

# Prevention and Treatment of Pediatric Obesity and Diabetes

Help Kids and Teens Get on a Healthy Track with the Good Health Club



## Physician Guidelines



An independent licensee of the Blue Cross and Blue Shield Association

As you know, Americans weigh more each year. In fact, the rate of obesity has more than tripled in three decades and, as the weight of the nation increases, the prevalence of diabetes rises.

The Blue Cross and Blue Shield companies recognize the critical role physicians have in motivating patients to adopt healthier lifestyles. As physicians, you treat young children who may struggle with weight issues. That puts you in a unique position to help them identify and develop healthy habits that will guide them in being healthier adults. These guidelines were designed to provide you with a quick reference when looking at possible risk factors in your young patients.

Together, we can prevent future cases of diabetes by encouraging healthy choices and behaviors in America's youth today.

## Guidelines for Physicians on the Prevention and Treatment of Childhood Diabetes Based on Identified Risk

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Sources: Adapted from the American Academy of Pediatrics; Expert Committee Recommendations Regarding the Prevention, Assessment and Treatment of Child and Adolescent Overweight and Obesity: Summary Report; Centers for Disease Control and Prevention; Saint Joseph’s Hospital, Atlanta, Ga.; and Blue Cross and Blue Shield companies by the Blue Cross and Blue Shield Association.

Review provided by leading experts:  
American Academy of Pediatrics  
American Diabetes Association

## General Risk Assessment

This assessment is recommended for all pediatric patients, regardless of their known level of risk.

All children should:

- Get their height and weight measured at each visit.
- Get their Body Mass Index (BMI) calculated during each office visit.

Assessment	Key Elements	Details
Medical and Family History	Identify familial risks.	<ul style="list-style-type: none"><li>• Overweight/obese</li><li>• Type 2 diabetes</li><li>• High blood pressure</li><li>• Heart disease</li><li>• High cholesterol</li></ul>

Assessment	Key Elements	Details
<b>Physical Examination</b>	<p><b>For all patients:</b></p> <ul style="list-style-type: none"> <li>• Measure height and weight.</li> <li>• Calculate BMI and plot on standard growth charts.</li> </ul> <p><b>For healthy weight patients:</b></p> <ul style="list-style-type: none"> <li>• Measure blood pressure (correct cuff).</li> </ul> <p><b>For overweight patients:</b></p> <ul style="list-style-type: none"> <li>• Blood pressure (correct cuff), acanthosis nigricans, tonsils, goiter, tender abdomen, liver, bowing of legs, limited hip range of motion, optic discs if headaches, acne and hirsutism.</li> </ul> <p><b>For obese patients:</b></p> <ul style="list-style-type: none"> <li>• Blood pressure (correct cuff), acanthosis nigricans, tonsils, goiter, tender abdomen, liver, bowing of legs, limited hip range of motion, optic discs if headaches, acne and hirsutism.</li> </ul>	<ul style="list-style-type: none"> <li>• Measure height</li> <li>• Measure weight</li> <li>• Online calculator, BMI wheel, growth charts</li> </ul> <p>To calculate BMI:  Weight (kg) / [Height (cm)]<sup>2</sup> x 10,000 or  Weight (lb) / [Height (in)]<sup>2</sup> x 703</p>

## General Risk Assessment

Assessment	Key Elements	Details
Physical Examination	<b>For morbidly obese patients:</b> <ul style="list-style-type: none"><li>• Blood pressure (correct cuff), acanthosis nigricans, tonsils, goiter, tender abdomen, liver, bowing of legs, limp, limited hip range of motion, optic discs if headaches, acne, hirsutism and skin inflammation.</li></ul>	
	<ul style="list-style-type: none"><li>• Identify underlying syndromes or secondary complications for overweight and obese patients.</li></ul>	<ul style="list-style-type: none"><li>• Severe recurrent headaches</li><li>• Shortness of breath, exercise intolerance</li><li>• Snoring, apnea, daytime sleepiness</li><li>• Sleepiness or wakefulness</li><li>• Abdominal pain</li><li>• Hip, knee or walking pain</li><li>• Foot pain</li><li>• Irregular menses (&lt;9 per year)</li><li>• Primary amenorrhea</li><li>• Polyuria polydipsia</li><li>• Unexpected weight loss</li><li>• Nocturnal enuresis</li></ul>

Assessment	Key Elements	Details
<b>Weight Status Category</b>	Categories based on BMI percentile: <ul style="list-style-type: none"> <li>• Underweight: Less than the 5th percentile</li> <li>• Healthy Weight: 5th percentile to less than the 85th percentile</li> <li>• Overweight: 85th to less than the 95th percentile</li> <li>• Obese: Equal to or greater than the 95th percentile</li> </ul>	
<b>Nutritional Review</b>	Identify eating behaviors, food intake and preferences for all locations: <ul style="list-style-type: none"> <li>• At home</li> <li>• At school</li> <li>• At other caregiver</li> </ul>	Probe on: <ol style="list-style-type: none"> <li>1. Eating breakfast</li> <li>2. Portion size</li> <li>3. Eating balanced meals</li> <li>4. Limiting sugar and fat intake</li> <li>5. Preferred beverages</li> </ol>

## General Risk Assessment

Assessment	Key Elements	Details
<b>Activity Review</b>	Identify daily activities and exercise patterns.	Probe on: <ul style="list-style-type: none"><li>• Daily physical activity at home and school</li><li>• Types of activity (vigorous or leisurely — for example, running versus walking)</li><li>• Amount of daily screen time (e.g., TV, instant messaging, video games, etc.)</li></ul>
<b>Psychosocial Assessment</b>	<ul style="list-style-type: none"><li>• Screen for depression.</li><li>• Assess family support to change.</li></ul>	Scale of 1–10: <ol style="list-style-type: none"><li>1. Not Ready (1–3)</li><li>2. Somewhat Ready (4–6)</li><li>3. Willing (7–10)</li></ol>

Assessment	Key Elements	Details
<p><b>Psychosocial Assessment</b></p>	<p><b>Not Ready to Change (1–3):</b></p> <ul style="list-style-type: none"> <li>• Do you have any concerns regarding your child’s weight? Parent/patient doesn’t express concern.</li> <li>• Are you worried about your child’s eating or activity? Parent/patient does not think this is a problem.</li> <li>• Are you worried about your child’s ability to do activities with others his/her age? Parent/patient does not think this is a problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Acknowledge the patient is not ready to work on weight loss at this time, and let patient know you respect his/her decision.</li> <li>• Review the health risks that come with being overweight and how this is affecting the patient (review BMI, waist circumference and health risks) and advise to maintain current weight.</li> <li>• Give the parent and patient more information to take home.</li> </ul>

## General Risk Assessment

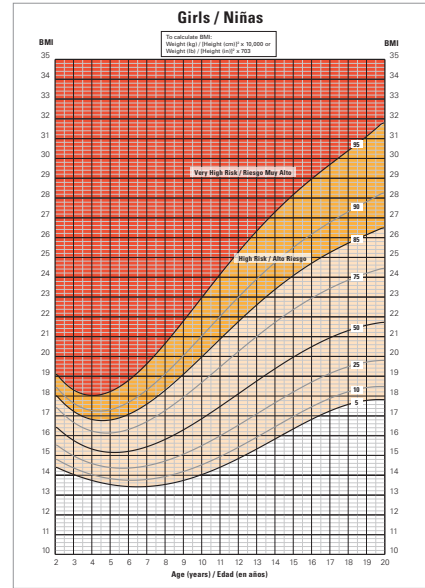
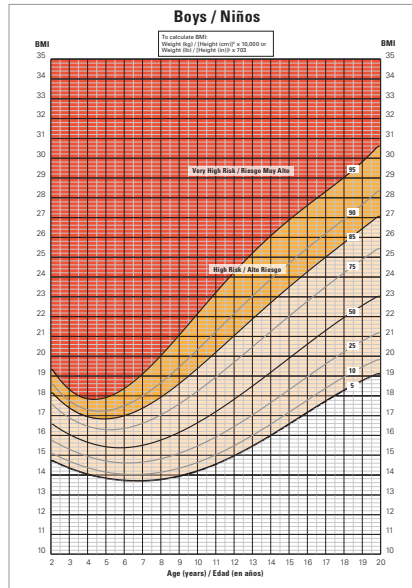
Assessment	Key Elements	Details
<b>Psychosocial Assessment</b>	<p><b>Somewhat Ready to Change (4–6):</b></p> <ul style="list-style-type: none"><li>• Are you worried about your child’s weight? Parent/patient has some worries.</li><li>• Are you worried about your child’s ability to do activities with others his/her age? Parent/patient has some worries.</li><li>• Considering your family history, are you worried about your child getting diabetes? Parent worries about child being at risk.</li><li>• On a scale of 1–10, how willing are you to change some habits around nutrition and activity? 4–6 shows some willingness to change.</li><li>• Can I tell you my concerns?</li><li>• May I give you some information on healthy nutrition and activity?</li></ul>	<ul style="list-style-type: none"><li>• Acknowledge the patient in a nonjudgmental manner. Review the health risks of being overweight and how this is affecting the patient. Tell the patient to bring up the subject at any time in the future. You could also follow-up with: “What would help you become more ready for change?”</li></ul>

Assessment	Key Elements	Details
<b>Psychosocial Assessment</b>	<p><b>Willing to Change (7–10):</b></p> <ul style="list-style-type: none"> <li>• Are you worried about your child’s weight? Parent/patient is worried.</li> <li>• Are you worried about your child’s ability to do activities with others his/her age? Parent/patient is concerned.</li> <li>• Considering your family history, are you worried about your child getting diabetes? Parent worries about child being at risk.</li> <li>• On a scale of 1–10, how willing are you to change your eating habits and activity? 7-10 shows a willingness to change.</li> </ul>	<ul style="list-style-type: none"> <li>• Talk about options and help the patient establish an action plan.</li> <li>• “Have you tried making changes in the past? What changes were the most successful and least successful?”</li> <li>• “How much physical activity do you usually get right now? How do you feel about being more active?”</li> <li>• “Will your family and friends help you lose weight?”</li> <li>• “Do you think you will have any problems losing weight?”</li> <li>• “What do you think would be the easiest thing to change or work on first?”</li> </ul>

# Physical Risk Assessment

Identifying Risk through Body Mass Index-for-age percentiles for boys and girls, ages 2–20

*See the laminated Body Mass Index-for-age percentiles chart for a larger image.*



Source: Centers for Disease Control and Prevention

BMI Category	Risk Level	Recommended Action	Care Guidelines
<p><b>Overweight BMI: 85th to less than the 95th percentile</b></p>	<p><b>High</b></p>	<p>1. If there is evidence of a health risk, use “Stage 1 Prevention Plus Protocol.” These recommendations can be used by the primary care physician or other healthcare professionals who have some training in pediatric weight management or behavioral counseling. The goal should be to keep the same weight with growth, resulting in a decreasing BMI as age increases. Stage 1 recommendations include:</p> <ul style="list-style-type: none"> <li>• Dietary habits and physical activity: <ul style="list-style-type: none"> <li>~ Five or more servings of fruits and vegetables per day</li> <li>~ Two hours or less of screen time per day and no TV in the room where the child sleeps</li> <li>~ One hour or more of daily physical activity</li> <li>~ No sugar-sweetened drinks</li> </ul> </li> </ul>	<p>1. With risk factors in patient’s history or following physical examination: Obtain fasting glucose and other tests depending on risk.</p> <p>Twice a year check-up, starting at 10 years of age for children with a BMI in the 85th to less than the 95th percentile who have other risk factors.</p>

## Physical Risk Assessment

BMI Category	Risk Level	Recommended Action	Care Guidelines
<b>Overweight BMI: 85th to less than the 95th percentile</b>	<b>High</b>	<ul style="list-style-type: none"><li>• Patients and families of the patient should learn how to follow these eating behaviors:<ul style="list-style-type: none"><li>~ Eating a daily breakfast</li><li>~ Limiting meals outside of the home</li><li>~ Family eating meals together at least five times per week</li><li>~ Allowing the child to monitor his or her meals and avoiding overly restrictive behaviors</li><li>~ Follow-up: After 3-6 months, if there is no improvement in BMI or weight status, advance to Stage 2, based on patient and family's readiness to change.</li></ul></li></ul>	

BMI Category	Risk Level	Recommended Action	Care Guidelines
<b>Overweight BMI: 85th to less than the 95th percentile</b>	<b>High</b>	<ol style="list-style-type: none"> <li>2. If no health risk, look for behavior problem — such as bad eating habits or not being active enough. Set goals to improve.</li> <li>3. A follow-up appointment to check weight should be scheduled in one month.</li> </ol>	<ol style="list-style-type: none"> <li>2. With no risk factors: Get fasting lipid profile.</li> </ol>
<b>Obese BMI: Equal to or greater than the 95th percentile</b>	<b>Very High</b>	<ol style="list-style-type: none"> <li>1. Same as protocol for “High” risk.</li> <li>2. Refer the patient and the parents to an obesity treatment program if they demonstrate a readiness to change.</li> </ol>	<ol style="list-style-type: none"> <li>1. Even without risk factors: Obtain appropriate “High” risk level laboratory tests, plus blood urea nitrogen, or BUN, and creatinine.</li> </ol>

## Behavioral Risk Assessment

This will help you look for behavioral risks and recommend actions with parents.  
Track their answers to the questionnaire.

1. Does your child eat five or more fruits and vegetables per day?  Yes  No
2. Does your child have a favorite fruit or vegetable that they eat every day?  Yes  No
3. Does your child eat breakfast five times a week or more?  Yes  No
4. Does your child watch TV, videos or play computer games for two hours or less per day?  Yes  No
5. Does your child take gym class or participate in sports or dance in or outside of school three or more times a week?  Yes  No
6. Does your child have a favorite sport or physical activity that they love to do?  Yes  No
7. Does your child eat dinner at the table with the family at least once a week?  Yes  No
8. Is your child's room a "TV-free zone?"  Yes  No
9. Does your child eat meals at the table with the TV turned off?  Yes  No
10. Does your child drink water instead of soda, juice or other sweetened drinks?  Yes  No

Add the number of “No’s” to conduct the following behavioral risk assessment:

No's	Risk Level	Recommended Action
1-5	Low to Medium	1. Reinforce proper nutrition and behavior.
6-8	High	1. Reinforce proper nutrition and behavior. 2. Review healthy living and self-help information with patient/parent.
9-10	Very High	1. Reinforce proper nutrition and behavior. 2. Review healthy living and self-help information with patient/parent. 3. Make an action plan to become healthier.

## Reference: Lab Values

These are the lab tests you could use to identify whether a pediatric patient is prediabetic. They wouldn't be performed on a child who is at a healthy weight – only on overweight or obese pediatric patients.

### Plasma Glucose Criteria for the Diagnosis of Impaired Glucose Tolerance in Diabetes

Plasma Glucose	Normal	Impaired	Diabetes
Fasting Plasma Glucose	<100 mg/dl	100-125 mg/dl	≥126 mg/dl
Two-hour modified OGTT (Perform test using a glucose load containing equivalent of 75 g anhydrous glucose dissolved in water). <i>OGTT is not recommended for routine clinical use.</i>	<140 mg/dl	140-199 mg/dl	≥200 mg/dl
Random			≥200 mg/dl + symptoms
HBA1c			≥6.5%

*Note: Tests may be repeated on another day to confirm diagnosis of diabetes for all test methods.*

## Cholesterol

Category	Acceptable	Borderline	Abnormal
Cholesterol (mg/dl)	<170	170-199	>200
LDL (mg/dl)	<110	110-129	>130
HDL (mg/dl)	≥45		<35

## Triglycerides

Age	Male	Female
8-9	25-90	30-115
10-11	30-105	35-130
12-15	35-130	40-125
16-19	40-145	40-125

## Diseases Related to Childhood Obesity

The following are symptoms and possible etiologies of illnesses that may be related to childhood obesity.

Symptom	Possible Etiologies
Anxiety, school avoidance, social isolation	Depression
Severe recurrent headaches	Pseudotumor cerebri
Shortness of breath, exercise intolerance	Asthma, lack of physical conditioning
Snoring, apnea, daytime sleepiness	Obstructive sleep apnea, obesity hypoventilation syndrome
Sleepiness or wakefulness	Depression
Abdominal pain	Gastroesophageal reflux disease, constipation, gall bladder disease, nonalcoholic fatty liver disease

Symptom	Possible Etiologies
Hip, knee, walking pain	Slipped capital femoral epiphysis, Blount's disease, musculoskeletal stress from weight (may be a barrier to physical activity)
Foot pain	Musculoskeletal stress from weight (may be a barrier to physical activity)
Irregular menses (<9 per year)	Polycystic ovary syndrome (may be normal if recent menarche)
Primary amenorrhea	Polycystic ovary syndrome, Prader-Willi syndrome
Polyuria, polydipsia	Type 2 diabetes
Unexpected weight loss	Type 2 diabetes
Nocturnal enuresis	Obstructive sleep apnea
Tobacco use	Increased cardiovascular risk; may be used as a form of weight control

## **Help your pediatric patients and their parents get on a healthy track.**

Give your patients information about the Good Health Club. Each of the four characters follow four healthy habits that help kids keep fit, eat right and avoid obesity and diabetes. The Good Health Club tells kids to eat lots of fruits and veggies, drink water instead of soda, and work up a sweat doing something fun instead of watching TV or playing on the computer.

# Tips from the Good Health Club:

## Stretch

This tall, cool gal is here to say, "Eat five fruits and veggies every day!"

- Give kids 5 servings of fruits and vegetables every day.
- Prepare more meals at home, as a family.
- Prevent diabetes, heart disease and many forms of cancer with a diet rich in fruits and veggies.



## Hoot

Hoot's wise advice is to get out and play, "Turn off the TV and computer—get moving today!"



- Limit screen time (TV, video games, computers) to 2 hours or less per day.
- Avoid putting a TV in your child's bedroom.
- Encourage children to be physically active before allowing screen time.

## Spark

Spark has just one rhyme she likes to say, "Take an hour each day to go out and play!"

- Get at least 1 hour of physical activity each day.
- Plan family walk time after dinner.
- Encourage kids to join a school sports team, club or dance class.



## Flip

This thirsty frog says what he thinks, "Stick with water and skip the sweet drinks!"

- Avoid serving soft drinks or sweetened drinks to kids.
- Encourage water between meals because it helps kids feel full.
- Add fruit like lemons or limes to your water for better flavor.

