution ranges) as a reasonable short-term (6–12 months) treatment option. They also mentioned that meal replacements may be considered as a component of an energy-reduced diet.

Physical activity recommendations included long-term, regular physical activity. They proposed that physical activity should be sustainable and tailored to the individual. The committee recommended that the total duration be increased gradually to maximize the weight loss benefits. They suggested 30 min a day of moderate intensity, increasing to appropriate to 60 min a day, as part of a weight-loss program. For children and adolescents, they recommended that a primary care physician encourage the child to reduce the amount of sedentary activity and screen time (watching TV, video games). In addition, they recommended fun and recreational activities, tailored to the relative strengths of the individual child and family. The committee focused on short-term benefits with children, rather than long-term benefits.

These educational directives would be rather complicated to follow, in part because they require substantial knowledge by families to implement. For example, relatively few parents understand the notion of macronutrient balance or the best way to implement a low-fat diet. Their directive regarding activity was more specific (60 min a day) and easily remembered.

Figure 4, second panel from top, illustrates the emphasis place on education by the Canadian group by shading the term *education* in the Health Care Provider box and showing a solid arrow from that box to Client Behaviors & Biology. Figure 4 (second from the top panel) shows a de-emphasis on Self-Help Groups and Immersion CBT, reflecting the lack of discussion of these options, as detailed in the following section.

Self-help groups. Self-help groups are not mentioned by this committee.

Outpatient CBT. This task force recommended comprehensive lifestyle interventions combining CBT, activity enhancement, and dietary counseling in a family-based intervention. They did not specify duration or intensity levels for this.

Immersion CBT. Immersion CBT is not mentioned by this committee.

Bariatric surgery. In adolescents, they recommended restricting the use of bariatric surgery to extreme cases and, even in those cases, using only experienced teams to perform the surgeries. They mentioned that this should be considered only if other weight-loss attempts have failed and that postsurgery lifelong monitoring is necessary.

2008 Clinical Guidelines Subcommittee of the Endocrine Society

The Clinical Guidelines Subcommittee of the Endocrine Society (American) appointed an expert task force to provide clinical guidelines for the treatment of pediatric obesity (August et al., 2008). They used the grading of recommendations assessment, development and evaluation (GRADE) method to rate the strength of their recommendations and the quality of the evidence that supports it (GRADE Working Group, 2004). They then summarized their findings in five categories and 1.5 pages of their 23-page extensive report.

Education. This group suggested that providing parents with better education on healthy rearing patterns related to diet and exercise was critical for the prevention and treatment of childhood obesity. These recommended rearing patterns included parental modeling of healthy habits, avoiding overly strict dieting (which was not defined), setting limits of acceptable behaviors, and not using food for rewards or punishments. The task force also encouraged physicians to educate children and parents on healthy dietary and physical activity habits. The dietary guidelines focused on minimizing consumption of most fast food and sugary drinks; controlling caloric intake via portion control; eating timely regular meals and avoiding grazing; and, increasing intake of fiber, fruits, and vegetables. They also indicated support for school systems to provide adequate health education courses promoting healthy eating habits.

Their physical activity recommendations included 60 min of daily moderate to vigorous exercise, defined as physical activity that leads to an increase in breathing and heart rate usually associated with (in a healthy person) brisk walking, dancing, swimming, or cycling on flat terrain. In exercise physiology terms, they advocated for children to expend at least three metabolic equivalents when they exercised to achieve a certain amount of intensity in their workouts. They also recommended that children decrease the amount of time spent in sedentary activities (watching TV, playing video games, using computers recreationally), limiting screen time to 1–2 hr per day. In addition to educating the parent and child, this task force recommended that the parents become involved in the design of the school-based dietary and exercise programs and that schools educate parents about the rationale for these programs to ensure understanding and cooperation.

These educational recommendations were quite specific and goal oriented regarding activity but vague and complicated regarding eating. What does it mean, for example, to minimize consumption of most fast foods and sugary drinks? Even suggesting that families would be well served to eat timely regular meals lacks specificity (i.e., How many family meals per week? Does timely mean the same time every day or within a couple of hours every day?).

In accord with the related emphases on education in the four stages and Canadian recommendations, Figure 4, third panel from top, illustrates the emphasis by the Endocrine Society group on education by the shading of the word and the solid arrow to Client Behaviors & Biology. As in the Canadian recommendations, the figure shows that Self-Help Groups, Immersion CBT, and the relationship between the specialized interventions were de-emphasized in the present set of recommendations.

Self-help. The task force did not mention this option.

Outpatient CBT. The task force recommended lifestyle interventions (dietary, exercise, and behavioral modification) for entire families. Their impression of the success of lifestyle modification treatments (i.e., CBT), based on their own meta-analyses and others, prompted them to endorse the guidelines from the United States Preventive Services Task Force (USPSTF) published in 2003 pertaining to adults (USPSTF, 2003). Therefore, they extrapolated to children and recommended following the USPSTF guidelines of having obese children receive intensive counseling for at least 3 months. They defined *intensive counseling* as “at least one person to person (individual or group) session per week for at least the first 3 months of the intervention” (p. 4583), preferably involving family members as well.

Immersion CBT. The task force advocated for physicians to prescribe and support “intensive lifestyle modification” for the whole family (August et al., 2008, p. 4583). This presumably could include immersion treatment, particularly at therapeutic camps that involve the parents substantially. Beyond that, immersion or residential treatment was not mentioned.

Bariatric surgery. According to this committee, bariatric surgery should only be considered if the child has attained Tanner 4 or 5 pubertal development at or near final adult height, has a BMI greater than 50kg/m² or 40kg/m² with severe complications and comorbidities, has severe complications that persist despite lifestyle modifications without medication, has stable psychological functioning of the family unit, has an experienced medical team for long-term follow-up, and adheres consistently to diet and activity principles. The team recommends against surgery for preadolescents, pregnant or breastfeeding adolescents, and those planning to get pregnant. Also, this group suggested that those teens who have not mastered the lifestyle modification habits required for long-term success should not be considered for bariatric surgery. Overall, this committee suggested minimizing the use of bariatric surgery to avoid functional changes in developing children and unforeseen complications from surgery. If families pursue bariatric surgery, this group recommended using a surgical center that includes a multidisciplinary team for preoperative and postoperative care.

2009 Seven Step Model

The editors of the journal *Obesity Management* invited a multidisciplinary team of experts (five physicians and three psychologists; Kirschenbaum, DeUgarte, et al., 2009) to review current approaches and, if warranted, propose a new standard of care for treating childhood and adolescent obesity. This group did, in fact, suggest a new standard of care. The new standard asserts that families must get thoroughly involved in the process of changing their children’s lifestyles to achieve success. The standard also includes seven steps: Health care providers could recommend, and parents could apply, seven increasingly intensive steps if necessary to achieve meaningful changes. This group asserted that most families will have to use at least several steps to reach the critical goal of improved weight and fitness for the whole family and encouraged families to pursue those steps aggressively until they succeed. They made the following points emphatically:

- If you keep taking the steps, you and your child can succeed.
- If you give up before reaching the goal of improved health and wellness, your child will not achieve his or her full potential for a happy and healthy life. (Kirschenbaum, DeUgarte, et al., 2009, p. 29)

Education. The seven steps include recommendations for medical management, education, and advice about making changes in the family environment (e.g., removing screens from bedrooms). The authors encouraged health care providers to use a one-page handout (see the Appendix) to walk parents through each of the steps, including actually providing copies of relevant books as part of the educational process. This makes the goal for health care providers quite explicit (i.e., to give the handout to parents of overweight children and explain it to them; offer education, medical assessment, and specific advice in your office). The seven steps also help suggest a clear goal to parents: Improve weight and

health status significantly; if lower intensity steps do not work, go to higher intensity interventions until the goal is achieved. Figure 4, fourth panel from top, shows the step-wise nature of this plan and its incorporation of all four types of interventions by specialists.

Self-help groups. The seven steps model encourages parents and providers to use one of the widely available support groups (the fourth step of seven).

Outpatient CBT. The seven steps model includes outpatient CBT as the fifth step and recommends use of this approach if the first four prove unsatisfactory.

Immersion CBT. This set of recommendations explicitly supports the usefulness of immersion treatments for obesity, both short term (e.g., therapeutic camps) and longer term (therapeutic boarding schools).

Bariatric surgery. The seven step model describes bariatric surgery as the highest intensity level (the seventh step). They recommend this step as a viable and worthwhile option for some “seriously overweight teenagers who have tried the other steps” (Kirschenbaum, DeUgarte, et al., 2009, p. 31).

2010 U.S. Preventive Services Task Force Recommendations

The U.S. government’s Agency for Healthcare Research and Quality sponsors the USPSTF. The USPSTF conducts rigorous, impartial assessments of the scientific evidence for the effectiveness of a broad range of clinical services, including screening, counseling, and preventive medications. According to its website (<http://www.ahrq.gov/ppip/pcmsampart.htm>), “Its recommendations are considered the gold standard for clinical preventive services.” In 2010, the USPSTF’s committee published its recommendations, replacing the 2005 recommendations, about screening and treating childhood and adolescent obesity (USPSTF, 2010).

Figure 4 (bottom panel) shows the unusual aspects of the USPSTF recommendations relative to the other four sets of recommendations. That is, as detailed below, USPSTF de-emphasized education, as well as bariatric surgery. The figure illustrates the reduced focus on education and increased attention to referral by differential shading in the Health Care Providers box and the removal altogether of the arrow showing a potential link from Health Care Providers to Client Behaviors & Biology.

Education. Education was not discussed as a useful intervention, if education was provided outside of the context of a comprehensive CBT program.

Self-help groups. This option was not discussed in the USPSTF guidelines.

Outpatient CBT. The committee advised clinicians to refer obese children and their families to “comprehensive moderate-to-high intensity programs that include dietary, physical activity, and behavioral counseling components” (USPSTF, 2010, p. 362). In the same article, the USPSTF further defined *comprehensive treatment* as including counseling for weight loss, healthy diet, and physical activity as well as instruction and support for the use of behavioral management techniques including self-monitoring, stimulus control, eating management, contingency management, and CBT techniques. They also defined moderate- to high-intensity programs quite clearly, as including more than 25 hr of contact with the child and/or family and that showed improve-

ments in BMI 12 months after beginning the intervention, and asserted that less intensive (<25 contact hours) programs usually did not produce significant improvements.

Immersion CBT. Although the USPSTF (2010) did not explicitly mention immersion CBT, such programs that last at least several weeks would meet their definition of *high intensity*. Some immersion CBT programs include as many as four CBT sessions per week (Kirschenbaum, 2010). These 24/7 programs also sometimes include many additional contact hours in structured activities (e.g., personal training, martial arts, walks), as well as nutrition and culinary education.

Bariatric surgery. The USPSTF (2010) stated that surgical treatments for obesity are best reserved for morbidly obese adolescents, whom they noted could be identified without using BMI screening. They did not elaborate further, mentioning that bariatric surgery was outside of the scope of their review.

Several months after publishing its recommendations, the USPSTF also published an article examining the benefits and harms of behavioral and pharmacologic weight management interventions for overweight and obese children and adolescents (Whitlock, O'Connor, Williams, Beil, & Lutz, 2010). They asserted that the evidence supported medium- to high-intensity treatment programs.

Integration

Figure 4 illustrates the similarities and differences in the five sets of recommendations. All groups supported the important benefits provided by CBT interventions, particularly outpatient CBT. Beyond that consistency, the differences between the groups are more apparent than their similarities. Two models (four stages and seven steps) advocate a stepped-care approach. That means increasing the type and intensity of treatment if overweight children and adolescents fail to make clinically meaningful changes. This position provides many important advantages over the approaches that did not suggest stepwise increases in interventions. Consider the messages to parents of obese children. The advice to use stepped-care distills to three central messages:

- Obesity requires sustained, continuous, and lifelong effort to control; it is a tough task master.
- The devastating effects of this disease (on health, as well as social, emotional, academic, and vocational consequences) warrant sustained efforts over time until your child achieves substantial improvements.
- Even if the quest to succeed takes several steps, the potential benefits will almost certainly outweigh the financial and behavioral costs.

Some could argue that the four primary interventions in the sequential model (see Figure 4) do not lend themselves to a simple continuum of intensity. After all, bariatric surgery differs in a great many ways from self-help groups, for example. However, costs to participate, ease of access, and other factors do support sorting the four interventions at least on an ordinal scale from least costly and greatest access (self-help) to most costly and more limited in availability (long-term immersion CBT, surgery). If the term *intensity* does not appropriately label the continuum, perhaps another word does, like *accessibility*.

No evidence has thus far demonstrated the hypothesized direct benefits of the stepped-care recommendations. However, research

on provider–client communication does support the value of clear messages, goal orientation, and simplicity of messaging (Garrity, 1981; Hall et al., 1988). When providers use the seven step model, for example, they can rely on the one-page handout in the Appendix to clearly and directly communicate recommended actions and goals. Research on the process of maximizing the value of such expert recommendations supports the viability of this approach (Dunlop et al., 2007; Kim, Haemer, & Krebs, 2008).

The two most recent sets of recommendations (seven steps and USPTF) also differ from the others in their relative de-emphasis of education and, conversely, their stronger endorsements of referral. Figure 4 illustrates this differential pattern via the dashed arrow between Health Care Providers and Client Behaviors only for these two more recent sets of recommendations versus the solid arrow for the other three. As noted previously in this article, education alone rarely produces significant improvements in weight status (e.g., Stice et al., 2006; Wake et al., 2009). This overwhelming evidence supports the position of the two most recent recommendations: Education can provide a foundation for lifestyle change, but more specialized and intensive interventions produce far better outcomes (Kelly & Kirschenbaum, 2011; Wilfley et al., 2007). Education remains the most accessible intervention, readily and frequently used in school settings, clinics, books, magazine articles, and popular websites (e.g., <http://fit.webmd.com/>, <http://www.letsmove.gov/>). But that does not justify relying on it alone to treat the highly refractory disease of obesity. As Maslow's maxim famously emphasized, "When our only tool is a hammer, we treat everything as if it were a nail" (Maslow, 1966). The authors of the two most recent sets of recommendations recognized that much better tools than that educational hammer for the treatment of childhood and adolescent obesity are available.

Summary and Conclusions

Expert recommendations may indeed facilitate the treatment of childhood and adolescent obesity. The best recommendations encourage health care providers to take a few key steps in their offices and then refer to specialists using a stepped-care approach.

In their offices, health care providers can offer simple, clear, direct messages, beginning with good quality medical management. This would include continual assessment of and feedback about BMIs and potential comorbidities. Health care providers could also offer basic educational materials (scientifically based self-help websites and books, e.g., those endorsed by ABCT at <http://www.abct.org/shBooks/?shTab=1&action=10>) and favorably reviewed in professional journals (e.g., Boutelle, Cromley, & Rockwell, 2009). They can even recommend popular apps (e.g., MyFitnessPal) and sell appealing calorie and fat counters (e.g., Borushek's [2012] *The CalorieKing's Calorie, Fat & Carbohydrate Counter*) and pedometers for the whole family; the latter coincides with a widely endorsed and simple goal for activity of 10,000 steps per day (Kirschenbaum, 2011; Richardson et al., 2008). Some evidence noted by several of the expert groups also supports the potential value of a few other simple goals, including to eat most dinners at home as a family (e.g., four stages, Endocrine Society). Most of the expert groups also recommended eating a low-fat diet, and some evidence even suggests targeting minimal fat consumption (e.g., aiming for zero fat grams per day, accepting

20 or fewer grams per day; Barnard, Akhtar, & Nicholson, 1995; Kirschenbaum, 2005, 2011).

Providing such office-based medical management and education can create an important foundation for helping overweight young people and their families. All of the expert groups, however, recognized that encouraging families to take additional steps together when warranted can build on this foundation substantially, eventually resulting in significant progress in the fight against the childhood and adolescent obesity epidemic.

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Appendix

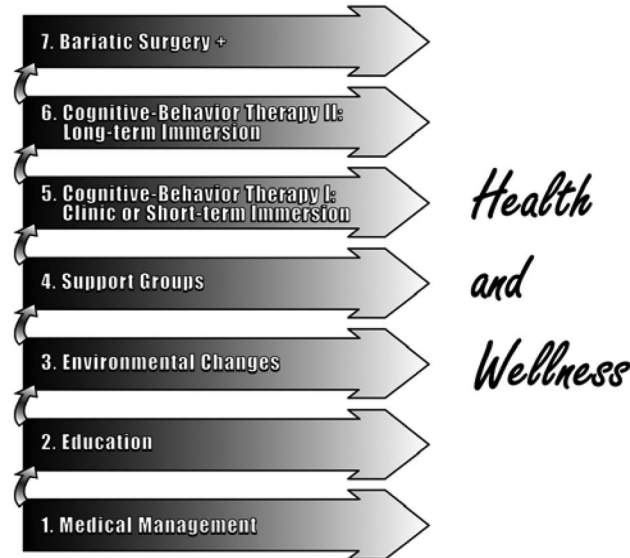
Reprinted from “Seven Steps to Success: A Handout for Parents of Overweight Children and Adolescents,” by D. S. Kirschenbaum, D. DeUgarte, F. Frankel, J. N. Germann, T. L. McKnight,

P. Nieman, R. H. Sandler, and W. Slusser, 2009, *Obesity Management*, 5, p. 32. Copyright 2009 by Mary Ann Liebert, Inc. Reprinted with permission.

(Appendix continues)

Seven Steps to Success

These seven steps provide a roadmap. Each step has an arrow pointing to the ultimate goal of "Health and Wellness." That means that you can help your overweight child go directly from any of the steps to achieve permanent weight control. Most families, however, find it necessary to add more intensive interventions (the steps with the higher numbers) in order to succeed. Families that take these steps together achieve the best results.



Seven Steps: Definitions

- | |
|---|
| <p>1. Medical Management. Seeing your child's pediatrician regularly will help provide you with feedback about progress and regular evaluations for potential health problems caused by excess weight (e.g., high blood pressure, liver problems, diabetes).</p> |
| <p>2. Education. Knowledge of the best ways to eat, stay active, and solve problems related to weight is necessary for successful weight control (e.g., Borushek A. <i>Calorie King</i>, 2008; Fletcher A. <i>Weight Loss Confidential</i>, 2006, Kirschenbaum D. <i>The Wellspring Weight Loss Plan</i>, 2011; healthykids.ca; cspinet.org; calorieking.com).</p> |
| <p>3. Environmental Changes. Making changes in the environment in which your family lives can help (e.g., taking televisions and computers out of bedrooms; eliminating all high-fat food in the house).</p> |
| <p>4. Support Groups. Wellspring Journey (wellspringjourney.com) offers support groups just for teenagers. Take Off Pounds Sensibly (TOPS; tops.org) and Weight Watchers (weightwatchers.com) can accommodate teens sometimes.</p> |
| <p>5. Cognitive-Behavior Therapy (CBT) I: Clinics or Short-Term Immersion. CBT is a scientifically based approach to helping people improve their motivation, goal-setting, and focusing skills. Professionally conducted CBT programs for overweight children are available (check local hospitals, clinics). Immersion programs focus on CBT full time, for example for 3-10 weeks in the summer (e.g., wellspringcamps.com; campkingsmont.com).</p> |
| <p>6. CBT II: Long-Term Immersion. Longer, more intensive, immersion programs are available in therapeutic boarding schools and clinics (e.g., wellspringacademies.com; zeepreventorium.be).</p> |
| <p>7. Bariatric Surgery +. For some seriously overweight teenagers who have tried the first six steps, specialized surgeries (bariatric surgeries like the gastric bypass) performed in surgical centers that have experience and understanding of this problem are important options (e.g., fitprogram.ucla.edu; cincinnatichildrens.org).</p> |

Source:

Kirschenbaum DS, DeUgarte D, Frankel F, Germann J, McKnight TL, Nieman P, Sandler RH, Slusser W. Seven steps to success: a handout for parents of overweight children and adolescents. *Obesity Management* 2009; 5:29-32.

Received September 30, 2011
Revision received August 24, 2012
Accepted August 27, 2012 ■