

CLINICAL PRACTICE

Overweight Children and Adolescents

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This Journal feature begins with a case vignette highlighting a common clinical problem. Evidence supporting various strategies is then presented, followed by a review of formal guidelines, when they exist. The article ends with the author's clinical recommendations.

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A seven-year-old girl is 130 cm tall (51 in., the 90th percentile for girls of the same age) and weighs 34.6 kg (76 lb, above the 95th percentile), with a body-mass index (defined as the weight in kilograms divided by the square of the height in meters) of 20.5 (above the 95th percentile). Physical examination reveals no abnormalities aside from her excess weight. Her family eats at a quick-service restaurant once a week, and she drinks approximately 16 oz (450 ml) of soft drinks and 8 oz (225 ml) of whole milk per day. Her physical activity is limited to 30 minutes of physical education twice per week and 20-minute recesses three days per week in school. She has approximately 4.5 hours of screen time per day, which is divided among the television sets in her bedroom and in the family room and the family computer. What should you advise?

THE CLINICAL PROBLEM

Childhood overweight, defined as a body-mass index at or above the 95th percentile for children of the same age and sex, affected approximately 15 percent of children and adolescents in the United States in the period from 1999 through 2002. According to the National Health and Nutrition Examination Surveys, the prevalence of overweight children doubled between 1976–1980 and 1999–2002.¹ Although the prevalence of overweight among blacks, Mexican Americans, and Native Americans exceeds that of other ethnic groups, overweight has increased among both sexes and among all racial, ethnic, and socioeconomic groups. The risk for overweight is increased among persons with high birth weight (4000 g or more)² and parental obesity.³

Childhood overweight is associated with a variety of adverse consequences. For example, more than 60 percent of overweight children 5 to 10 years of age in Bogalusa, Louisiana, had at least one risk factor for cardiovascular disease, such as elevated blood pressure or serum insulin levels or dyslipidemia, and 25 percent had two or more risk factors.⁴ Type 2 diabetes now accounts for up to 45 percent of all newly diagnosed diabetes in pediatric patients⁵ and is more common in ethnic and racial groups with higher rates of obesity, such as Native Americans, blacks, and Mexican Americans. Conditions associated with overweight, such as sleep apnea and gallbladder disease, tripled in children and adolescents between 1979–1981 and 1997–1999.⁶ Although childhood-onset overweight accounts for only 25 percent of adult obesity, overweight that begins before age eight and persists into adulthood is associated with a mean body-mass index of 41 in adulthood, as compared with a body-mass index of 35 for adult-onset obesity.⁷

STRATEGIES AND EVIDENCE

ASSESSMENT

Measurement of the body-mass index represents the first step in assessment and treatment. The term “overweight” is applied when the body-mass index of a child exceeds the 95th percentile for children of the same age and sex, and the term “at risk for overweight” is applied to children or adolescents whose body-mass index is between the 85th and 95th percentiles (Fig. 1).^{8,9} A body-mass index at or above the 95th percentile is highly specific for increased body fat.¹⁰ The crossing of major growth percentile lines upward is an early indication of risk. However, body-mass index must also be considered in the context of the age of the child and the growth patterns of the family. In children who are born small but are genetically programmed to be larger, these adjustments appear to occur in the first five years of life. Less than 5 percent of children cross two major percentile lines upward on the growth charts of the Centers for Disease Control and Prevention after four years of age.¹¹ Thereafter, children

who cross major percentile lines upward may be at increased risk for overweight. Although visceral fat increases the likelihood of morbidity in adults and youth, no widely accepted clinical measure of central adiposity yet exists for youth.

The family history of obesity and obesity-related diseases and the dietary and activity patterns should routinely be assessed (Table 1). The signs and symptoms that are most frequently associated with a congenital or endocrine abnormality underlying overweight are hypogonadism, short stature, dysmorphic features, a somatic abnormality, and mental retardation (Table 2). Clinical experience in tertiary care centers suggests that identifiable endocrine abnormalities or syndromes account for less than 1 percent of cases of overweight. The history and physical examination should also address potential complications of overweight (Table 2).

LABORATORY TESTING

A fasting profile of lipoprotein, insulin, and glucose levels has been recommended by some experts for all overweight children.^{23,24} Elevated levels of liv-

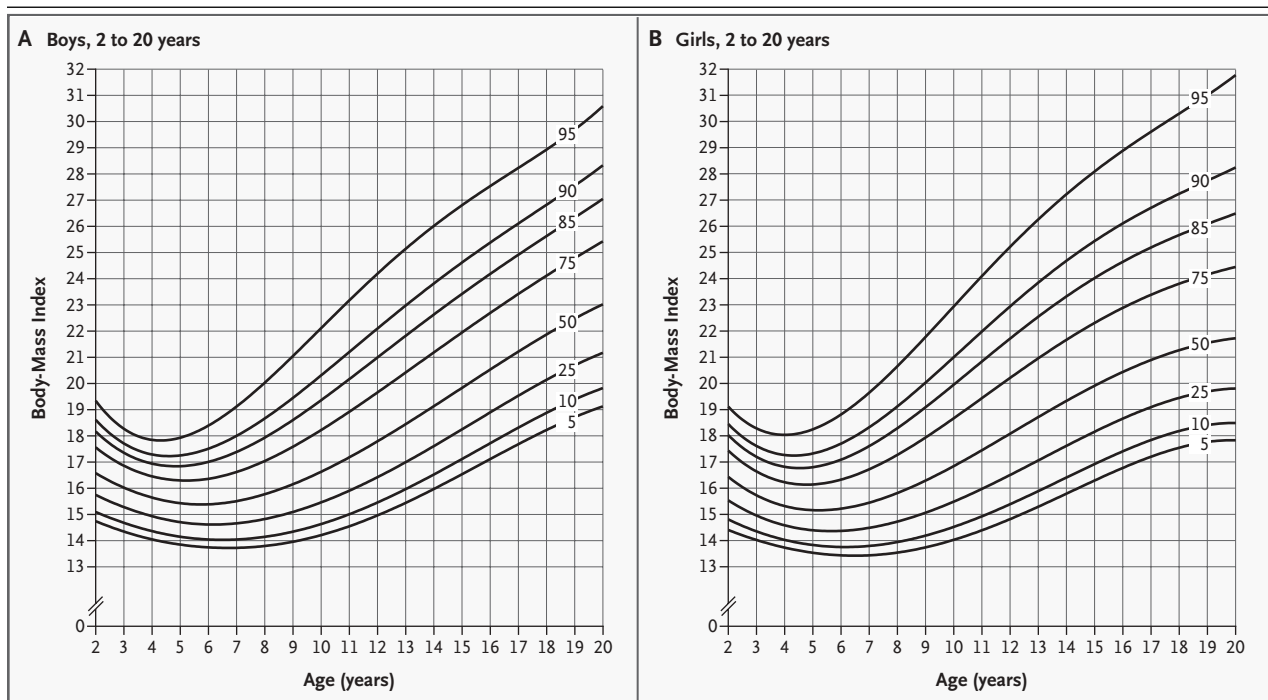


Figure 1. Body-Mass Index and Percentiles.

The charts were compiled by the Centers for Disease Control and Prevention on the basis of combined data from several nationally representative surveys of the U.S. population that were collected between 1963 and 1980. Overweight is defined as a body-mass index (the weight in kilograms divided by the square of the height in meters) at or above the 95th percentile on these growth charts. Because the data on which these charts are based were collected before 1980, more than 5 percent of the current population may be classified as overweight.

Table 1. Assessment of Childhood Overweight.

Calculate body-mass index: divide the weight in kilograms by the square of the height in meters
Family history
Identify obesity in first-degree relatives
Evaluate history of cardiovascular disease, type 2 diabetes, or cancer in first-degree or second-degree relatives
Diet
Identify caretakers who feed the child
Identify foods high in calories and low in nutritional value that can be reduced, eliminated, or replaced
Assess eating patterns (e.g., timing, content, and location of meals and snacks)
Activity
Identify barriers to walking or riding a bike to school
Evaluate time spent in play
Evaluate school recess and physical education (frequency, duration, and intensity)
Assess after-school and weekend activities
Assess screen time (television, videotapes and DVDs, and video games)
History and review of systems (see Table 2)

er enzymes, which usually indicate hepatic steatosis, occur in approximately 10 percent of overweight children and adolescents in the general population.²⁵ As with all screening tests, clinicians should decide whether testing is likely to alter the course of treatment they prescribe. The American Diabetes Association recommends a fasting plasma glucose test for children 10 years of age or older who have a body-mass index at or above the 85th percentile and two of the following risk factors: a family history of type 2 diabetes in first-degree or second-degree relatives, nonwhite race, and conditions associated with insulin resistance (e.g., acanthosis nigricans, hypertension, dyslipidemias, or polycystic ovary syndrome).²⁶ It is uncertain how many children and adolescents meet these criteria, and the cost-effectiveness of this approach is unknown.

COMMUNICATION

Providers report that they are often reluctant to discuss overweight with families because of the associated stigma, the concern that parents will feel blamed, or fears that a discussion of weight will lead to an eating disorder. However, when providers address obesity in obese adults, those adults are more likely to initiate weight-control efforts than when weight is not discussed.²⁷ In the absence of a complication that needs urgent attention, a neutral approach to weight control in a child may help to avoid a sense of blame or pressure and to assess the family's readiness to change. For example, the

level of parental concern can be elicited by such questions as "Are you concerned about your child's weight?" and "Has your child's weight caused her any problems?" Because "obesity" is often a pejorative term and is popularly used to indicate a massive degree of overweight, the term "overweight" is preferable when discussing weight with parents.

TREATMENT

Treatment to achieve weight maintenance is recommended²³ for children two to six years of age who have a body-mass index at or above the 95th percentile for their age and sex and who do not have weight-related complications. Weight loss is indicated for two-to-six-year-old children who have a weight-related complication and for older children whose body-mass index is at or above the 95th percentile whether or not they have a weight-related complication. Overweight-related conditions requiring more urgent weight loss include pseudotumor cerebri, sleep apnea, orthopedic abnormalities, type 2 diabetes, and hypertension. Additional factors that increase the need for treatment include major psychological or social complications and an increased risk of a future obesity-associated illness as suggested by a family history of obesity, type 2 diabetes, or cardiovascular disease in a first-degree or second-degree relative.^{23,24,26}

Family engagement is critical to therapy. If the child, one or both parents, or the guardians are not motivated, any treatment is likely to fail and frustrate everyone involved. Under such circumstances, clinicians should share the basis for their concern about the child's weight and reinforce positive behaviors that are already in place. Motivation should not be viewed as an all-or-nothing phenomenon but, rather, as a dynamic process that providers can influence over time. Parental concerns other than the child's overweight also may help to address behaviors that contribute to it. For example, concern about schoolwork, family time, or exposure to televised sex and violence may be a more powerful motivator to control television time than is overweight.

SPECIFIC INTERVENTIONS

A systematic review of randomized, controlled trials of lifestyle interventions for the treatment of pediatric overweight concluded that most studies were too small and that the number of studies was insufficient to compare the efficacies of various treatment approaches or components.²⁸ In the absence of such data, studies of treatments in research

Table 2. Symptoms and Signs of Syndromes Associated with or Complications of Overweight in Children and Adolescents.

Symptom	Syndrome or Complication	Additional Findings	Additional Studies or Referral
Headaches	Pseudotumor cerebri ¹²	Papilledema	Pediatric neurologist
Snoring	Obstructive sleep apnea ^{13,14}	Hypertrophy of tonsils, adenoids, or both	Sleep study
Daytime somnolence	Pickwickian syndrome or sleep apnea		Blood gases, sleep study
Abdominal pain	Gallbladder disease ¹⁵ Nonalcoholic fatty liver disease ¹⁶	Elevated serum aminotransferases	Abdominal ultrasonography Pediatric gastroenterologist
Hip pain or limp	Slipped capital femoral epiphysis ¹⁷		Radiologic examination of hips
Urinary frequency, nocturia, polydipsia, polyuria	Type 2 diabetes		Urinalysis, fasting blood glucose, glucose tolerance test
Irregular menses or amenorrhea	Polycystic ovary disease ^{18,19}	Hirsutism, muscular body build, male-pattern distribution of body fat	Pediatric endocrinologist or adolescent specialist
	Prader-Willi syndrome ²⁰	Short stature, hypogonadism, small hands and feet, infantile hypotonia	Pediatric geneticist
Binge eating or purging	Eating disorder	Use of laxatives, cathartics, or diuretics	Specialist in eating disorders
Sign			
Short stature or growth arrest	Hypothyroidism, Cushing's syndrome		Thyroid-function tests Pediatric endocrinologist
Developmental delay	Prader-Willi syndrome, other genetic syndromes		Pediatric geneticist
Depressed affect, insomnia, anhedonia	Depression		Pediatric psychologist or psychiatrist
Elevated blood pressure	Elevated blood pressure	Cuff size may be too small; consider Cushing's syndrome	Specialist in pediatric hypertension
Postaxial polydactyly	Bardet-Biedl syndrome ²¹	Retinitis pigmentosa, hypogonadism, mental retardation	Pediatric geneticist
Small hands and feet	Prader-Willi syndrome		Pediatric geneticist
Eyes			
Papilledema	Pseudotumor cerebri		Pediatric neurologist
Retinitis pigmentosa	Bardet-Biedl syndrome		Pediatric geneticist
Erosion of tooth enamel or dorsal finger lesions	Self-induced vomiting		Specialist in eating disorders
Skin			
Acanthosis nigricans	Severe obesity, possible glucose intolerance		Fasting insulin, urinalysis
Violaceous striae	Cushing's syndrome		Pediatric endocrinologist
Hirsutism	Polycystic ovary disease, Cushing's syndrome		Pediatric endocrinologist
Hepatomegaly	Nonalcoholic fatty liver disease	Elevated serum aminotransferases	Pediatric gastroenterologist
Genitalia			
Undescended testicles	Prader-Willi syndrome		Pediatric geneticist
Delayed puberty	Cushing's syndrome		Pediatric endocrinologist
	Prader-Willi syndrome in girls Bardet-Biedl syndrome		Pediatric geneticist Pediatric geneticist
Bowed legs	Blount disease, ²² bowed femurs	Bowed tibias	Radiologic examination; orthopedic surgeon

settings^{29,30} and of adult obesity^{31,32} provide useful direction. In children, behavior modification has generally produced losses of 5 to 20 percent of excess weight, of 1 to 3 units of the body-mass index, or both, over 3 to 6 months; changes reported over 6 to 12 months range from a 25 percent loss to a

10 percent increase in excess weight, a loss of 0 to 4 units of the body-mass index, or both. Long-term follow-up, as reported by a single research group, has shown increases of about 3 percent to decreases of about 20 percent in excess weight after 2 to 10 years.³⁰

Four main interrelated behavioral strategies are used to help families make changes: controlling the environment, monitoring behavior, setting goals, and rewarding successful changes in behavior. The targets for these strategies must be age-specific. For example, it is the parent's responsibility to monitor the behaviors of young children, whereas adolescents may monitor their own behaviors. Key principles and examples of these weight-control strategies^{29,33} are summarized in Table 3.

DIET AND ACTIVITY

Short-term weight loss in pediatric patients has been achieved in randomized, controlled trials involving various strategies for the control of diet and activity level. These strategies include calorie and fat reduction,²⁹ adherence to a low-carbohydrate diet,³⁴ the integration of physical activity into daily routines,²⁹ participation in structured, vigorous physical activity,³⁵ and the reduction of sedentary behaviors.³⁶ If changes in diet and activity level produce a net energy deficit, weight loss will result. A substantial slowing of weight gain may be achieved by relatively small but consistent changes in energy intake, expenditure, or both (200 to 500 kcal per day).^{37,38}

Because consensus is lacking on the most effective ways to achieve long-term weight control, the clinician, child, and family should work together to choose goals that can be achieved in terms of diet and activity. The monitoring of increases or decreases in weight allows the clinician to assess whether the changes in diet and activity level are too limited, sufficient, or too aggressive and to adjust these changes accordingly. Other providers, such as dietitians or nurse practitioners, also can help assess, change, and monitor behaviors. Group treatment of parents and children may provide more cost-effective and efficient delivery of care.

Weight-control interventions in medical settings are unlikely to succeed over the long term without alterations in the environments in which children and adolescents live. For example, efforts to change food choices may not succeed without the availability of healthful choices in school lunches or vending machines or without access to supermarkets where fruits and vegetables can be purchased at reasonable prices. Efforts to increase physical activity may not succeed if neighborhoods are unsafe for outdoor play or if physical education is absent in schools.

WEIGHT GOALS

A challenge in the treatment of overweight children involves the maintenance of normal growth and development with concurrent reductions in weight and body fat. For most overweight children, the first goal of weight control is weight maintenance.²³ If weight loss is desired, an appropriate starting goal is about 1 lb (450 g) of weight loss per month.²³ The long-term weight goal should be a body-mass index that is below the 85th percentile for age and sex, because the severity of adult obesity appears to be related to the severity and persistence of childhood overweight. Satisfactory weight control can also be assessed according to improvements in coexisting illnesses such as hyperlipidemia, hyperinsulinemia, acanthosis nigricans, and hypertension.

COMPLICATIONS OF TREATMENT

Systematic studies of the complications of various approaches to treatment are needed. In one 10-year follow-up of overweight children who were treated in behavioral modification programs to reduce calorie intake and increase physical activity, participants reported substantial rates of major psychiatric disorders, primarily depression, eating disorders, and substance abuse.²⁹ These rates may reflect a high level of risk among patients seeking treatment rather than effects of the intervention. Population-based surveys of adolescents indicate that an elevated body-mass index is associated with a higher risk of disordered eating behaviors.³⁹

Addressing eating and activity behaviors may also exacerbate existing family conflicts, which in turn may require psychological therapy to accompany or precede treatment for weight control. Excessive weight loss reflects extreme calorie restriction. Growth retardation and nutritional insufficiency have been reported in children on highly restrictive diets that provide less than two thirds of the estimated energy needs,⁴⁰ but such adverse events are extremely unlikely with respect to the approaches outlined here. Gallstones occur in 10 to 25 percent of adults who lose weight rapidly,¹⁵ but the frequency of this complication in pediatric patients is uncertain.

PREVENTION

The approaches described above also apply to the prevention of overweight in children of normal weight or in children at risk for overweight. School-based randomized trials have demonstrated that

a reduction in television or total screen time^{41,42} and an increase in the frequency and intensity of activity during physical education classes^{43,44} are effective preventive measures. In the two studies that reported changes in the body-mass index, in children in the treatment group, the body-mass index increased at an annualized rate of about 0.8 to 1.3 units less than in the children in the control group.^{41,43}

Observational studies suggest that breast-feeding may be another preventive strategy.⁴⁵ Both breast-feeding and later physical activity⁴⁶ have been associated with reduced weight gain or the prevention of weight-related coexisting illnesses; both are generally safe and have other benefits that warrant their implementation. Other strategies that appear promising but have not been tested in randomized trials include the reduced consumption of sugar-sweetened beverages,⁴⁷ reduced portion sizes at mealtimes,⁴⁸ and increased consumption of fruits and vegetables.⁴⁹

AREAS OF UNCERTAINTY

Data from randomized trials to support any particular strategy over others to achieve weight control in children and adolescents²⁸ or to prevent the development of overweight⁵⁰ are currently lacking. The approaches outlined above apply to children and adolescents who are mildly to moderately overweight. Patients for whom treatment is the most challenging are those who are severely overweight (with a body-mass index of 40 or more); these patients may benefit from treatment by providers with experience in the management of such cases. Aggressive approaches to treatment for severely overweight patients include drug therapy, restrictive carbohydrate-free, hypocaloric diets, and bariatric surgery. Each of these should be considered only after more conservative approaches fail.

The two drugs currently approved for the management of obesity are sibutramine, an inhibitor of norepinephrine, serotonin, and dopamine reuptake, and orlistat, a lipase inhibitor that inhibits the absorption of dietary fats. The safety and efficacy of sibutramine have not been established for patients less than 16 years of age, and orlistat has not been evaluated in patients less than 12 years of age. A six-month clinical trial of sibutramine in adolescents demonstrated that patients who were treated with this agent lost 4.6 kg more weight than did patients who received placebo.⁵¹ A 54-week clinical

trial of orlistat in adolescents, as described in the package insert, found a significantly greater reduction in body-mass index among patients treated with orlistat than among those who received placebo. As with other chronic diseases, weight maintenance is likely to require ongoing drug therapy. As the authors of the sibutramine trial concluded, "Until more extensive safety and efficacy data are available, medications for weight loss should be used only on an experimental basis in adolescents and children."⁵¹

Hypocaloric diets containing less than 20 g of carbohydrate result in rapid weight loss and appear to block hunger.⁵² Their use in pediatric patients has been described⁵² but requires physician oversight and monitoring. There have been limited published reports of experience with bariatric surgery in the pediatric age group. Available recommendations suggest the limitation of its use to adolescents with a body-mass index of 40 or more who also have obesity-associated coexisting illnesses; the recommendations also specify criteria for referral and treatment.⁵³

GUIDELINES

An expert committee that included representatives from the American Academy of Pediatrics, the American Dietetic Association, and the National Association of Pediatric Nurse Practitioners has issued consensus recommendations for the assessment and treatment of childhood and adolescent overweight.²³ Consensus recommendations for the use of bariatric surgery in adolescents have also been published⁵³ and endorsed by the American Pediatric Surgical Association.⁵⁴ The recommendations of these organizations agree with those outlined here.

SUMMARY AND RECOMMENDATIONS

Several strategies are useful in the management of overweight patients who are seen in primary care settings, such as the seven-year-old girl described in the vignette. The routine assessment of body-mass index will allow providers to identify modest excesses of weight when the behaviors that contribute to them are tractable. Communication strategies that avoid blame and encourage concern and an interest in change on the part of overweight patients and their families are critical to management.

Table 3. Strategies for and Principles of Weight Control.

Strategy	General Principles	Examples
<p>Control the environment To reduce cues and chances to eat excess calories and remain sedentary while increasing cues to eat fewer calories and increase activity</p>	<p>Identify existing home, school, and family routines or environmental factors associated with increased calorie consumption, inactivity, and sedentary behaviors</p> <p>Help the child and family identify alternative routines or environmental factors to reduce calorie consumption, increase physical activity, and decrease sedentary behaviors</p> <p>Help the child and family limit options to those most acceptable and easiest to implement; include these as part of monitoring, goal setting, and rewards for behavioral change</p>	<p>Eliminate sugar-sweetened beverages from the home</p> <p>Reduce the frequency of fast food, meals eaten away from home, or both</p> <p>Limit serving sizes by serving food directly onto plates instead of self-service at table and use smaller plates to make servings appear larger</p> <p>Remove high-fat and high-calorie snacks from the home and replace them with fresh fruits and vegetables</p> <p>Remove television sets from children's bedrooms, budget weekly screen time, and set family rules to limit what can be watched or played as well as when and where</p> <p>Enroll child in an after-school program of physical activity</p> <p>Start a new family routine involving daily or weekly physical activity</p>
<p>Monitor behavior To recognize where one is starting, set goals, assess changes, give and receive feedback, and reward success</p>	<p>Records should be kept to assess changes over time</p> <p>Measures must reliably define baseline behaviors and assess changes over time</p> <p>Measures should match behavioral goals</p> <p>Monitoring should be frequent initially; may become less frequent as new behaviors are established</p> <p>Monitoring should cover both short-term and long-term behavioral goals, including weight changes</p> <p>If doubt arises about continued progress or if relapse occurs, reinstitute frequent monitoring</p>	<p>Individual behavior</p> <ul style="list-style-type: none"> No. of sugar-sweetened beverages consumed daily No. of meals eaten outside the home, no. of fast-food meals/wk, or both No. of servings of fruits and vegetables eaten daily No. of hours of television watched weekly No. of days/wk physical-activity goals are met Weekly weight measurement <p>Changes in the environment</p> <ul style="list-style-type: none"> No. of sugar-sweetened beverages in the home Frequency of fast-food meals, meals eaten away from home, or both No. of days/wk food is served on plates, small plates are used, or both No. of days per week fruits and vegetables are present in the home Presence or absence of television in child's bedroom, established limits for screen time, and rules for family screen time
<p>Set goals</p>	<p>Help family set short-term goals for behavioral change and long-term goals for weight change</p> <p>To enhance motivation, goals should be challenging but achievable</p> <p>Goals should be agreed to by the patient, not set by the provider; allow the child and family to choose from a range of possible goals</p> <p>Limit new goals to one or two at a time</p> <p>Parent or guardian may set goals for his or her own behavior to help the child lose weight</p> <p>Behavioral goals must be specific, explicit, unambiguous, and subject to self-monitoring (i.e., "If you can't count it, you can't change it")</p>	<p>Individual goals for the child</p> <ul style="list-style-type: none"> I will drink no more sugar-sweetened beverages I will eat no more than 1 fast food meal/wk I will eat fresh fruit and vegetables for my after-school snack I will watch television, videos, or DVDs and play computer and video games for less than 7 hr/wk, and only after dinner and all my school work and chores are completed <p>Individual goals for the parent</p> <ul style="list-style-type: none"> I will praise my child every day that he or she achieves a goal I will review behavior-monitoring records with my child for 30 min every evening I will walk my child to school at least 3 days/wk <p>Family environmental goals</p> <ul style="list-style-type: none"> Our home will be free of sugar-sweetened beverages in 14 days We will go out for dinner no more than 1 night/wk All meals will be served in the kitchen, directly onto plates instead of self-served at the table Fruits and vegetables will be available in our home every day We will remove all televisions from children's bedrooms We will eat meals without watching television

Table 3. (Continued.)

Strategy	General Principles	Examples
Reward successful behavioral change	<p>Both positive and negative responses (rewards and disapproval) should be tied to specific behaviors</p> <p>Rewards should be given as soon as possible after completion of the behavioral goal</p> <p>Rewards should be frequent while the child is learning a new behavior, less frequent as the behavior becomes established</p> <p>Mixed messages should be avoided; rewards and disapproval should be used consistently; rewards should not be given if the goal was not achieved</p> <p>Magnitude of the reward, its value, or both should be consistent with the magnitude of the accomplishment; large or excessively valuable rewards can be counterproductive</p> <p>Frequent and specific use of praise and attention should be encouraged, because these can be powerful rewards for children</p> <p>Parents should use rewards that they are willing and able to give if the goal is achieved and to withhold if the goal is not achieved</p> <p>“Reciprocal contracting,” in which parents or guardians reward children for achieving their goals and children reward parents or guardians for achieving theirs, should be considered²⁹</p>	<p>Praise and attention</p> <p>Praise tied to a specific behavior is better than nonspecific praise: “I am proud of you for eating the carrots instead of chips for your snack” is better than “You are such a good child”</p> <p>Suggested rewards</p> <p>Activities that the child and parents or guardians like to perform together (e.g., skating)</p> <p>Activities that are related to goals, such as an active, outdoor excursion, a trip to buy a favorite fruit or vegetable at a local farm, or athletic shoes or other sports-related equipment for accomplishing a physical-activity goal</p> <p>Extra privileges, such as special time with a parent</p> <p>Rewards to avoid</p> <p>Food (especially sweets or other high-calorie foods that are being limited in the diet)</p> <p>Money or items with a specified value (these often lead to expectations and negotiations for greater rewards over time)</p> <p>Expensive material items</p> <p>Items unrelated to the goals</p>
Problem solving	<p>Iterative cycles should be established to identify barriers to success, identify potential solutions to overcome the barriers, make plans to implement those potential solutions, and monitor their success</p> <p>With assistance, children and families can identify the most challenging barriers and invent their own strategies to overcome them</p> <p>Group sessions can provide an opportunity for families to share strategies, successes, and lessons learned with other families facing similar challenges</p>	<p>Common barriers that require problem solving</p> <p>Resistance to change or sabotage by other family members</p> <p>Expression of love by family members through cooking or food</p> <p>Eating out in restaurants or at others’ homes</p> <p>Parties and holidays involving food traditions (e.g., birthday parties, Halloween)</p> <p>School meals</p> <p>After-school hunger</p> <p>Use of eating to cope with stress and anxiety</p> <p>Neighborhood safety concerns</p> <p>Transportation difficulties</p> <p>Perceived limited community resources and opportunities for physical activity</p> <p>Provider and child or family have different ideas about what is most important to change</p>
Parenting skills	<p>Authoritative rather than authoritarian parenting</p> <p>Support the child’s autonomy and self-sufficiency</p> <p>Modeling of desired behaviors</p> <p>Monitoring or supervision of the child’s behavior</p> <p>Clear communication of expectations and consequences</p> <p>Consistent and contingent feedback</p> <p>Use of praise, attention, and other rewards for effective reinforcement of desired behaviors; minimal attention to undesired behaviors</p> <p>Appropriate setting of limits</p>	<p>Setting family rules and maintaining a household that is consistent with healthful behaviors</p> <p>Parents choose what is available to eat but children choose whether to eat and how much</p> <p>Saying no and setting limits are in the best interest of their child’s health and well-being</p> <p>Parents or guardians set their own goals and monitor their own behaviors</p> <p>Parents or guardians model both successful behavioral change and ways of coping with unsuccessful attempts to change behavior</p> <p>All parents or guardians and other caregivers communicate a consistent message to the child</p> <p>Rewards are provided only when earned</p> <p>Parents meet daily with the child to review the day’s behaviors, show interest in his or her progress, and provide a regular opportunity to praise success</p>

Most causes and complications of overweight can be identified by medical history and physical examination. A fasting lipid profile is a reasonable test for all overweight children. The medical history (with attention to risk factors for diabetes or other complications), the physical examination (to rule out such conditions as acanthosis nigricans), and the likelihood that test results will affect the management of the case should guide further testing. Treatment should focus on habits of diet or activity that contribute to weight gain or impair weight loss and that can be modified; recommendations should be based on a sensitivity to competing family priorities, particularly in the absence of apparent complications of overweight. Relevant behaviors should be quantified to facilitate monitoring and change,

and positive changes should be reinforced. In the case vignette, immediate targets for change suggested by the history include a reduction in the intake of soft drinks and in screen time and an increase in active play. Our initial goal for this patient would be to maintain her current weight for one year and to achieve a body-mass index that is below the 85th percentile for her age, assuming that she undergoes continued linear growth at the 90th percentile. We would recommend weekly to monthly face-to-face or telephone monitoring of behavioral and weight goals by the primary care provider. In some settings, nurses, dietitians, or other health professionals may help accomplish frequent follow-up assessments.

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