

# Pediatric Obesity Clinical Decision Support Chart

keep ME healthy

The word "keep" is in black, "ME" is in green, and "healthy" is in black. Below the word "keep" are three icons: a teal bowl containing various fruits and vegetables labeled "5"; a purple television labeled "2"; and a basketball hoop and ball labeled "1". To the right of the word "healthy" is a black circle with a diagonal red slash through it, containing a purple bottle labeled "SODA" and "POP".

## 5210

- 5** Eat fruits and vegetables at least 5 or more times on most days.
- 2** Limit screen time unrelated to school to 2 hours or less daily.
- 1** Get 1 hour *or more* of moderate to vigorous physical activity every day and 20 minutes of vigorous activity at least 3 times a week.
- 0** Drink less sugar. Try water and low-fat milk instead of sugar-sweetened drinks.

# Introduction

The *Pediatric Obesity Clinical Decision Support Chart* provides clinicians with practical, point-of-care guidance on the prevention and treatment of obesity. Adapted from the *keep ME healthy* flip chart developed by the Maine Center for Public Health and the Maine Chapter of the American Academy of Pediatrics, the chart also contains the latest information from “Expert Committee Recommendations on the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity” by Sarah E. Barlow, MD, MPH, and the Expert Committee.

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The recommendations in this publication do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

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Adapted from the *keep ME healthy* chart developed by the Maine Center for Public Health and the Maine Chapter of the American Academy of Pediatrics (copyright 2006 Maine Center for Public Health).

New obesity terminology, assessment, and treatment content from Barlow S, Expert Committee. Expert committee recommendations on the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics*. 2007;120:S164–S192.

# Treatment Interventions for the Overweight Child

## BMI Calculation and Classification of BMI Percentage Begins the Process of Evaluation

### 1. Tailor interventions

- Age appropriate
- Meet patient's and family's readiness to change

### 2. Key steps

- Start early
- Aim for long-term behavioral/lifestyle change
- Use small steps and gradual change
- Family support/praise
- Measurable goals ("if you can't count it, you can't change it")

### 3. Techniques

- Focus on successes not failures.
- Realize this is really hard work.
- Adherence from patients will vary; support return to the plan in a nonjudgmental way.
- Expect periods of relapse and be ready to troubleshoot with the patient and family.
- Identify potentially high-risk nutrition and activity behaviors.

### 4. Mental health

- Evaluate family stressors and comorbidities (eg, depression, anxiety, post-traumatic stress disorder).
- Assess need for mental health intervention (eg, family or individual counseling, medications).
- Consider mental health consult (eg, child psychology).

### 5. Healthy eating and nutrition education

- Assess patient and family's eating habits.
- Breastfeeding
  - Promote and support breastfeeding.
- Portions
  - Provide age-appropriate information on portion size.
- Structure
  - Encourage daily breakfast.
  - Family dinners with no TV at meals.
  - Limit fast food.

### 6. Balance

- Advise diet with balanced food group emphasis.
- Limit refined sugars, substitute low-fat for whole milk, encourage healthy fats and proteins.
- Limit 100% fruit juice to 4 to 6 oz/d for 1- to 6-year-olds and 8 to 12 oz/d for 7- to 18-year-olds.
- "Parent provides, child decides."
- Aim for reasonable daily target for calorie reduction (eg, 200–300 kcal/d less).

### 6. Promote increased physical activity

- Assess patient's and family's physical activity habits.
- Advise physical activity of 60 minutes or more daily (including walking) and 20 minutes of vigorous aerobic activity at least 3 days a week. Emphasize outdoor physical activity.
- Encourage a decrease in physical inactivity: Advise family to limit total screen time to 2 hours or less per day (TV, computer, video games, etc).
- Advise no TV or computer in bedroom (and/or remove TV from bedroom).
- Refer to specific community physical activity program (eg, local YMCA/YWCA; Boys/Girls Club; before-/after-school physical activity program).
- Encourage development of family physical activity plan (eg, "move and improve").
- Provide resources on how to find low-cost or free pedometers with age-appropriate goal of daily steps for BOTH patient and parent.

### 7. Subspecialist referral for comorbidities

- Immediate referrals for orthopedics with hip/knee pain; neurology with headaches/pseudotumor cerebri.
- Pediatric endocrinology with persisting metabolic syndrome/type 2 diabetes; pediatric gastroenterology with progressive alanine transaminase elevation; pulmonology, polysomnography with persistent sleep disorder/daytime fatigue; psychology with persistent depression, anxiety, low self-esteem.

# Feeding Guide for Children

## Feeding Guide for Children<sup>a</sup>

Food	Age, y						Comments
	2 to 3		4 to 6		7 to 12		
	Portion Size	Servings	Portion Size	Servings	Portion Size	Servings	
Milk and dairy	1/2 c (4 oz)	4–5 16–20 oz total	1/2–3/4 c (4–6 oz)	3–4 24–32 oz total	1/2–1 c (4–8 oz)	3–4 24–32 oz total	The following may be substituted for 1/2 c fluid milk: 1/2–3/4 oz cheese, 1/2 cup yogurt, 2 1/2 tbsp nonfat dry milk
Meat, fish, poultry, or equivalent	1–2 oz	2 2–4 oz total	1–2 oz	2 2–4 oz total	2 oz	3–4 6–8 oz total	The following may be substituted for 1 oz meat, fish, or poultry: 1 egg, 2 tbsp peanut butter, 4–5 tbsp cooked legumes
Vegetables and fruit <i>Vegetables</i>		4–5		4–5		3–4	Include one green leafy or yellow vegetable for vitamin A, such as carrots, spinach, broccoli, winter squash, or greens
Cooked Raw <sup>b</sup>	2–3 tbsp Few pieces		3–4 tbsp Few Pieces		1/4–1/2 c Several pieces		
<i>Fruit</i> Raw Canned Juice	1/2–1 small 2–4 tbsp 3–4 oz		1/2–1 small 4–6 tbsp 4 oz		1 medium 1/4–1/2 c 4 oz		Include one vitamin C-rich fruit, vegetable, or juice, such as citrus juices, orange, grapefruit, strawberries, melon, tomato, or broccoli
Grain products Whole grain or enriched bread Cooked cereal Dry cereal	1/2–1 slice 1/4–1/2 c 1/2–1 c	3–4	1 slice 1/2 c 1 c	3–4	1 slice 1/2–1 c 1 c	4–5	The following may be substituted for 1 slice of bread: 1/2 c spaghetti, macaroni, noodles, or rice; 5 saltines; 1/2 English muffin or bagel; 1 tortilla; corn grits or posole

<sup>a</sup> Adapted from Lowenberg ME. Development of food patterns in young children. In: Pipes PL, Trahms CM, eds. *Nutrition Infancy and Childhood*. 5th ed. St Louis, MO: Mosby-Year Book; 1993:168–169. With permission of Elsevier.

<sup>b</sup> Do not give to young children until they can chew well.

 **Tips for Busy Clinicians** 

## Treatment Interventions

### Communication

- Deliver a set of consistent key messages—5210.
- Keep a list of good Web sites to give your patients. Have appropriate books and magazines available in your waiting room. Provide books, puzzles, and activity sheets—especially for children—that help promote healthy eating and active living.
- Display educational posters and create a bulletin board for community partners to update.
- Frame your discussions to expand the patient/family perception of what healthy lifestyle changes they can make. Keep goals small, simple, and concrete. Allow for personal choices. Selections a child enjoys will be more easily sustained.
- Have patients set specific behavioral goals and action plans and be sure to ask about these during the next visit or follow-up contact.
- Be aware of the cultural norms of the patient, significance of meals/eating for the family/community, beliefs about special foods, and feelings about body size.

### Team Approach

- Be a good role model—be physically active every day and work to make healthy food choices.
- Involve the clinical team in planning and implementing treatment intervention.
- Know your community resources and refer patients to them. These will help support families once they leave your office.
- Behavior change is a long-term process and involving other qualified staff will help ensure success.
- Encourage involvement and change for the whole family and all caregivers.

## ABCs of Counseling and Motivating Overweight Children and Families

### Ask Open-Ended Questions

- How do you feel about us talking about your physical activity, TV watching, and eating today?
- How concerned are you about your child's weight? Why?
- What are some of the things you might like to change?

### Body Language

- Put patient at ease.
- Use eye contact without barriers.
- Convey respect.
- Counsel in a private setting.

### Care and Empathy

- Do not criticize.
- Acknowledge patient's feelings.
- Answer questions without sign of judgment.
- Use language that is nonjudgmental
  - "Healthier" food vs "bad" food
  - "Healthier" weight vs "ideal" weight

# Resources

## Website Resources

### BMI Calculators and Information

2000 CDC Growth Charts

[www.cdc.gov/growthcharts/](http://www.cdc.gov/growthcharts/)

CDC Z Score Data Files

[www.cdc.gov/nchs/about/major/nhanes/growthcharts/zscore/zscore.htm](http://www.cdc.gov/nchs/about/major/nhanes/growthcharts/zscore/zscore.htm)

Children's BMI Risk Category Dependent on Age

[www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm](http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm)

Children's BMI Calculator including plot to graph (for parents)

[www.kidsnutrition.org/bodycomp/bmiz2.html](http://www.kidsnutrition.org/bodycomp/bmiz2.html)

Medscape: Using the BMI-for-Age Growth Charts

[www.medscape.com/vewprogram/2640](http://www.medscape.com/vewprogram/2640)

BMI Adults National Heart, Lung, & Blood Institute

[www.nhlbisupport.com/bmi](http://www.nhlbisupport.com/bmi)

Free Download for Palm OS Handhelds

[www.statcoder.com/growthcharts.htm](http://www.statcoder.com/growthcharts.htm)

### National Resources

American Academy of Pediatrics

[www.aap.org/obesity](http://www.aap.org/obesity)

Bright Futures

[www.brightfutures.aap.org/web/](http://www.brightfutures.aap.org/web/)

Call to Action: Health School Nutrition Environments

[www.fns.usda.gov/tn/healthy/calltoaction.html](http://www.fns.usda.gov/tn/healthy/calltoaction.html)

Harvard Prevention Research Center

[www.hspf.harvard.edu/prc/](http://www.hspf.harvard.edu/prc/)

National Initiative for Children's Healthcare Quality-

Childhood Obesity Action Network

[www.nichq.org/NICHQ/Programs/ConferencesAndTraining/ChildhoodObesityActionNetwork.htm](http://www.nichq.org/NICHQ/Programs/ConferencesAndTraining/ChildhoodObesityActionNetwork.htm)

### Resources for Parents and Kids

Healthy eating and activities for kids & parents

[www.kidnetic.com](http://www.kidnetic.com)

KidsHealth

[www.kidshealth.org](http://www.kidshealth.org)

My Pyramid

[www.mypyramid.gov](http://www.mypyramid.gov)

Overview of the VERB campaign

[www.cdc.gov/youthcampaign/](http://www.cdc.gov/youthcampaign/)

VERB Tween interactive website

[www.verbnow.com](http://www.verbnow.com)

### Maine Resources

Action for Healthy Kids is about creating health-promoting schools that support sound nutrition and physical activity as part of a total learning environment.

[www.healthymainekids.org](http://www.healthymainekids.org)

Health Policy Partners of Maine

[www.mcd.org/HPP](http://www.mcd.org/HPP)

Healthy Maine Partnerships Info & Contacts by Town

[www.healthymainepartners.org](http://www.healthymainepartners.org)

Healthy Maine Walks & Sites

[www.healthymainewalks.org](http://www.healthymainewalks.org)

Let's Go!

Maine information for kids, teens, parents, childcare, health care providers, schools, and workplaces.

[www.letsgo.org](http://www.letsgo.org)

Maine Census Data

[www.state.me.us/newsletter/may2001/maine\\_census\\_data.htm](http://www.state.me.us/newsletter/may2001/maine_census_data.htm)

Maine Center for Public Health

[www.mcph.org](http://www.mcph.org)

Maine Chapter of the American Academy of Pediatrics

[www.maineap.org](http://www.maineap.org)

Maine Childrens Alliance/Maine Kids Count Data Book

[www.mekids.org](http://www.mekids.org)

Maine Department of Education

[www.maine.gov/education](http://www.maine.gov/education)

Maine Governor's Council on Physical Activity

[www.mainephysicalactivity.org](http://www.mainephysicalactivity.org)

Maine Harvard Prevention Research Center - Keep ME Healthy

[www.mcph.org/Major\\_Activities/keepmehealthy.htm](http://www.mcph.org/Major_Activities/keepmehealthy.htm)

MaineHealth Learning Resource Centers

[www.mainehealth.org/lrc](http://www.mainehealth.org/lrc)

Maine Nutrition Network

[www.maine-nutrition.org](http://www.maine-nutrition.org)

Maine Physical Activity & Nutrition [PAN] Program

[www.maine.gov/dhhs/boh/hmp/panp/](http://www.maine.gov/dhhs/boh/hmp/panp/)

Maine WIC Program

[www.maine.gov/dhhs/wic/](http://www.maine.gov/dhhs/wic/)

 **Obesity Assessment: Findings on Review of Systems and Possible Etiologies** 

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 <sup>a</sup>
Hip pain, knee pain, walking pain	Slipped capital femoral epiphysis, Blount disease, musculoskeletal stress from weight (may be barrier to physical activity)
Foot pain	Musculoskeletal stress from weight (may be 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 mellitus <sup>a</sup>
Unexpected weight loss	Type 2 diabetes mellitus <sup>a</sup>
Nocturnal enuresis	Obstructive sleep apnea
Tobacco use	Increased cardiovascular risk; may be as form of weight control

<sup>a</sup>These conditions are often asymptomatic.

# Obesity Assessment

## Obesity Assessment: Physical Examination Findings and Possible Etiologies

System	Findings	Possible Explanations
Anthropometry	<ul style="list-style-type: none"> <li>• High body mass index percentile</li> <li>• Short stature</li> </ul>	<ul style="list-style-type: none"> <li>• Overweight or obesity</li> <li>• Underlying endocrine or genetic condition</li> </ul>
Vital signs	<ul style="list-style-type: none"> <li>• Elevated blood pressure</li> </ul>	<ul style="list-style-type: none"> <li>• Hypertension if systolic or diastolic blood pressure &gt;95th percentile for age, gender, and height on ≥3 occasions</li> </ul>
Skin	<ul style="list-style-type: none"> <li>• Acanthosis nigricans</li> <li>• Hirsutism, acne</li> <li>• Irritation, inflammation</li> <li>• Violaceous striae</li> </ul>	<ul style="list-style-type: none"> <li>• Common in obese children, especially when skin is dark; increased risk of insulin resistance</li> <li>• Polycystic ovary syndrome</li> <li>• Consequence of severe obesity</li> <li>• Cushing syndrome</li> </ul>
Eyes	<ul style="list-style-type: none"> <li>• Papilledema, cranial nerve VI paralysis</li> </ul>	<ul style="list-style-type: none"> <li>• Pseudotumor cerebri</li> </ul>
Throat	<ul style="list-style-type: none"> <li>• Tonsillar hypertrophy</li> </ul>	<ul style="list-style-type: none"> <li>• Obstructive sleep apnea</li> </ul>
Neck	<ul style="list-style-type: none"> <li>• Goiter</li> </ul>	<ul style="list-style-type: none"> <li>• Hypothyroidism</li> </ul>
Chest	<ul style="list-style-type: none"> <li>• Wheezing</li> </ul>	<ul style="list-style-type: none"> <li>• Asthma (may explain or contribute to exercise intolerance)</li> </ul>
Abdomen	<ul style="list-style-type: none"> <li>• Tenderness</li> <li>• Hepatomegaly</li> </ul>	<ul style="list-style-type: none"> <li>• Gastroesophageal reflux disorder, gall bladder disease, nonalcoholic fatty liver disease (NAFLD)<sup>a</sup></li> <li>• NAFLD<sup>a</sup></li> </ul>
Reproductive	<ul style="list-style-type: none"> <li>• Tanner stage</li> <li>• Apparent micropenis</li> <li>• Undescended testis/micropenis</li> </ul>	<ul style="list-style-type: none"> <li>• Premature puberty age &lt;7 years in white girls, age &lt;6 years in black girls, and age &lt;9 years in boys</li> <li>• May be normal penis that is buried in fat</li> <li>• Prader-Willi syndrome</li> </ul>
Extremities	<ul style="list-style-type: none"> <li>• Abnormal gait, limited hip range of motion</li> <li>• Bowing of tibia</li> <li>• Small hands and feet, polydactyly</li> </ul>	<ul style="list-style-type: none"> <li>• Slipped capital femoral epiphysis</li> <li>• Blount disease</li> <li>• Prader-Willi syndrome, Bardet-Biedl syndrome</li> </ul>

<sup>a</sup>These conditions are usually without signs.



## Medical Screening by BMI Category<sup>a</sup>



BMI Percentile	Medication Use	Review of Symptoms	Family History (1st and 2nd degree relatives)	Physical Examination	Laboratory Tests
5 <sup>th</sup> –84 <sup>th</sup> (healthy weight)	Medications that may affect weight gain (eg, neuropsychiatric)		Obesity, type 2 diabetes, hypertension, lipid, heart disease	BP (correct cuff)	
85 <sup>th</sup> –94 <sup>th</sup> (overweight)	Medications that may affect weight gain (eg, neuropsychiatric)	Snoring/sleep; abdominal pain; menstrual irregularities; hip, knee, or leg pain; polyuria; thirst; depression	Obesity, type 2 diabetes, hypertension, lipid, heart disease	BP (correct cuff), acanthosis nigricans, tonsils, goiter, tender abdomen, liver, bowing of legs, limited hip range of motion, optic discs if headaches, acne and hirsutism	<ul style="list-style-type: none"> <li>Fasting lipid profile</li> <li>If other risk factors,<sup>b</sup> fasting glucose, ALT, AST every 2 years</li> </ul>
95 <sup>th</sup> –<99 <sup>th</sup> (obese)	Medications that may affect weight gain (eg, neuropsychiatric)	Snoring/sleep; abdominal pain, menstrual irregularities; hip, knee, or leg pain; urination; thirst; depression	Obesity, type 2 diabetes, hypertension, lipid, heart disease	BP (correct cuff), acanthosis nigricans, tonsils, goiter, tender abdomen, liver, bowing of legs, limited hip range of motion, optic discs if headaches, acne and hirsutism	<ul style="list-style-type: none"> <li>Fasting lipid profile</li> <li>Fasting glucose, ALT, AST every 2 years</li> </ul>
≥99 <sup>th</sup>	Medications that may affect weight gain (eg, neuropsychiatric)	Snoring/sleep; abdominal pain, menstrual irregularities; hip, knee, or leg pain; urination; thirst; depression	Obesity, type 2 diabetes, hypertension, lipid, heart disease	BP (correct cuff); acanthosis nigricans; tonsils; goiter; tender abdomen; liver; bowing of legs; limp, limited hip range of motion; optic discs if headaches; acne and hirsutism; skin inflammation	<ul style="list-style-type: none"> <li>Fasting lipid profile</li> <li>Fasting glucose, ALT, AST every 2 years</li> </ul>

Abbreviations: BMI, body mass index; BP, blood pressure; ALT, alanine transaminase; AST, aspartate transaminase; BUN, blood urea nitrogen.

<sup>a</sup>BMI is a screening measure. The higher the BMI, the more likely it is to be correlated with excess fat.

<sup>b</sup>Risk factors include family history of obesity-related diseases, including hypertension, early cardiovascular deaths, and strokes, elevated blood pressure (in the patient), hyperlipidemia, and tobacco use.

# Reference Values

## Reference Values

### Plasma Glucose Criteria for the Diagnosis of Impaired Glucose Tolerance in Diabetes<sup>a</sup>

Plasma Glucose	Normal, mg/dL	Impaired, mg/dL	Diabetes, mg/dL
Fasting	<100	100–125 (IFG)	≥126
Oral glucose-tolerance test, 2 h PG	<140	140–199 (IGT)	≥200
Random			≥200 + symptoms <sup>b</sup>

Abbreviations: IFG, impaired fasting glucose; 2 h PG, plasma glucose at 2 hours postingestion of glucose; IGT, impaired glucose.

<sup>a</sup>From Hannon TS, Rao G, Arslanian SA. Childhood obesity and type 2 diabetes mellitus. *Pediatrics*. 2005;116:475.

<sup>b</sup>Polyuria, polydipsia, weight loss.

### Cholesterol<sup>a</sup>

Category	Total Cholesterol, mg/dL	Low-Density Lipoprotein, mg/dL	High-Density Lipoprotein, mg/dL
Acceptable	<170	<110	>40
Borderline	170–199	110–129	
Abnormal	≥200	≥130	<40 is low

<sup>a</sup>Adapted from American Academy of Pediatrics Committee on Nutrition. Cholesterol in children. *Pediatrics*. 1998;101:145.

### Triglycerides<sup>a</sup>

Age, y	Normal, mg/dL	
	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

<sup>a</sup>From the Third National Health and Nutrition Examination Survey (NHANES III), 1988–1994.

Note: Alanine transaminase, aspartate transaminase, blood urea nitrogen, and creatinine reference values vary by laboratory. Consult local laboratory values.

# ▶▶▶ 15-Minute Obesity Prevention Protocol ◀◀◀

*continued*

# 15-Minute Obesity Prevention Protocol

## ►►► 15-Minute Obesity Prevention Protocol, continued ◀◀◀

### STEP 3. ASSESS MOTIVATION AND CONFIDENCE, continued

#### 3b: Confidence

On a scale of 0 to 10, with 10 being very confident, assuming you decided to change the amount of fast food he eats, how confident are you that you could succeed?



3c: Explore IMPORTANCE and CONFIDENCE ratings with the following probes:

Benefits

Barriers

Solutions

You chose 6. Why did you not choose a lower number?

*I know all that grease is bad for him.*

You chose 6. Why did you not choose a higher number?

*It's quick, cheap, and he loves it...especially the toys and fries.*

REFLECTION: So there are benefits for both you and him.

What would it take you to move to an 8?

*Well, I really want him to avoid diabetes. My mother died of diabetes, and it wasn't pretty...maybe if he started showing signs of it...maybe if I could get into cooking a bit.*

### STEP 4. SUMMARIZE AND PROBE POSSIBLE CHANGES

Query possible next steps.

So where does that leave you?

OR

From what you mentioned it sounds like eating less fast food may be a good first step.

OR

How are you feeling about making a change?

Probe plan of attack.

What might be a good first step for you and your child?

Or

What might you do in the next week or even day to help move things along?

Or

What ideas do you have for making this happen?

*If patient does not have any ideas...*

If it's OK with you, I'd like to suggest a few things that have worked for some of my patients.

Summarize change plan, provide positive feedback.

Involving child in cooking or meal preparation

Ordering healthier at fast-food restaurants

Trying some new recipes at home

### STEP 5. SCHEDULE FOLLOW-UP

Agree to follow up within X weeks/months.

Let's schedule a visit in the next few weeks/months to see how things went.

If no plan is made

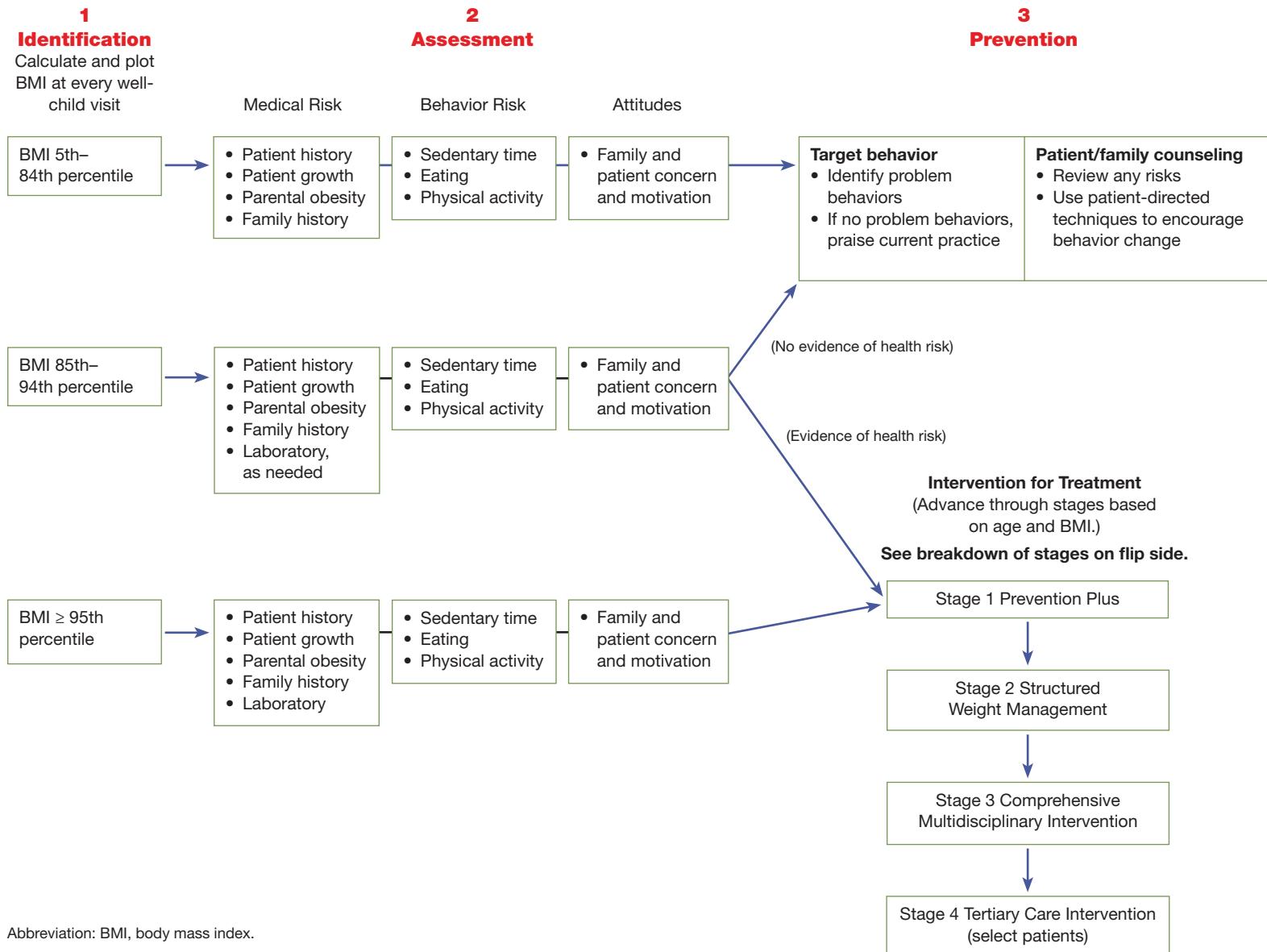
Sounds like you aren't quite ready to commit to making any changes now. How about we follow up with this at your child's next visit?

OR

Although you don't sound ready to make any changes, between now and our next visit you might want to think about your child's weight gain and lowering his diabetes risk.



# Universal Assessment of Obesity Risk: Steps to Prevention and Treatment

# Universal Assessment of Obesity Risk

## ►►►►► Universal Assessment of Obesity Risk: Steps to Prevention and Treatment, continued ◀◀◀◀◀

### Intervention for Treatment

(Advance through stages based on age and BMI.)

<b>Stage 1 Prevention Plus</b>	<p><b>Primary Care Provider</b></p> <p><b>Dietary habits and physical activity</b></p> <ul style="list-style-type: none"><li>5 Eat fruits and vegetables at least 5 or more times on most days.</li><li>2 Limit screen time unrelated to school to 2 hours or less daily.</li><li>1 Get 1 hour or more of moderate to vigorous physical activity every day and 20 minutes of vigorous activity at least 3 times a week.</li><li>0 Drink less sugar. Try water and low-fat milk instead of sugar-sweetened drinks.</li></ul> <p><b>Behavioral Counseling</b></p> <ul style="list-style-type: none"><li>• Eating a daily breakfast</li><li>• Limiting meals outside the home</li><li>• Family meals 5–6 times/week</li><li>• Allow child to self-regulate at meals without overly restrictive behavior</li></ul> <p><b>Goal</b></p> <ul style="list-style-type: none"><li>• Weight maintenance with growth resulting in decreased BMI</li></ul> <p><b>Monthly follow-up assessment. After 3–6 months, if no improvement in BMI/weight status, advance to Stage 2.</b></p>
<b>Stage 2 Structured Weight Management</b>	<p><b>Primary Care Provider with appropriate training</b></p> <p><b>Dietary habits and physical activity</b></p> <ul style="list-style-type: none"><li>• Develop plan for utilization of balanced macronutrient diet emphasizing low amounts of energy-dense foods</li><li>• Increased structured daily meals and snacks</li><li>• Supervised active play of at least 60 minutes/day</li><li>• Screen time of 1 hour or less/day</li><li>• Increased monitoring (eg, screen time, physical activity, dietary intake, restaurant logs) by provider, patient, and /or family</li></ul> <p><b>Goal</b></p> <ul style="list-style-type: none"><li>• Weight maintenance resulting in a decreasing BMI with age and increasing height. Weight loss not to exceed 1lb/month in children 2–11 years or an average of 2 lb/week in older overweight/obese children and adolescents</li></ul> <p><b>Monthly follow-up assessment. If no improvement in BMI/weight after 3–6 months, patient should be advanced to Stage 3.</b></p>
<b>Stage 3 Comprehensive Multidisciplinary Intervention</b>	<p><b>Weight Management Clinic with multidisciplinary team</b></p> <p><b>Eating and Activity</b></p> <ul style="list-style-type: none"><li>• Same as Stage 2</li></ul> <p><b>Behavioral counseling</b></p> <ul style="list-style-type: none"><li>• Structured behavioral modification program, including food and activity monitoring and development of short-term diet and physical activity goals</li><li>• Involvement of primary caregivers/families for behavioral modification in children younger than 12 years and training of primary caregivers/families for all children</li></ul> <p><b>Goals</b></p> <ul style="list-style-type: none"><li>• Weight maintenance or gradual weight loss until BMI &lt;85% not to exceed 1lb/month in children aged 2–5 years or 2 lbs/week in older obese children and adolescents</li></ul>
<b>Stage 4 Tertiary Care Intervention (select patients)</b>	<p><b>Hospital Setting with expertise in childhood obesity</b></p> <p>Recommended for children with BMI &gt;95% with significant comorbidities unsuccessful with Stages 1–3 and children with BMI &gt;99% who have shown no improvement under Stage 3</p> <ul style="list-style-type: none"><li>• Multidisciplinary team with expertise in childhood obesity operating under a designated protocol</li><li>• Continued diet and activity counseling and consideration of such additions as meal replacement, very low calorie diet, medication, and surgery</li></ul>

## ▶▶▶ Definition of Hypertension<sup>a</sup> ◀◀◀

- Hypertension is defined as average SBP and/or DBP that is  $\geq$ 95th percentile for gender, age, and height on  $\geq$ 3 occasions.
- Prehypertension in children is defined as average SBP or DBP levels that are  $\geq$ 90th percentile but  $<$ 95th percentile.
- As with adults, adolescents with BP levels 120/80 mm Hg should be considered prehypertensive.
- A patient with BP levels  $>$ 95th percentile in a physician's office or clinic, who is normotensive outside a clinical setting, has "white-coat hypertension." ABPM is usually required to make this diagnosis.

### Clinical Evaluation of Confirmed Hypertension

Study or Procedure	Purpose	Target Population
<b>Evaluation for identifiable causes</b>		
History, including sleep history, family history, risk factors, diet, and habits such as smoking and drinking alcohol; physical examination	History and physical examination help focus subsequent evaluation	All children with persistent BP $\geq$ 95th percentile
BUN, creatinine, electrolytes, urinalysis, and urine culture	R/O renal disease and chronic pyelonephritis	All children with persistent BP $\geq$ 95th percentile
CBC	R/O anemia, consistent with chronic renal disease	All children with persistent BP $\geq$ 95th percentile
Renal U/S	R/O renal scar, congenital anomaly, or disparate renal size	All children with persistent BP $\geq$ 95th percentile
<b>Evaluation for comorbidity</b>		
Fasting lipid panel, fasting glucose	Identify hyperlipidemia, identify metabolic abnormalities	Overweight patients with BP at 90th–94th percentile; all patients with BP $\geq$ 95th percentile; family history of hypertension or CVD; child with chronic renal disease
Drug screen	Identify substances that might cause hypertension	History suggestive of possible contribution by substances or drugs
Polysomnography	Identify sleep disorder in association with hypertension	History of loud, frequent snoring
<b>Evaluation for target-organ damage</b>		
Echocardiogram	Identify LVH and other indications of cardiac involvement	Patients with comorbid risk factors <sup>b</sup> and BP 90th–94th percentile; all patients with BP $\geq$ 95th percentile
Retinal exam	Identify retinal vascular changes	Patients with comorbid risk factors and BP 90th–94th percentile; all patients with BP $\geq$ 95th percentile
<b>Additional evaluation as indicated</b>		
ABPM	Identify white-coat hypertension, abnormal diurnal BP pattern, BP load	Patients in whom white-coat hypertension is suspected, and when other information on BP pattern is needed
Plasma renin determination	Identify low renin, suggesting mineralocorticoid-related disease	Young children with stage 1 hypertension and any child or adolescent with stage 2 hypertension
Renovascular imaging	Identify renovascular disease	Positive family history of severe hypertension Young children with stage 1 hypertension and any child or adolescent with stage 2 hypertension
Isotopic scintigraphy (renal scan) MRA Duplex Doppler flow studies 3-Dimensional CT Arteriography: DSA or classic		
Plasma and urine steroid levels	Identify steroid-mediated hypertension	Young children with stage 1 hypertension and any child or adolescent with stage 2 hypertension
Plasma and urine catecholamines	Identify catecholamine-mediated hypertension	Young children with stage 1 hypertension and any child or adolescent with stage 2 hypertension

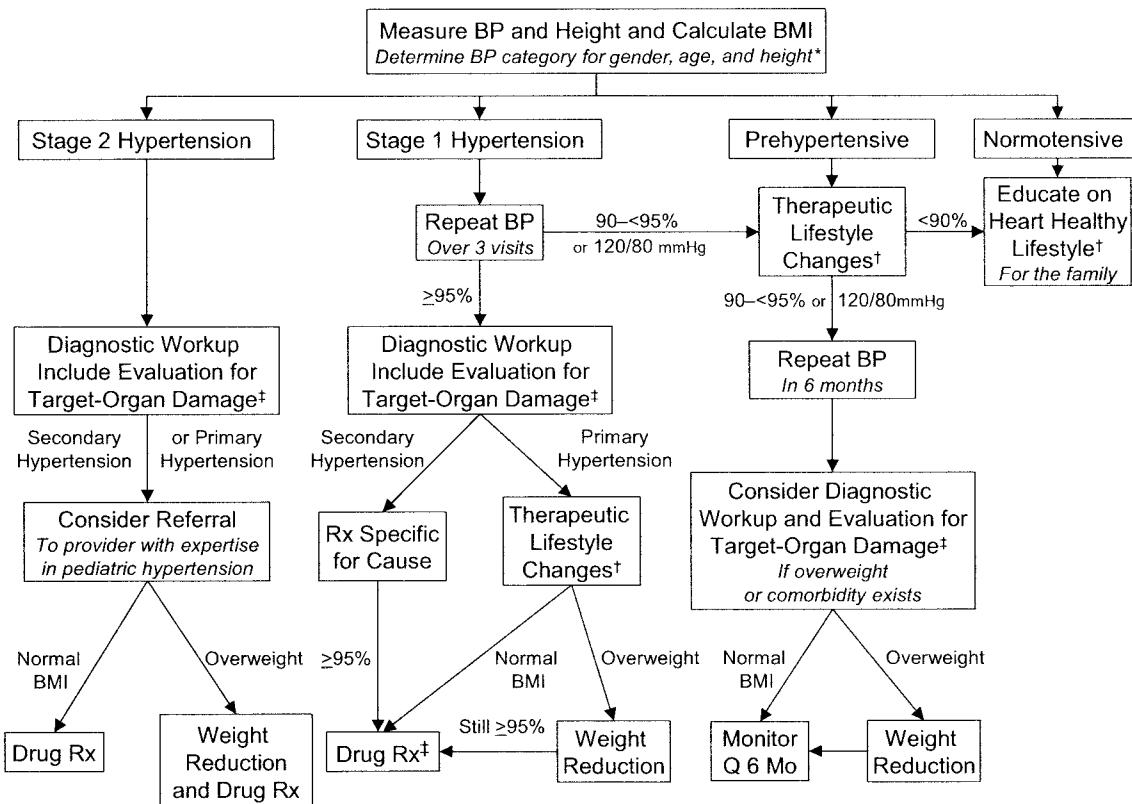
Abbreviations: SBP, systolic blood pressure; DBP, diastolic blood pressure; BP, blood pressure; ABPM, ambulatory blood pressure monitoring; BUN, blood urea nitrogen; R/O, rule out; CBC, complete blood count; U/S, ultrasound; CVD, cardiovascular disease; LVH, left ventricular hypertrophy; MRA, magnetic resonance angiography; CT, computed tomography; DSA, digital-subtraction angiography.

<sup>a</sup>Selected excerpts from The fourth report on the diagnosis, evaluation, and treatment and high blood pressure in children and adolescents. *Pediatrics*. 2004;114:555–576.

<sup>b</sup>Comorbid risk factors also include diabetes mellitus and kidney disease.

# Hypertension Management Algorithm

## Hypertension Management Algorithm



Abbreviations and symbols: Rx, prescription; Q, every; †, diet modification and physical activity; ‡, especially if younger, very high blood pressure, little or no family history, diabetic, or other risk factors.

### Therapeutic Lifestyle Changes

- Weight reduction is the primary therapy for obesity-related hypertension. Prevention of excess or abnormal weight gain will limit future increases in blood pressure.
- Regular physical activity and restriction of sedentary activity will improve efforts at weight management and may prevent an excess increase in blood pressure over time.
- Dietary modification should be strongly encouraged in children and adolescents who have blood pressure levels in the prehypertensive range as well as those with hypertension.
- Family-based intervention improves success.

### Indications for Antihypertensive Drug Therapy in Children

- 
- Symptomatic hypertension
  - Secondary hypertension
  - Hypertensive target-organ damage
  - Diabetes (types 1 and 2)
  - Persistent hypertension despite nonpharmacologic measures

**BLOOD PRESSURE LEVELS FOR THE 90TH AND 95TH PERCENTILES OF BLOOD PRESSURE FOR BOYS AGE 1 TO 17 YEARS BY PERCENTILES OF HEIGHT**

Age	Height Percentiles*	Systolic BP (mm Hg)							Diastolic BP (mm Hg)						
		→5%	10%	25%	50%	75%	90%	95%	5%	10%	25%	50%	75%	90%	95%
1	90th 95th	94 98	95 99	97 101	98 102	100 104	102 106	102 106	50 55	51 55	52 56	53 57	54 58	54 59	55 59
2	90th 95th	98 101	99 102	100 104	102 106	104 108	105 109	106 110	55 59	55 59	56 60	57 61	58 62	59 63	59 63
3	90th 95th	100 104	101 105	103 107	105 109	107 111	108 112	109 113	59 63	59 63	60 64	61 65	62 66	63 67	63 67
4	90th 95th	102 106	103 107	105 109	107 111	109 113	110 114	111 115	62 66	62 67	63 67	64 68	65 69	66 70	66 71
5	90th 95th	104 108	105 109	106 110	108 112	110 114	112 115	112 116	65 69	65 70	66 70	67 71	68 72	69 73	69 74
6	90th 95th	105 109	106 110	108 112	110 114	111 115	113 117	114 117	67 72	68 72	69 73	70 74	70 75	71 76	72 76
7	90th 95th	106 110	107 111	109 113	111 115	113 116	114 118	115 119	69 74	70 74	71 75	72 76	72 77	73 78	74 78
8	90th 95th	107 111	108 112	110 114	112 116	114 118	115 119	116 120	71 75	71 76	72 76	73 77	74 78	75 79	75 80
9	90th 95th	109 113	110 114	112 116	113 117	115 119	117 121	117 121	72 76	73 77	73 78	74 79	75 80	76 80	77 81
10	90th 95th	110 114	112 115	113 117	115 119	117 121	118 122	119 123	73 77	74 78	74 79	75 80	76 80	77 81	78 82
11	90th 95th	112 116	113 117	115 119	117 121	119 123	120 124	121 125	74 78	74 79	75 79	76 80	77 81	78 82	78 83
12	90th 95th	115 119	116 120	117 121	119 123	121 125	123 126	123 127	75 79	75 79	76 80	77 81	78 82	78 83	79 83
13	90th 95th	117 121	118 122	120 124	122 126	124 128	125 129	126 130	75 79	76 80	76 81	77 82	78 83	79 83	80 84
14	90th 95th	120 124	121 125	123 127	125 128	126 130	128 132	128 132	76 80	76 81	77 81	78 82	79 83	80 84	80 85
15	90th 95th	123 127	124 128	125 129	127 131	129 133	131 134	131 135	77 81	77 82	78 83	79 83	80 84	81 85	81 86
16	90th 95th	125 129	126 130	128 132	130 134	132 136	133 137	134 138	79 83	79 83	80 84	81 85	82 86	82 87	83 87
17	90th 95th	128 132	129 133	131 135	133 136	134 138	136 140	136 140	81 85	81 85	82 86	83 87	84 88	85 89	85 89

\*Height percentile determined by standard growth curves.

†Blood pressure percentile determined by a single measurement.

# Blood Pressure Levels—Girls

## BLOOD PRESSURE LEVELS FOR THE 90TH AND 95TH PERCENTILES OF BLOOD PRESSURE FOR GIRLS AGE 1 TO 17 YEARS BY PERCENTILES OF HEIGHT

Age	Height Percentiles* →	Systolic BP (mm Hg)							Diastolic BP (mm Hg)						
		5%	10%	25%	50%	75%	90%	95%	5%	10%	25%	50%	75%	90%	95%
1	90th 95th	97 101	98 102	99 103	100 104	102 105	103 107	104 107	53 57	53 57	53 57	54 58	55 59	56 60	56 60
2	90th 95th	99 102	99 103	100 104	102 105	103 107	104 108	105 109	57 61	57 61	58 62	58 62	59 63	60 64	61 65
3	90th 95th	100 104	100 104	102 105	103 107	104 108	105 109	106 110	61 65	61 65	61 65	62 66	63 67	63 67	64 68
4	90th 95th	101 105	102 106	103 107	104 108	106 109	107 111	108 111	63 67	63 67	64 68	65 69	65 69	66 70	67 71
5	90th 95th	103 107	103 107	104 108	106 110	107 111	108 112	109 113	65 69	66 70	66 70	67 71	68 72	68 72	69 73
6	90th 95th	104 108	105 109	106 110	107 111	109 112	110 114	111 114	67 71	67 71	68 72	69 73	69 73	70 74	71 75
7	90th 95th	106 110	107 110	108 112	109 113	110 114	112 115	112 116	69 73	69 73	69 73	70 74	71 75	72 76	72 76
8	90th 95th	108 112	109 112	110 113	111 115	112 116	113 117	114 118	70 74	70 74	71 75	71 75	72 76	73 77	74 78
9	90th 95th	110 114	110 114	112 115	113 117	114 118	115 119	116 120	71 75	72 76	72 76	73 77	74 78	74 78	75 79
10	90th 95th	112 116	112 116	114 117	115 119	116 120	117 121	118 122	73 77	73 77	73 77	74 78	75 79	76 80	76 80
11	90th 95th	114 118	114 118	116 119	117 121	118 122	119 123	120 124	74 78	74 78	75 79	75 79	76 80	77 81	77 81
12	90th 95th	116 120	116 120	118 121	119 123	120 124	121 125	122 126	75 79	75 79	76 80	76 80	77 81	78 82	78 82
13	90th 95th	118 121	118 122	119 123	121 125	122 126	123 127	124 128	76 80	76 80	77 81	78 82	78 82	79 83	80 84
14	90th 95th	119 123	120 124	121 125	122 126	124 128	125 129	126 130	77 81	77 81	78 82	79 83	79 83	80 84	81 85
15	90th 95th	121 124	121 125	122 126	124 128	125 129	126 130	127 131	78 82	78 82	79 83	79 83	80 84	81 85	82 86
16	90th 95th	122 125	122 126	123 127	125 128	126 130	127 131	128 132	79 83	79 83	79 83	80 84	81 85	82 86	82 86
17	90th 95th	122 126	123 126	124 127	125 129	126 130	128 131	128 132	79 83	79 83	79 83	80 84	81 85	82 86	82 86

\*Height percentile determined by standard growth curves.

†Blood pressure percentile determined by a single measurement.

# Coding for Obesity and Related Comorbidities

While coding for the care of children with obesity and related comorbidities is relatively straightforward, ensuring that appropriate reimbursement is received for such services is a more complicated matter. Many insurance carriers will deny claims submitted with "obesity" codes (eg, **278.00**), essentially carving out obesity-related care from the scope of benefits. Therefore, coding for obesity services is fundamentally a two-tiered system, in which the first tier requires health care professionals to submit claims using appropriate codes and the second tier involves the practice-level issues of denial management and contract negotiation.

The following is a guide to coding for obesity-related health care services taken from "Obesity and Related Comorbidities Coding Fact Sheet for Primary Care Pediatricians." For strategies for pediatric practices to handle carrier denials and contractual issues, see "Obesity and Related Comorbidities Coding Fact Sheet for Primary Care Pediatricians" ([www.aap.org/obesity/Obesity%20CodingFactSheetAugust07.pdf](http://www.aap.org/obesity/Obesity%20CodingFactSheetAugust07.pdf)).

## Procedure Codes (Current Procedural Terminology [CPT®] Codes)

### Body Fat Composition Testing

There is no separate *Current Procedural Terminology* (CPT®) code for body fat composition testing. This service would be included in the examination component of the evaluation and management (E/M) code reported.

### Calorimetry

**94690** Oxygen uptake, expired gas analysis; rest, indirect (separate procedure)

or

**94799** Unlisted pulmonary service or procedure

[Note: Special report required.]

### Glucose Monitoring

**95250** Glucose monitoring for up to 72 hours by continuous recording and storage of glucose values from interstitial tissue fluid via a subcutaneous sensor (includes hookup, calibration, patient initiation and training, recording, disconnection, downloading with printout of data)

### Routine Venipuncture

**36415** Collection of venous blood by venipuncture

**36416** Collection of capillary blood specimen (eg, finger, heel, ear stick)

### Venipuncture Necessitating Physician's Skill

**36406** Venipuncture, younger than 3 years, necessitating physician's skill, not to be used for routine venipuncture; other vein

**36410** Venipuncture, 3 years or older, necessitating physician's skill (separate procedure), for diagnostic or therapeutic purposes (not to be used for routine venipuncture)

### Digestive System Surgery Codes

**43644** Laparoscopy, surgical, gastric restrictive procedure; with gastric bypass and Roux-en-Y gastroenterostomy (Roux limb 150 cm or less)

**43645** Laparoscopy, surgical, gastric restrictive procedure; with gastric bypass and small intestine reconstruction to limit absorption

**43770** Laparoscopy, surgical, gastric restrictive procedure; placement of adjustable gastric band (gastric band and subcutaneous port components)

**43771** Laparoscopy, surgical, gastric restrictive procedure; revision of adjustable gastric band component only

**43772** Laparoscopy, surgical, gastric restrictive procedure; removal of adjustable gastric band component only

**43773** Laparoscopy, surgical, gastric restrictive procedure; removal and replacement of adjustable gastric band component only

- 43774** Laparoscopy, surgical, gastric restrictive procedure; removal of adjustable gastric band and subcutaneous port components
- 43842** Gastric restrictive procedure, without gastric bypass, for morbid obesity; vertical-banded gastroplasty
- 43843** Gastric restrictive procedure, without gastric bypass, for morbid obesity; other than vertical-banded gastroplasty
- 43845** Gastric restrictive procedure with partial gastrectomy, pylorus-preserving duodenalostomy and ileoileostomy (50 to 100 cm common channel) to limit absorption (biliopancreatic diversion with duodenal switch)
- 43846** Gastric restrictive procedure, with gastric bypass for morbid obesity; with short limb (150 cm or less) Roux-en-Y gastroenterostomy
- 43847** Gastric restrictive procedure, with gastric bypass for morbid obesity; with small intestine reconstruction to limit absorption
- 43848** Revision of gastric restrictive procedure for morbid obesity; other than adjustable gastric band (separate procedure)

## Healthcare Common Procedure Coding System (HCPCS) Level II Procedure and Supply Codes

CPT codes are also known as Healthcare Common Procedure Coding System (HCPCS) Level I codes. HCPCS also contains Level II codes. Level II codes (commonly referred to as HCPCS ["hick-picks"] codes) are national codes that are included as part of the Health Insurance Portability and Accountability Act of 1996 (HIPAA) standard procedural transaction coding set along with CPT codes.

HCPCS Level II codes were developed to fill gaps in the CPT nomenclature. While they are reported in the same way as CPT codes, they consist of 1 alphabetic character (A–V) followed by 4 digits. In the past, insurance carriers did not uniformly recognize HCPCS Level II codes. However, with the implementation of HIPAA, carrier software systems must now be able to recognize all HCPCS Level I (CPT) and Level II codes.

## HCPCS Education and Counseling Codes

- S9445** Patient education, not otherwise classified, nonphysician provider, individual, per session
- S9446** Patient education, not otherwise classified, nonphysician provider, group, per session
- S9449** Weight management classes, nonphysician provider, per session
- S9451** Exercise class, nonphysician provider, per session
- S9452** Nutrition class, nonphysician provider, per session
- S9454** Stress management class, nonphysician provider, per session
- S9455** Diabetic management program, group session
- S9460** Diabetic management program, nurse visit
- S9465** Diabetic management program, dietitian visit
- S9470** Nutritional counseling, dietitian visit

## Diagnosis Codes (International Classification of Diseases, Ninth Revision, Clinical Modification [ICD-9-CM] Codes)

### Circulatory System

- 401.9** Essential hypertension; unspecified
- 429.3** Cardiomegaly

### Congenital Anomalies

- 758.0** Down syndrome
- 759.81** Prader-Willi syndrome
- 759.83** Fragile X syndrome
- 759.89** Other specified anomalies (Laurence-Moon syndrome)

# Coding for Obesity and Related Comorbidities

## Diagnosis Codes (*International Classification of Diseases, Ninth Revision, Clinical Modification [ICD-9-CM] Codes*), continued

### Digestive System

- 530.81 Esophageal reflux  
564.00 Constipation, unspecified  
571.8 Other chronic nonalcoholic liver disease  
Endocrine, Nutritional, Metabolic  
244.8 Other specified acquired hypothyroidism  
244.9 Unspecified hypothyroidism  
250.00 Diabetes mellitus without mention of complication, type 2 or unspecified type, not stated as uncontrolled  
250.02 Diabetes mellitus without mention of complication, type 2 or unspecified type, uncontrolled  
253.8 Other disorders of the pituitary and other syndromes of diencephalohypophyseal origin  
255.8 Other specified disorders of adrenal glands  
256.4 Polycystic ovaries  
259.1 Precocious sexual development and puberty, not elsewhere specified  
259.9 Unspecified endocrine disorder  
272.0 Pure hypercholesterolemia  
272.1 Pure hyperglyceridemia  
272.2 Mixed hyperlipidemia  
272.4 Other and unspecified hyperlipidemia  
272.9 Unspecified disorder of lipid metabolism  
277.7 Dysmetabolic syndrome X/metabolic syndrome  
278.00 Obesity, unspecified  
278.01 Morbid obesity  
278.02 Overweight  
278.1 Localized adiposity  
278.8 Other hyperalimentation

### Genitourinary System

- 611.1 Hypertrophy of the breast

### Mental Disorders

- 300.00 Anxiety state, unspecified  
300.02 Generalized anxiety disorder  
300.4 Dysthymic disorder  
307.50 Eating disorder, unspecified  
307.51 Bulimia nervosa  
307.59 Other and unspecified disorders of eating  
308.3 Other acute reactions to stress  
308.9 Unspecified acute reaction to stress  
311 Depressive disorder, not elsewhere classified  
313.1 Misery and unhappiness disorder  
313.81 Oppositional defiant disorder

### Musculoskeletal System and Connective Tissue

- 732.4 Juvenile osteochondrosis of lower extremity, excluding foot

### Nervous System and Sense Organs

- 327.23 Obstructive sleep apnea (adult) (pediatric)  
327.26 Sleep-related hypoventilation/hypoxemia in conditions classifiable elsewhere  
327.29 Other organic sleep apnea  
348.2 Benign intracranial hypertension

### Skin and Subcutaneous Tissue

- 701.2 Acquired acanthosis nigricans

### Symptoms, Signs, and Ill-Defined Conditions

- 780.51 Insomnia with sleep apnea, unspecified  
780.52 Insomnia, unspecified  
780.53 Hypersomnia with sleep apnea, unspecified  
780.54 Hypersomnia, unspecified  
780.57 Unspecified sleep apnea  
780.71 Chronic fatigue syndrome  
780.79 Other malaise and fatigue  
783.1 Abnormal weight gain  
783.3 Feeding difficulties and mismanagement  
783.40 Lack of normal physiological development, unspecified  
783.43 Short stature  
783.5 Polydipsia  
783.6 Polyphagia  
783.9 Other symptoms concerning nutrition, metabolism, and development  
786.05 Shortness of breath  
789.1 Hepatomegaly  
790.22 Impaired glucose tolerance test (oral)  
790.29 Other abnormal glucose; prediabetes not otherwise specified  
790.4 Nonspecific elevation of levels of transaminase or lactate dehydrogenase (LDH)  
790.6 Other abnormal blood chemistry (hyperglycemia)

### Other

NOTE: The *ICD-9-CM* codes that follow are used to deal with occasions in which circumstances other than a disease or injury are recorded as diagnoses or problems. Some carriers may request supporting documentation for the reporting of V codes.

- V18.0 Family history of diabetes mellitus  
V18.1 Family history of endocrine and metabolic diseases  
V49.89 Other specified conditions influencing health status  
V58.67 Long-term (current) use of insulin  
V58.69 Long-term (current) use of other medications  
V61.0 Family disruption  
V61.20 Counseling for parent-child problem, unspecified  
V61.29 Parent-child problems; other  
V61.49 Health problems with family; other  
V61.8 Health problems within family; other specified family circumstances  
V61.9 Health problems within family; unspecified family circumstances  
V62.81 Interpersonal problems, not elsewhere classified  
V62.89 Other psychological or physical stress not elsewhere classified; other  
V62.9 Unspecified psychosocial circumstance  
V65.19 Other person consulting on behalf of another person  
V65.3 Dietary surveillance and counseling  
V65.41 Exercise counseling  
V65.49 Other specified counseling  
V69.0 Lack of physical exercise  
V69.1 Inappropriate diet and eating habits  
V69.8 Other problems relating to lifestyle; self-damaging behavior  
V69.9 Problem related to lifestyle, unspecified  
V85.51 Body mass index, pediatric, less than 5th percentile for age  
V85.52 Body mass index, pediatric, 5th percentile to less than 85th percentile for age  
V85.53 Body mass index, pediatric, 85th percentile to less than 95th percentile for age  
V85.54 Body mass index, pediatric, greater than or equal to 95th percentile for age

**2 to 20 years: Girls  
Body mass index-for-age percentiles**

NAME \_\_\_\_\_

**RECORD #** \_\_\_\_\_

**BMI**

\*To Calculate BMI: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000  
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703

**Obese**

**Overweight**

**Healthy Weight**

**Underweight**

**AGE (YEARS)**

**BMI**

27  
26  
25  
24  
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12

kg/m<sup>2</sup>

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

kg/m<sup>2</sup>

Published May 30, 2000 (modified 10/16/00).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000). <http://www.cdc.gov/growthcharts>



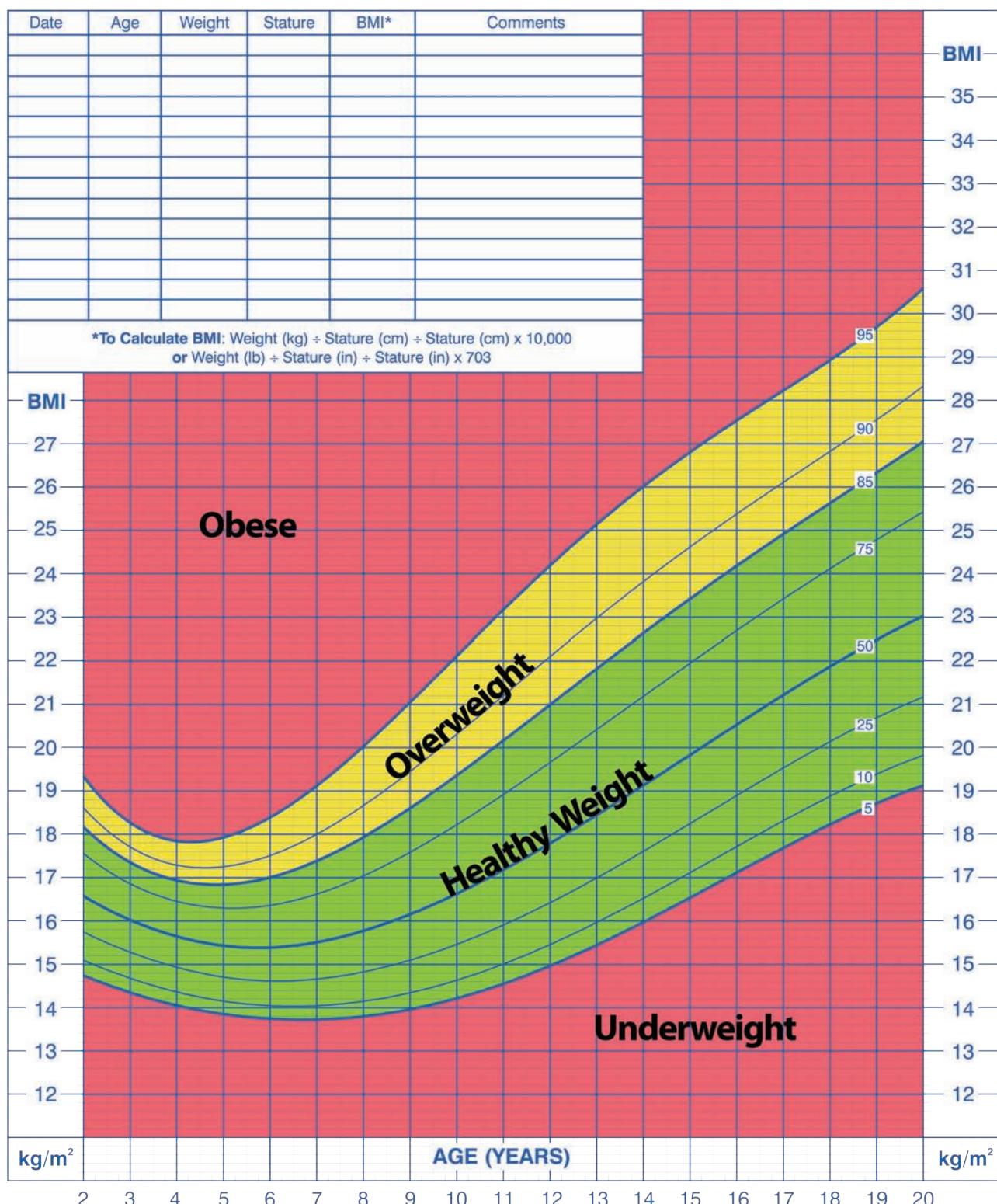
# Body Mass Index (BMI)—Boys

2 to 20 years: Boys

Body mass index-for-age percentiles

NAME \_\_\_\_\_

RECORD # \_\_\_\_\_



Published May 30, 2000 (modified 10/16/00).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000). <http://www.cdc.gov/growthcharts>



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## Body Mass Index 99th Percentile Cut-Points ( $\text{kg}/\text{m}^2$ )



Age, y	Boys	Girls
5	20.1	21.5
6	21.6	23.0
7	23.6	24.6
8	25.6	26.4
9	27.6	28.2
10	29.3	29.9
11	30.7	31.5
12	31.8	33.1
13	32.6	34.6
14	33.2	36.0
15	33.6	37.5
16	33.9	39.1
17	34.4	40.8



## Weight Loss Targets



Age, y	BMI 85th-94th Percentile No Risks	BMI 85th-94th Percentile With Risks	BMI 95-98th Percentile	BMI $\geq$ 99th Percentile
2–5	Maintain weight velocity	Decrease weight velocity or weight maintenance	Weight maintenance	Gradual weight loss of up to 1 lb/mo if BMI is very high ( $>21$ or $22 \text{ kg}/\text{m}^2$ )
6–11	Maintain weight velocity	Decrease weight velocity or weight maintenance	Weight maintenance or gradual loss (1 lb/mo)	Weight loss not to exceed an average of 2 lb/wk <sup>a</sup>
12–18	Maintain weight velocity. After linear growth is complete, maintain weight.	Decrease weight velocity or weight maintenance	Weight loss not to exceed an average of 2 lb/wk <sup>a</sup>	Weight loss not to exceed an average of 2 lb/wk <sup>a</sup>

Abbreviation: BMI, body mass index.

<sup>a</sup>If greater loss is noted, monitor for causes of excessive weight loss.

**The Pediatric Obesity Clinical Decision Support Chart offers the latest tools and practice recommendations you need to tackle childhood obesity.**

- Step-by-step prevention, assessment, and treatment interventions developed by the CDC for the child who is overweight or obese
- 15-minute obesity prevention protocol
- Hypertension evaluation and management algorithms
- Growth charts spanning birth to age 2 years, including body mass index-for-age percentiles
- Blood pressure levels for boys and girls
- Coding information for obesity-related health services
- ***And more!***

This flipchart was initially developed by the Maine Youth Overweight Collaborative (MYOC), a joint initiative of the Maine Center for Public Health, the Maine-Harvard Prevention Research Center, and the Maine Chapter of the American Academy of Pediatrics. By providing the tools and resources included, MYOC seeks to provide practical support and guidance to health care practices to help improve the prevention, identification, treatment, and outcomes for overweight youth and their families.

These tools are a result of the hard work and support of many individuals associated with MYOC who are dedicated to promoting healthy lifestyles for Maine families. We would like to extend special thanks to the National American Academy of Pediatrics for their willingness to partner to improve and market the Pediatric Obesity Clinical Decision Support Chart.

**We would also like to sincerely thank and acknowledge the following funders of the Maine Youth Overweight Collaborative. Their generosity and support for our work made MYOC possible.**

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- **MaineHealth**
- **Eastern Maine Healthcare**
- **Betterment Fund**
- **Harvard Prevention Research Center (HPRC)**

**2004 - 2006**

- **The Maine Health Access Foundation (MeHAF)**
- **Harvard Pilgrim Health Care Foundation**
- **American Academy of Pediatrics**

American Academy of Pediatrics

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