# Childhood Obesity: Highlights of AMA Expert Committee Recommendations

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**Childhood obesity is an increasingly serious problem; 13.9 percent of children two to five years of age, 18.8 percent of children six to 11 years of age, and 17.4 percent of adolescents 12 to 19 years of age in America are obese. Practical strategies that primary care physicians can use to tackle the problem are scarce. The American Medical Association recently convened an expert panel to address this need. Evidence about how best to manage and prevent obesity was reviewed and incorporated into a series of reports. The Expert Committee on the Assessment, Prevention, and Treatment of Child and Adolescent Overweight and Obesity recommends addressing the issue of weight with all children at least once a year. Family physicians are urged to assess key dietary habits (e.g., consumption of sweetened beverages), physical activity habits, readiness to change lifestyle habits, and family history of obesity and obesity-related illnesses. Laboratory testing recommendations depend on the degree of obesity and associated illnesses. For children with a body mass index between the 85th and 94th percentiles but who have no obesity-related illnesses, a fasting lipid profile should be done. Those with the same body mass index and obesity-related illnesses should also have tests for alanine transaminase, aspartate transaminase, and fasting blood glucose levels. Measurement of blood urea nitrogen and creatinine levels should be added in children with a body mass index above the 95th percentile. A four-stage approach to treatment of childhood obesity is recommended. Many of these recommendations can be carried out by family physicians for treatment and prevention. These include advising families to limit consumption of sweetened beverages and fast food, limit screen time, engage in physical activity for at least 60 minutes per day, and encourage family meals on most, and preferably all, days of the week. (*Am Fam Physician*. 2008;78(1):56-63, 65-66. Copyright © 2008 American Academy of Family Physicians.)**

ILLUSTRATION BY MARK E. SCHULER

▶ **Patient information:** A handout on childhood obesity, written by the author of this article, is provided on page 65.

▶ **See related editorial on page 34.**

New reports about the obesity epidemic appear in the media almost daily; 13.9 percent of children two to five years of age, 18.8 percent of children six to 11 years of age, and 17.4 percent of adolescents and teenagers 12 to 19 years of age are classified as "overweight" (i.e., children with age- and sex-adjusted body mass index [BMI] above the 95th percentile and equivalent to the "obese" classification among adults) by the Centers for Disease Control and Prevention (CDC).[1]

Childhood obesity has become so severe that diseases that once affected only adults are now appearing in children. For instance, type 2 diabetes in children was rare 20 years ago; today, it constitutes nearly one half of all new cases of diabetes among children in some settings.[2] The long-term implications of this epidemic are extremely serious. Obese children are much more likely than children of healthy weight to become obese adults.[3] In adults, obesity is strongly associated with type 2 diabetes, hypertension, osteoarthritis, gout, dyslipidemia, cardiovascular disease, and biliary tract disease.[4] There is also a strong association between obesity and cancers of the colon, breast (in postmenopausal women), endometrium, esophagus, and kidney.[5]

Despite the seriousness of childhood obesity, effective and safe prevention and treatment programs are not widely available. Specialized centers offer effective intensive counseling programs that promote behavior modification for obese children. At best,

**SORT: KEY RECOMMENDATIONS FOR PRACTICE**

| *Clinical recommendation* | *Evidence rating* | *References* |
|---|---|---|
| Measure height and weight and calculate BMI plus BMI percentile for all children at least once a year. | C | 9, 10 |
| Encourage all children to engage in at least 60 minutes of moderate to vigorous physical activity on most, and preferably all, days of the week to achieve or maintain a healthy weight. | A | 12 |
| Advise patients to consume no more than one serving of sweetened beverages (e.g., fruit juice, fruit drink, regular-calorie soft drink, sports drink, energy drink, sweetened or flavored milk, sweetened iced tea) per day. | B | 15 |
| Advise families to limit children's television viewing and other screen time to no more than two hours per day. | B | 16, 17 |
| Encourage families to limit children's fast-food consumption to no more than once per week. | C | 18 |
| Encourage families with children to have meals together as often as possible. | C | 19, 20 |

*BMI = body mass index.*

*A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, see http://www.aafp.org/afpsort.xml.*

such programs can accommodate only a fraction of the nation's obese children. The widespread use of medications to treat childhood obesity is likely many years away. Significant environmental and societal change holds the promise of reversing the problem. This will probably require change in public policy that affects, for example, how certain foods are marketed to and packaged for children. Environmental changes take a long time to establish and even longer to have a substantial impact on children's health. Today, settings in which identification, prevention, and treatment of childhood obesity are practical and rational include schools, where children spend much of their time, and primary care practices, through which they receive much of their health care.

There is evidence that family physicians and primary care pediatricians are uncomfortable managing childhood obesity. According to one study, just 12 percent of pediatricians reported high self-efficacy in managing obesity, even though 39 percent believed that treatment of obesity by physicians has the potential to be effective.[6] The lack of research in primary care settings over the past 20 years is cited as an important reason for this. A recent report from the U.S. Preventive Services Task Force concludes, "There are critical research gaps in answering the most basic questions needed to enable clinicians to engage strategies to prevent current and future weight-related morbidities in children. Despite the fact that many of these gaps were pointed out over 10 years ago, little subsequent research has addressed the most clinically relevant questions."[7] The American Medical Association (AMA) Expert Committee on the Assessment, Prevention, and Treatment of Child and Adolescent Overweight and Obesity based its recommendations on sound evidence whenever such evidence was available and on expert opinion when it was not.

## Assessment Recommendations

The Expert Committee's recommendations for assessment can be divided into review of lifestyle habits, family history, physical examination, and laboratory testing. The committee also recommends a general assessment of readiness to change specific dietary and physical activity habits. Readiness to change

can be categorized according to the "Stages of Change" model, shown in *Table 1*.[8]

The Expert Committee has identified the following as dietary habits that contribute to obesity: frequently consuming fast food and large volumes of sweet beverages (e.g., fruit juices, soft drinks), eating large portions, skipping breakfast, choosing foods high in energy density (e.g., high-fat snacks), eating few fruits and vegetables, and having irregular meal frequency and snacking patterns. In addition to these habits, assessment of a child's environment, social support, barriers to physical activity, and levels of physical activity and sedentary behavior is also recommended.

A family history of obesity, type 2 diabetes, and cardiovascular disease (including hypertension) should be obtained. Physical examination should include measurement of height, weight, and calculation of BMI and age- and sex-adjusted BMI percentile according to CDC criteria[9,10] (see BMI calculator at http://apps.nccd.cdc.gov/dnpabmi/Calculator.aspx). The committee recommends that children with a BMI at or above the 85th percentile, but below the 95th percentile, be described as "overweight"; those with a BMI at or above the 95th percentile described as "obese," and those with a BMI above the 99th percentile described as "severely obese." By contrast, the CDC uses the phrase "at risk for overweight" for children with a BMI between the 85th and 94th percentiles and overweight for children with a BMI at or above the 95th percentile.

The CDC believes that the term "obese" is pejorative to children. The Expert Committee, however, states that different terminology for adults and children is confusing, and the benefits of consistent terminology outweigh the risk of offending children or families by using the terms "overweight" and "obese" in their proper clinical context. Any stigma associated with use of the term "obese," in particular, can be reduced when family physicians use a sensitive, nonjudgmental approach with patients. This should include describing a child's weight in terms of BMI percentile and its associated health risks, and then offering to help identify and change specific behaviors that contribute to excess weight.

**Table 1. Classification of Readiness to Change Dietary and Physical Activity Behaviors**

| *Stage* | *Description* |
|---|---|
| Precontemplation | Patient is not yet considering changing a lifestyle behavior |
| Contemplation | Patient is evaluating reasons for and against change |
| Preparation | Patient is planning for change |
| Action | Patient has carried out a change for less than six months |
| Maintenance | Patient has maintained a change for at least six months |

*Information from reference 8.*

Physical examination should also include pulse, blood pressure, and a search for signs commonly associated with obesity, such as hepatomegaly from fatty liver disease and acanthosis nigricans (associated with insulin resistance). Signs of possible reversible causes of obesity should also be sought, such as deep purple striae and the "buffalo hump" of Cushing's syndrome (a rare secondary cause of obesity). Laboratory testing depends on the degree of excess weight and additional risk factors for diseases (e.g., hypertension, known dyslipidemia, increased blood pressure, a strong family history of diabetes or other obesity-related disease). A fasting lipid profile should be obtained in children with a BMI between the 85th and 94th percentiles with no risk factors. Children with a BMI between the 85th and 94th percentiles and risk factors should have a fasting lipid profile and measurement of alanine transaminase and aspartate transaminase levels (to detect fatty liver disease) and fasting blood glucose (to detect type 2 diabetes). Children whose BMI is above the 95th percentile should have the same tests plus measurement of blood urea nitrogen

and creatinine levels to detect impaired renal function (which may have developed from long-standing hypertension or diabetes).

## Treatment Recommendations

The Expert Committee recommends that weight and weight-related lifestyle habits be addressed with all patients at least once annually. Children with a healthy weight (i.e., a BMI between the 5th and 84th percentiles) should follow prevention recommendations described in the next section (see Obesity Prevention). For overweight and obese children and adolescents two to 19 years of age, the committee recommends a staged approach of increasing intensity, depending on progress.

### STAGE 1 (PREVENTION-PLUS PROTOCOL)

This first step involves making specific dietary and physical activity recommendations, such as encouraging fruit and vegetable consumption and limiting television and other screen time (e.g., use of video games and computers). These are listed in *Table 2*.[11] Children should be followed monthly. If no improvement in BMI takes place after three to six months, Stage 2 should be considered.

### STAGE 2 (STRUCTURED WEIGHT-MANAGEMENT PROTOCOL)

This second step involves providing a more structured plan for children and families that includes a low–energy-dense, balanced diet; structured meals; supervised physical activity of at least 60 minutes daily[12]; one hour or less of screen time per day; and increased self-monitoring of these behaviors through completion of logs *(Table 3*[11]*)*. Family physicians may require help from allied care professionals or special expertise to implement this step. Children should be followed as often as needed to encourage adherence to these behaviors. If no improvement in BMI takes place after three to six months, Stage 3 is appropriate.

### STAGE 3 (COMPREHENSIVE, MULTIDISCIPLINARY INTERVENTION) AND STAGE 4 (TERTIARY-CARE INTERVENTION)

These more intensive interventions are delivered by highly trained teams with expertise in obesity. They are suitable for children who have not succeeded in achieving a healthier weight through Stages 1 and 2. Implementation of these interventions requires time, training, and expertise that are beyond the scope of family physicians. Referral is especially important for severely obese children and those with obesity-related comorbidities. Some hospital- and university-based children's weight-management centers that offer multidisciplinary obesity care programs are listed in *Table 4*.

### HEALTHY WEIGHT GOALS

The Expert Committee has adopted targets for healthy weight depending on age and degree of obesity. The ultimate goal for most children should always be the adoption of

**Table 2. Prevention-Plus Protocol for the Treatment of Childhood Obesity (Stage 1)**

| |
|---|
| Eat five or more servings of fruits and vegetables daily |
| Use television and computer for no more than two hours per day |
| Do not keep a television in child's bedroom |
| Participate in at least 60 minutes of moderate to vigorous physical activity per day |
| Do not consume sugar-sweetened beverages |
| Eat breakfast daily |
| Limit meals outside the home |
| Have family meals at least five to six times per week |
| Allow child to self-regulate food intake and avoid food restriction (e.g., a child should be permitted to eat portions of food until satiated, no more, or less) |

*Information from reference 11.*

**Table 3. Structured Weight-Management Protocol for the Treatment of Childhood Obesity (Stage 2)**

| |
|---|
| Develop a low–energy-dense, balanced-macronutrient diet plan |
| Increase structured daily meals and snacks |
| Schedule supervised physical activity for at least 60 minutes per day |
| Limit television and computer use to less than one hour per day |
| Increase monitoring of screen time, physical activity, dietary intake, and dining habits by physician, patient, and/or family; use logs if necessary |

*Information from reference 11.*

healthy behaviors for a lifetime. Healthy weight targets, however, provide family physicians with some general guidelines on what to expect from treatment. These are listed in *Table 5*.[13]

## Obesity Prevention

Prevention recommendations target children with an age- and sex-adjusted BMI between the 5th and 84th percentiles and are listed in *Table 6*.[14] Most of these recommendations have also been put forth elsewhere. Children should be encouraged to limit sweetened beverage intake (e.g., regular-calorie soft drinks)[15]; limit time spent in front of the television or computer screen to no more than one to two hours per day, especially before bedtime[16,17]; eat breakfast daily; limit fast-food consumption[18]; eat meals with parents whenever possible[19,20]; and limit portions to appropriate sizes. Families should be encouraged to follow a balanced diet high in calcium and to limit consumption of energy-dense foods (e.g., high-calorie snacks such as pastries and ice cream).

The Expert Committee also recommends that physicians make a special effort to engage families at risk, including those with parental obesity or maternal diabetes. Physicians should promote physical activity among all families, encourage parents to model healthy behaviors, and recommend that parents adopt an "authoritative" (demanding, assertive, and responsive) parenting style as opposed to a "restrictive" (heavy monitoring and controlling of behavior) parenting style with respect to physical activity and eating behaviors.

Finally, the committee recommends that physicians advocate for increased physical activity in schools and support efforts to make the physical environment (e.g., parks, neighborhoods) more compatible with increased physical activity for children and families.

**Table 4. Selected Childhood Obesity Referral Centers**

| *Location* | *Institution* | *Telephone number* |
|---|---|---|
| Atlanta, Ga. | Children's Healthcare of Atlanta | 404-785-8180 |
| Birmingham, Ala. | Children's Hospital | 205-939-9100 |
| Boston, Mass. | Children's Hospital Boston | 617-355-6000 |
| Chicago, Ill. | La Rabida Children's Hospital | 773-363-6700 |
| Cincinnati, Ohio | Cincinnati Children's Hospital Medical Center | 513-636-4200 |
| Columbus, Ohio | Nationwide Children's Hospital | 614-722-2000 |
| Fairview, Minn. | University of Minnesota Children's Hospital | 888-543-7866 |
| Houston, Tex. | Texas Children's Hospital | 832-824-7700 |
| Kansas City, Mo. | Children's Mercy Hospital | 816-234-3000 |
| Nashville, Tenn. | Monroe Carell Jr. Children's Hospital at Vanderbilt | 615-936-1000 |
| New York, NY | Columbia University Medical Center | 212-305-2305 |
| Norfolk, Va. | Children's Hospital of the King's Daughters | 757-668-7035 |
| Pittsburgh, Penn. | Children's Hospital of Pittsburgh | 412-692-8041 |
| St. Petersburg, Fla. | All Children's Hospital | 727-898-7451 |
| Stanford, Calif. (San Francisco Bay area) | Lucile Packard Children's Hospital at Stanford | 800-995-5724 |
| Wilmington, Del. (Philadelphia, Pa., area) | DuPont Hospital for Children | 302-651-6148 |

## Implementation

Putting these recommendations into practice may be challenging. Family physicians are busy and rarely have the opportunity to address obesity and obesity prevention in detail. Furthermore, families do not usually seek help specifically for weight management. Assessment and treatment, therefore, must often be incorporated into visits for other acute or chronic problems, or during visits for periodic health maintenance. New, practical approaches for putting obesity-related recommendations into practice are emerging. Based on the work of the Expert Committee, the National Initiative for Children's Healthcare Quality has developed an implementation guide for the full set of the committee's recommendations.[21] In addition to the recommendations themselves, the guide provides tips on how to carry out each one. These include useful assessment and management tools.

Public awareness of childhood obesity is increasing, and many families are

**Table 5. Healthy Weight Goals for Children and Adolescents**

| *Age range (years)* | *BMI range (percentile or absolute value)* | *Healthy weight goals* |
|---|---|---|
| Two to five | 85th to 94th percentiles | Weight maintenance until BMI < 85th percentile or slowing of weight gain as indicated by downward deflection in BMI curve |
| | ≥ 95th percentile | Weight maintenance until BMI < 85th percentile or carefully monitored weight loss of no more than 1 lb (0.5 kg) per month until < 85th percentile |
| | > 21 or 22 kg per $m^2$ | Gradual, carefully monitored weight loss of no more than 1 lb per month until BMI < 85th percentile |
| Six to 11 | 85th to 94th percentiles | Weight maintenance until BMI < 85th percentile or slowing of weight gain as indicated by downward deflection in BMI curve |
| | 95th to 98th percentiles | Weight maintenance until BMI < 85th percentile or carefully monitored weight loss of no more than 1 lb per month until < 85th percentile |
| | ≥ 99th percentile | Weight loss not to exceed an average of 2 lb (0.9 kg) per week until < 85th percentile |
| 12 to 18 | 85th to 94th percentiles | Weight maintenance until BMI < 85th percentile or slowing of weight gain as indicated by downward deflection in BMI curve |
| | 95th to 98th percentiles | Weight maintenance until BMI < 85th percentile or carefully monitored weight loss of no more than 1 lb per month until < 85th percentile |
| | ≥ 99th percentile | Weight loss not to exceed an average of 2 lb per week until < 85th percentile |

*BMI = body mass index.*

*Adapted with permission from Spear BA, Barlow SE, Ervin C, et al. Recommendations for treatment of child and adolescent overweight and obesity.* Pediatrics. *2007;120:S278.*

knowledgeable about behaviors that contribute to obesity. Simple, patient-oriented tools can be used by physicians and families to identify key behaviors that can later be briefly discussed in clinical encounters. *Figure 1*[22] is a tool for families to identify five common behaviors ("The Big Five") that, based on considerable evidence, have been implicated as causes of obesity. This screening tool is now being pilot-tested in a large number of community practices in western Pennsylvania. An interactive online form of the tool will eventually be available. Family physicians often have a long relationship with patients built on trust and a knowledge of what makes each family unique. Therefore, they are in an ideal position to help children and families through the slow, incremental process of achieving or maintaining a healthy weight.

Groups with representatives on the Expert Committee on the Assessment, Prevention, and Treatment of Child and Adolescent Overweight and Obesity include the following: American Academy of Child and Adolescent Psychiatry, American Academy of Family Physicians, American Academy of Pediatrics, American College of Preventive Medicine, American College of Sports Medicine, American Dietetic Association, American Pediatric Surgical Association, American Psychological Association, Association of American Indian Physicians, The Endocrine

**Table 6. Recommendations for Parents to Prevent Childhood Obesity**

| |
|---|
| Limit consumption of sugar-sweetened beverages |
| Encourage consumption of recommended quantities of fruits and vegetables |
| Limit television and other screen time to one to two hours a day in children five years and older |
| Remove television and computer from child's bedroom |
| Eat breakfast daily |
| Limit eating out, especially at fast-food restaurants |
| Ensure that parents and children eat meals together |
| Limit portions to appropriate serving sizes |

*Information from reference 14.*

## "The Big Five"—Scoring Worksheet

**Some habits contribute more than others to excess weight. Complete this brief scoring sheet on behalf of your child. Keep in mind that all children should have good nutrition and physical activity habits, regardless of whether they are overweight.**

**1. Sweetened beverages**

Sweetened beverages include fruit juices (whole juice or from concentrate), fruit drinks and punches, regular-calorie soft drinks, sports drinks (e.g., Gatorade), energy drinks, regular sweetened iced tea, and chocolate or other flavored milk. One serving of a sweetened beverage is 12 oz.

How many servings of sweetened beverage does your child consume in a typical day? (Round up any half servings to the next whole number of servings.)

- ❑ A. One or no servings = 0
- ❑ B. Two servings = 5
- ❑ C. Three servings = 10
- ❑ D. Four servings = 15
- ❑ E. Five or more servings = 20

*Record your child's score here:* _____

**2. Fast food (excluding sweetened beverages)**

Traditional fast food (e.g., burgers [with any type of meat], hot dogs, french fries, chicken nuggets, onion rings)

In a typical week, how often does your child eat traditional fast food?

- ❑ A. One time or less = 0
- ❑ B. Two times = 5
- ❑ C. Three times = 10
- ❑ D. Four times = 15
- ❑ E. Five or more times = 20

*Record your child's score here:* _____

**3. Family meals**

Eating dinner while being supervised by at least one parent is protective against obesity.

How often does your child eat dinner with at least one parent during a typical week?

- ❑ A. One time or less = 20
- ❑ B. Two or three times = 10
- ❑ C. Four or five times = 5
- ❑ D. Six or seven times = 0

*Record your child's score here:* _____

**4. Media time**

Media time is defined as the amount of time your child spends watching television, using a computer (apart from homework), playing video games, or listening to a music device while sitting or lying still.

In a typical day, how much total media time does your child have?

- ❑ A. Less than one hour = 0
- ❑ B. One to two hours = 5
- ❑ C. Two to three hours = 10
- ❑ D. Three to four hours = 15
- ❑ E. More than four hours = 20

*Record your child's score here:* _____

**5. Habitual physical activity**

Regular physical activity is protective against obesity. This can include most sports as long as your child is out of breath at least once while playing (softball and bowling do not usually count). It can also include walking, riding a bike, skateboarding, etc., regardless of whether your child is out of breath. Gym class does not count.

In a typical week, on how many days does your child participate in physical activity (sports to the point of being out of breath) or walking, riding a bike, etc., for at least 30 minutes total per day?

- ❑ A. Zero or one day = 20
- ❑ B. Two or three days = 10
- ❑ C. Four or five days = 5
- ❑ D. Six or seven days = 0

*Record your child's score here:* _____

*Total score:* _____

**To calculate your child's total score, add up the scores above, and then subtract that number from 100. For example, if the sum of the scores above is 60, your child's score would be: 100 – 60 = 40**

**Scoring guide:**

80 to 100 points. Excellent. Although there is always room for improvement, it's obvious that your child is practicing habits that will help him or her achieve or maintain a healthy weight.

60 to 80 points. Good. Your child has many good habits, but there is still significant room for improvement.

40 to 60 points. Fair. To achieve or maintain a healthy weight, there are many healthy behaviors your child needs to adopt.

Less than 40 points. Poor. Your child is at high risk of becoming obese or remaining obese. You should speak to your doctor about helping your child achieve a healthy weight.

**Figure 1.** "Big Five" Scoring Worksheet

*Information from Rao G.* Child Obesity: a Parent's Guide to a Fit, Trim and Happy Child. *Amherst, NY: Prometheus Books; 2006.*

Society, National Association of Pediatric Nurse Practitioners, National Association of School Nurses, National Hispanic Medical Association, National Medical Association, and North American Association for the Study of Obesity.

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Author disclosure: Nothing to disclose.

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