

## Screening for Obesity in Children and Adolescents: Recommendation Statement

As published by the U.S. Preventive Services Task Force.

This summary is one in a series excerpted from the Recommendation Statements released by the USPSTF. These statements address preventive health services for use in primary care clinical settings, including screening tests, counseling, and preventive medications.

The complete version of this statement, including supporting scientific evidence, evidence tables, grading system, members of the USPSTF at the time this recommendation was finalized, and references, is available on the USPSTF website at <http://www.uspreventiveservicestaskforce.org/>.

This series is coordinated by Sumi Sexton, MD, Associate Deputy Editor.

A collection of USPSTF recommendation statements published in *AFP* is available at <http://www.aafp.org/afp/uspstf>.

### Summary of Recommendation and Evidence

The USPSTF recommends that clinicians screen for obesity in children and adolescents 6 years and older, and offer or refer them to comprehensive, intensive behavioral interventions to promote improvements in weight status (*Table 1*).

#### B recommendation.

### Rationale

#### IMPORTANCE

Approximately 17% of children and adolescents aged 2 to 19 years in the United States have obesity (defined as an age- and sex-specific body mass index [BMI] in the 95th percentile or greater, based on year 2000 Centers for Disease Control and Prevention [CDC] growth charts).<sup>1-4</sup> Almost 32% of children and adolescents are overweight (defined as an age- and sex-specific BMI in the 85th to 94th percentile) or have obesity.<sup>2,3</sup> Although the overall rate of child and adolescent obesity has stabilized over the last decade after increasing steadily for 3 decades, obesity rates continue to increase in certain populations, such as African American girls and Hispanic boys.<sup>4,5</sup> The proportion of children who meet the criteria for severe obesity (class II [ $\geq 120\%$  of the 95th percentile] or class III [140% of the 95th percentile]) also continues to increase.<sup>6</sup>

Obesity in children and adolescents is associated with morbidity such as mental health and psychological issues, asthma, obstructive sleep apnea, orthopedic problems, and adverse cardiovascular and metabolic outcomes (e.g., high blood pressure, abnormal lipid levels, and insulin resistance). Children and adolescents also may experience teasing and bullying behaviors based on their weight. Obesity in childhood and adolescence may continue into adulthood and lead to adverse cardiovascular

outcomes or other obesity-related morbidity, such as type 2 diabetes.<sup>3</sup>

#### DETECTION

In 2005, the USPSTF found that age- and sex-adjusted BMI (calculated as weight in kilograms divided by the square of height in meters) percentile is the accepted measure for detecting overweight or obesity in children and adolescents because it is feasible for use in primary care, a reliable measure, and associated with adult obesity.<sup>7-9</sup>

#### BENEFITS OF EARLY DETECTION AND TREATMENT OR INTERVENTION

The USPSTF found adequate evidence that screening and intensive behavioral interventions for obesity in children and adolescents 6 years and older can lead to improvements in weight status. The magnitude of this benefit is moderate.

Studies on pharmacotherapy interventions (i.e., metformin and orlistat) showed small amounts of weight loss. The magnitude of this benefit is of uncertain clinical significance, because the evidence regarding the effectiveness of metformin and orlistat is inadequate.

#### HARMS OF EARLY DETECTION AND TREATMENT OR INTERVENTION

The USPSTF found adequate evidence to bound the harms of screening and comprehensive, intensive behavioral interventions for obesity in children and adolescents as small to none, based on the likely minimal harms of using BMI as a screening tool, the absence of reported harms in the evidence on behavioral interventions, and the noninvasive nature of the interventions.

Evidence on the harms associated with metformin is inadequate. Adequate evidence shows that orlistat has moderate harms,

**Table 1. Screening for Obesity in Children and Adolescents: Clinical Summary of the USPSTF Recommendation**

<b>Population</b>	Children and adolescents 6 years and older
<b>Recommendation</b>	Screen for obesity; offer or refer children and adolescents with obesity to comprehensive, intensive behavioral interventions to promote improvements in weight status. Grade: B
<b>Risk assessment</b>	All children and adolescents are at risk for obesity and should be screened; specific risk factors include parental obesity, poor nutrition, low levels of physical activity, inadequate sleep, sedentary behaviors, and low family income.
<b>Screening tests</b>	BMI measurement, using height and weight, is the recommended screening test for obesity. Obesity is defined as an age- and sex-specific BMI in the 95th percentile or greater.
<b>Interventions</b>	Comprehensive, intensive behavioral interventions of $\geq 26$ contact hours resulted in weight loss. Effective interventions consisted of multiple components, including: sessions targeting both the parent and child (separately, together, or both); offering individual sessions (both family and group); providing information about healthy eating, safe exercising, and reading food labels; encouraging the use of stimulus control (e.g., limiting access to tempting foods and screen time), goal setting, self-monitoring, contingent rewards, and problem solving; and supervised physical activity sessions. Providers included primary care clinicians, exercise physiologists, physical therapists, dieticians, diet assistants, psychologists, and social workers, but the more intensive interventions usually involved referral outside the primary care office. Evidence regarding pharmacotherapy interventions was inadequate.
<b>Balance of benefits and harms</b>	The USPSTF concludes with moderate certainty that the net benefit of screening for obesity in children and adolescents 6 years and older, and offering or referring them to comprehensive, intensive behavioral interventions to promote improvements in weight status is moderate.
<b>Other relevant USPSTF recommendations</b>	The USPSTF has made recommendations on screening for primary hypertension and lipid disorders in children and adolescents. These recommendations are available on the USPSTF website ( <a href="https://www.uspreventiveservicestaskforce.org">https://www.uspreventiveservicestaskforce.org</a> ).

NOTE: For a summary of the evidence systematically reviewed in making this recommendation, the full recommendation statement, and supporting documents, go to <http://www.uspreventiveservicestaskforce.org/>.

BMI = body mass index; USPSTF = U.S. Preventive Services Task Force.

including abdominal pain or cramping, flatus with discharge, fecal incontinence, and fatty or oily stools.

#### USPSTF ASSESSMENT

The USPSTF concludes with moderate certainty that the net benefit of screening for obesity in children and adolescents 6 years and older and offering or referring them to comprehensive, intensive behavioral interventions to promote improvements in weight status is moderate.

#### Clinical Considerations

##### PATIENT POPULATION UNDER CONSIDERATION

This recommendation applies to children and adolescents 6 years and older.

##### ASSESSMENT OF RISK

Although all children and adolescents are at risk for obesity and should be screened, there are several specific risk factors, including parental obesity, poor nutrition, low levels of physical activity, inadequate sleep, sedentary behaviors, and low family income.<sup>3</sup>

Risk factors associated with obesity in younger children include maternal diabetes, maternal smoking, gestational weight gain, and rapid infant growth. A decrease in physical activity in young children is a risk factor for obesity later in adolescence. Obesity rates continue to increase in some racial/ethnic minority populations. These racial/ethnic differences in obesity prevalence are likely a result of both genetic and non-genetic factors (e.g., socioeconomic status, intake of sugar-sweetened beverages and fast food, and having a television in the bedroom).<sup>3</sup> The prevalence of obesity is approximately 21% to 25% among African American and Hispanic children 6 years and older.<sup>2,3</sup> In contrast, the prevalence of obesity ranges from 3.7% among Asian girls aged 6 to 11 years to 20.9% among non-Hispanic white adolescent girls.<sup>2,3</sup>

##### SCREENING TESTS

BMI measurement is the recommended screening test for obesity. BMI percentile is plotted on growth charts, such as those developed by the CDC, which are based on

U.S.-specific, population-based norms for children 2 years and older.<sup>10</sup> Obesity is defined as an age- and sex-specific BMI in the 95th percentile or greater.

#### SCREENING INTERVAL

The USPSTF found no evidence regarding appropriate screening intervals for obesity in children and adolescents. Height and weight, which are necessary for BMI calculation, are routinely measured during health maintenance visits.

#### TREATMENT AND IMPLEMENTATION

The USPSTF recognizes the challenges that children and their families encounter in having limited access to effective, intensive behavioral interventions for obesity. Identifying obesity in children and how to address it is an important step in helping children and families obtain the support they need.

The USPSTF found that comprehensive, intensive behavioral interventions with a total of 26 contact hours or more over a period of 2 to 12 months resulted in weight loss (Table 2).<sup>3,4</sup> Behavioral interventions with a total of 52 contact hours or more demonstrated greater weight loss and some improvements in cardiovascular and metabolic risk factors. These effective, higher-intensity ( $\geq 26$  contact hours) behavioral interventions consisted of multiple components.<sup>3,4</sup> Although these components varied across interventions, they frequently

included sessions targeting both the parent and child (separately, together, or both); offered individual sessions (both family and group); provided information about healthy eating, safe exercising, and reading food labels; encouraged the use of stimulus control (e.g., limiting access to tempting foods and limiting screen time), goal setting, self-monitoring, contingent rewards, and problem solving; and included supervised physical activity sessions. Intensive interventions involving 52 or more contact hours rarely took place in primary care settings but rather in settings to which primary care clinicians could refer patients. These types of interventions were often delivered by multidisciplinary teams, including pediatricians, exercise physiologists or physical therapists, dietitians or diet assistants, psychologists or social workers, or other behavioral specialists.<sup>3,4</sup>

Adherence to interventions can change their effectiveness. In the included trials, 68% to 95% of participants completed all of the sessions.<sup>3</sup> Lower adherence in clinical practice could decrease the overall benefit of these interventions.

Metformin has been used for weight loss in children but is not approved by the U.S. Food and Drug Administration for this purpose. Metformin has a small effect on weight (BMI reduction  $< 1$ ), and this effect is of uncertain clinical significance. Although the harms of metformin use are probably small, evidence regarding long-term outcomes of its use is lacking. In addition,

**Table 2. Components of Behavioral Interventions in 42 Trials for Treatment of Obesity in Children and Adolescents\***

Contact time (hours)	No. of trials	No. of participants	Trials with physical activity sessions, no. (%)	Intervention approach and target
$\geq 52$	7	1,252	7 (100)	Group sessions $\pm$ individual sessions
26 to 51	9	838	5 (56)	Parent-only + child-only + family sessions Referral/specialty clinic setting Frequently provided sessions on healthy eating, safe exercising, and reading food labels; encouraged the use of stimulus control (e.g., limiting access to tempting foods and limiting screen time), goal setting, self-monitoring, contingent rewards, and problem solving
6 to 25	11	1,085	4 (36)	Group sessions $\pm$ individual sessions Referral/specialty clinic setting
1 to 5	15	3,781	0	Individual sessions Usually targeted parents + child together Frequently conducted in primary care settings Used motivational interviewing

\*—Behavioral interventions with 26 or more contact hours were found to be effective.

Information from references 3 and 4.

participants in the metformin trials had abnormal insulin or glucose metabolism, and most had severe obesity. This limits the applicability of the results to a general pediatric population with obesity. Orlistat is approved by the U.S. Food and Drug Administration for use in adolescents 12 years and older. However, orlistat also has a small effect on weight (BMI reduction < 1), and this effect is of uncertain clinical significance. In addition, orlistat is associated with moderate harms. Therefore, the USPSTF encourages clinicians to promote behavioral interventions as the primary effective intervention for weight loss in children and adolescents.

*Clinically Important Weight Loss.* Research studies use a standardized measure (z score) of BMI known as BMI z score. This measure helps compare results among children of different ages and over time as children grow. A few observational studies have addressed the question of what change in BMI z score or excess weight represents a clinically important change. These studies showed that a BMI z score reduction of 0.15 to 0.25 is associated with improvements in cardiovascular and metabolic risk factors.<sup>3,4</sup> A German expert panel determined that a BMI z score reduction of 0.20 is clinically significant and is comparable to a weight loss of approximately 5%.<sup>11</sup> A BMI z score reduction in the range of 0.20 to 0.25 appears to be a suitable threshold for clinically important change.<sup>3</sup>

An analysis by Epstein et al. of 10-year outcomes from 4 randomized clinical trials of family-based behavioral obesity treatment programs suggested an association between weight loss in childhood and decreased risk of obesity in early adulthood. Participants were aged 8 to 12 years at baseline (mean age, 10.4 years), and average age at follow-up was 20 years.<sup>3,12,13</sup> Almost all participants (about 85%) had obesity at baseline. The comprehensive behavioral interventions involved 30 or more contact hours with the families. Among children with obesity, 52% continued to have obesity as adults.<sup>3,12,13</sup> In contrast, naturalistic longitudinal studies with similar follow-up report obesity rates of 64% to 87% among adults who had obesity as children; U.S.-based studies were often at the upper end of the range.<sup>9,14-16</sup>

**ADDITIONAL APPROACHES TO PREVENTION**

The Community Preventive Services Task Force recommends behavioral interventions to reduce sedentary screen time among children 13 years and younger.<sup>17</sup> It found insufficient evidence to recommend school-based obesity programs to prevent or reduce overweight and obesity among children and adolescents.<sup>18</sup>

The CDC recommends 26 separate community strategies to prevent obesity, such as promoting breastfeeding, promoting access to affordable healthy food and

beverages, promoting healthy food and beverage choices, and fostering physical activity among children.<sup>19</sup>

**USEFUL RESOURCES**

In a separate recommendation, the USPSTF concluded that there is insufficient evidence to assess the balance of benefits and harms of screening for primary hypertension in asymptomatic children and adolescents to prevent subsequent cardiovascular disease in childhood or adulthood (I statement).<sup>20</sup> The USPSTF has also concluded that there is insufficient evidence to assess the balance of benefits and harms of screening for lipid disorders in children and adolescents (I statement).<sup>21</sup>

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The "Other Considerations," "Discussion," "Update of Previous USPSTF Recommendation," and "Recommendations of Others" sections of this recommendation statement are available at <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/obesity-in-children-and-adolescents-screening1>.

The USPSTF recommendations are independent of the U.S. government. They do not represent the views of the Agency for Healthcare Research and Quality, the U.S. Department of Health and Human Services, or the U.S. Public Health Service.

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