

# HEALTH NET PEDIATRIC AND ADOLESCENT OBESITY ASSESSMENT AND MANAGEMENT GUIDELINES

A Summary to the Companion  
Child and Adolescent Obesity Provider Toolkit



## OVERVIEW

Our medical community is faced with unprecedented and unique challenges, particularly in the management of child and adolescent overweight and obesity conditions and their complications. These challenges present an opportunity for health plans and providers to work as partners to better manage overweight and obesity in the community. The dramatic rise in childhood overweight and obesity has led to the startling realization that today's children will become the first generation to have a shorter lifespan than their parents.

In an effort to support busy providers with resources to care for children and adolescents at risk for overweight and obesity, Health Net is pleased to announce the introduction of the 2009 Pediatric Obesity Flip Chart. As part of Health Net's Obesity Initiative Strategic Plan, and our commitment to the Department of Managed Health Care (DMHC) to address obesity and overweight conditions in pediatric patients, this chart gives providers practical, point-of-care guidance on the prevention and treatment of overweight and obesity. Adapted from the 2008 Childhood and Adolescent Obesity Provider Toolkit

produced by the California Medical Association (CMA) Foundation and the California Association of Health Plans, Health Net created this flip chart to offer the latest tools and practice recommendations for providers in addressing obesity in their patients, including:

- Improving the quality of life for members through identification and management of body weight with routine calculation of body mass index (BMI)
- The assessment, monitoring and management of at-risk children and adolescents, including brief education and counseling tools, targeted laboratory screenings and appropriate specialty referrals
- Resource information for nutrition, physical fitness and life-skill support education, national guidelines, and weight management programs

At Health Net, our goal is to help our providers with this quick, easy-to-use chart filled with innovative, yet practical, preventive and treatment options to help you manage your overweight and obese patients. This flip chart serves as a convenient summary to the companion toolkit.

# TIPS TO CONSIDER

## Use Consistent Messages With Patients

### Remember the 5-2-1-0 rule

The American Academy of Pediatrics (AAP) recommends a well-known approach to a balanced diet that includes:

- 5** Eat at least five or more servings of fruits and vegetables on most days.
  - 2** Limit screen (including all television, computer and video game) time unrelated to school to two hours or less per day.
  - 1** Get one hour or more of moderate to vigorous physical activity everyday, and 20 minutes of vigorous activity at least three times a week.
  - 0** Drink less sugar. Try water and low-fat milk instead of sugar-sweetened drinks.
- Keep healthy lifestyle educational material at hand – display educational posters, give handouts, keep a list of good Web sites, and provide books, puzzles and activity sheets for children
  - Set specific behavioral goals and create an action plan
  - Be aware of cultural traditions and beliefs about ethnic foods and body size perception
  - Be a healthy lifestyle champion for your patients and community – involve your clinical team in healthy food and activity choices; be a resource for your community

# ASSESSMENT

A comprehensive medical and family history of overweight and obesity, diabetes, coronary heart disease, hypertension, and dyslipidemia should be obtained for all patients, particularly for patients who are overweight or obese. Include an assessment of diet, physical activity and behavioral issues. Providers must perform the following assessments when evaluating patients:

## Medical History

Identify the underlying syndromes or secondary complications of overweight, such as obstructive sleep apnea, gastroesophageal reflux disease (GERD), gallbladder disease, slipped capital femoral epiphysis, musculoskeletal stress, polycystic ovarian syndrome, and type 2 diabetes mellitus.

## Family History

Obtain focused, family history to identify risk factors for overweight or obesity, such as family obesity, eating disorders, type 2 diabetes, cardiovascular disease (hypertension, abnormal lipid profiles), and early deaths from heart disease or stroke. A child with one obese parent has three times the risk of becoming obese. This risk increases to 13 times with two obese parents.

## Dietary Assessment

Evaluate eating habits, including the quantity, quality, frequency, and timing of eating, to identify foods and patterns of eating that may lead to a high-calorie intake. Techniques to gather this information include a 24-hour recall and food record.

## Physical Activity Assessment

Determine daily activity levels. This should include time spent involved in exercise or physical activity, as well as time spent watching television, playing video games and computer use.

## Behavioral Assessment

Determine patients' readiness to change behaviors or identify a history of eating disorders or depression. An assessment of parents' readiness to change is also important to obtain.

To review the complete Care Planning Guide for Overweight Children and Adolescents, log on to the CMA Foundation Web site at [www.calmedfoundation.org](http://www.calmedfoundation.org).

# CLINICAL EVALUATION

## Physical Examination

Providers should gather information about the degree of overweight and potential complications, such as high blood pressure.

## Body Mass Index

The calculation of BMI is recommended to screen for overweight children beginning at age two. Refer to the BMI tables on the following page, which show the obese, overweight, healthy weight, and underweight categories for boys and girls from ages two to 20. Use these tools when considering treatment for overweight or obese patients.

## Blood Pressure

Approximately 60 percent of overweight children ages five to 10 have at least one cardiovascular risk factor associated with obesity and being overweight. Elevated blood pressure is one of the more common and more easily identifiable risk factors. Studies indicate that as many as 39 percent of pediatric patients with a BMI greater than the 95<sup>th</sup> percentile have at least two complications. It is important to screen for comorbidities that may be associated with overweight and obesity.

# BODY MASS INDEX CALCULATOR

To access an online BMI calculator, visit the Centers for Disease Control and Prevention (CDC) Web site at <http://apps.nccd.cdc.gov/dnpabmi/Calculator.aspx>.

When using the BMI calculator, providers must:

- Accurately measure weight and height
- Calculate BMI using weight or height
- Plot BMI for age and sex on the CDC BMI Growth Charts to determine the patient's BMI percentile
- Record BMI and BMI percentile in the patient's medical chart

## BMI is calculated as follows:

Weight in kilograms (kg) divided by the square of height in meters (m<sup>2</sup>)

Weight in pounds (lbs) divided by the square of height in inches (in<sup>2</sup>), multiplied by 703

$$\text{BMI} = \frac{\text{WEIGHT (KG)}}{\text{HEIGHT SQUARED (M}^2\text{)}}$$

$$\text{BMI} = \frac{\text{WEIGHT (LBS)}}{\text{HEIGHT SQUARED (IN}^2\text{)}} \times 703$$

## BMI Percentile and Nutritional Status

BMI Percentile	Nutritional Status
< 5 <sup>TH</sup> PERCENTILE	Underweight
5 <sup>TH</sup> – 84 <sup>TH</sup> PERCENTILE	Healthy Weight
85 <sup>TH</sup> – < 95 <sup>TH</sup> PERCENTILE	Overweight*
≥ 95 <sup>TH</sup> PERCENTILE	Obese**
> 99 <sup>TH</sup> PERCENTILE	Classification of BMI in this percentile should be noted in the patient's chart

\*Formerly classified as "at-risk for overweight"

\*\*Formerly classified as "overweight"

## BMI 99<sup>th</sup> Percentile Cut-Off Points

Age	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

BODY MASS INDEX

## Blood Pressure Levels, Boys, Ages One to 17 Years

### Systolic Blood Pressure (mm Hg)

### Diastolic Blood Pressure (mm Hg)

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

## Blood Pressure Levels, Girls, Ages One to 17 Years

### Systolic Blood Pressure (mm Hg)

### Diastolic Blood Pressure (mm Hg)

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

BLOOD PRESSURE

## HEALTH CONSIDERATIONS

Approximately 60 percent of overweight children ages 5 to 10 have at least one associated cardiovascular risk factor, including abnormal glucose metabolism and elevated blood pressure, and dyslipidemia with high low-density lipoprotein (LDL), low high-density lipoprotein (HDL) and high triglycerides. Studies indicate that as many as 39 percent of pediatric patients with a

BMI greater than the 95<sup>th</sup> percentile have at least two comorbid conditions.

It is important to screen for comorbidities that may be associated with overweight and obesity. Health consequences of overweight and obesity include those described below:

### Health Conditions by Body System

<b>Cardiovascular</b> <ul style="list-style-type: none"> <li>• Dyslipidemia</li> <li>• Hypertension</li> <li>• Left ventricle hypertrophy</li> <li>• Atherosclerosis</li> </ul>	<b>Orthopedic</b> <ul style="list-style-type: none"> <li>• Slipped capital femoral epiphysis</li> <li>• Blount's disease</li> </ul>	<b>Endocrine</b> <ul style="list-style-type: none"> <li>• Metabolic syndrome</li> <li>• Diabetes mellitus type 2</li> <li>• Polycystic ovarian syndrome</li> </ul>	<b>Psychologic</b> <ul style="list-style-type: none"> <li>• Quality of life</li> <li>• Depression</li> <li>• Negative self-image</li> </ul>
<b>Hepatic</b> <ul style="list-style-type: none"> <li>• Nonalcoholic steatohepatitis</li> <li>• Nonalcoholic fatty liver disease</li> </ul>	<b>Pulmonary</b> <ul style="list-style-type: none"> <li>• Asthma</li> <li>• Obstructive sleep apnea</li> </ul>	<b>Nervous</b> <ul style="list-style-type: none"> <li>• Pseudotumor cerebri</li> </ul>	<b>Reproductive</b> <ul style="list-style-type: none"> <li>• Oligomenorrhea</li> <li>• Amenorrhea</li> </ul>

## LABORATORY SCREENINGS

Laboratory tests to be administered are determined by the degree of overweight, family history and the results of the physical examination.

In accordance with American Medical Association (AMA) and CDC guidelines, Health Net recommends testing for the following laboratory studies for overweight or obese patients.

### Plasma Glucose Criteria

Plasma Glucose	Normal, mg/dL	Impaired, mg/dL	Diabetes, mg/dL
FASTING	Less than 100	100-125 (IFG)*	Greater than or equal to 126
RANDOM	Less than 140	140-199 (IGT)**	Greater than or equal to 200+ symptoms

\*IFG – Impaired fasting. Glucose; 2 h PG – Plasma glucose at two-hours, post-ingestion of glucose.

\*\*IGT – Impaired glucose.

### Cholesterol Screenings

Category	Total Cholesterol, mg/dL	Low-Density Lipoprotein, mg/dL	High-Density Lipoprotein, mg/dL
ACCEPTABLE	Less than 200	Less than 100	Greater than 40-60
BORDERLINE	200-239	100-159	N/A
ABNORMAL	Greater than 240	Greater than 160	Less than 40

### Triglyceride Screenings

Age in Years	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

## INTERNET RESOURCES

### Centers for Disease Control and Prevention:

Visit the CDC Web site at [www.cdc.gov/HealthyYouth/obesity](http://www.cdc.gov/HealthyYouth/obesity) for additional information on obesity and overweight resources.

For information about BMI, online calculators and growth charts, visit the CDC Web site at <http://apps.nccd.cdc.gov/dnpabmi/Calculator.aspx>.

### California Medical Association Foundation

For more information on the AMA Child and Adolescent Obesity Provider Toolkit, visit the CMA Foundation Web site at [www.calmedfoundation.org/projects/obesityProject.aspx](http://www.calmedfoundation.org/projects/obesityProject.aspx). Select the link: Child and Adolescent Provider Toolkit.

### American Academy of Pediatrics

Information on overweight and obesity is also available on the AAP Web site at [www.aap.org/obesity/](http://www.aap.org/obesity/).

For more information about childhood obesity and resources for teens who are overweight or obese, visit the following Web sites:

### Childhood Overweight

*Helping Your Overweight Child, Helping Your Child: Tips for Parents, Take Charge of Your Health! A Guide for Teenagers!, and more*  
[www.win.niddk.nih.gov/publications/index.htm](http://www.win.niddk.nih.gov/publications/index.htm)

National Initiative for Children's Healthcare Quality Childhood Obesity Action Network  
[www.nichq.org/childhood\\_obesity/index.html](http://www.nichq.org/childhood_obesity/index.html)

### Healthy Eating

*A Close Look at MYPyramid for Kids*  
[http://teamnutrition.usda.gov/resources/mpk\\_close.pdf](http://teamnutrition.usda.gov/resources/mpk_close.pdf)

*United States Department of Agriculture Resource Guide on Child Nutrition and Health for Motivated Parents*  
[www.nal.usda.gov/fnic/pubs\\_and\\_db.html](http://www.nal.usda.gov/fnic/pubs_and_db.html)

## SUMMARY

### Centers for Disease Control and Prevention:

In 2005, the AMA, Health Resources and Services Administration (HRSA) and CDC convened an expert committee to revise the 1997 childhood obesity recommendations. The initial recommendations were released in the *Appendix: In 2005, Expert Committee Recommendations on the Assessment, Prevention and Treatment of Child and Adolescent Overweight and Obesity – 2007*.

In 2006, NICHQ launched the Childhood Obesity Action Network. The network created an implementation guide to provide strategies and key aspects of the expert committee recommendations summary released on June 6, 2007. The guide also includes practice tools identified in 2006 by NICHQ from primary care groups that have successfully developed obesity care strategies. The tools are designed to facilitate

implementation. As tools are updated or new tools are developed based on expert recommendations, the implementation guide is updated.

Health Net recommends that providers review three key steps from the implementation guide, including:

#### STEP 1

Obesity Prevention at Well Care Visits  
(Assessment and Prevention)

#### STEP 2

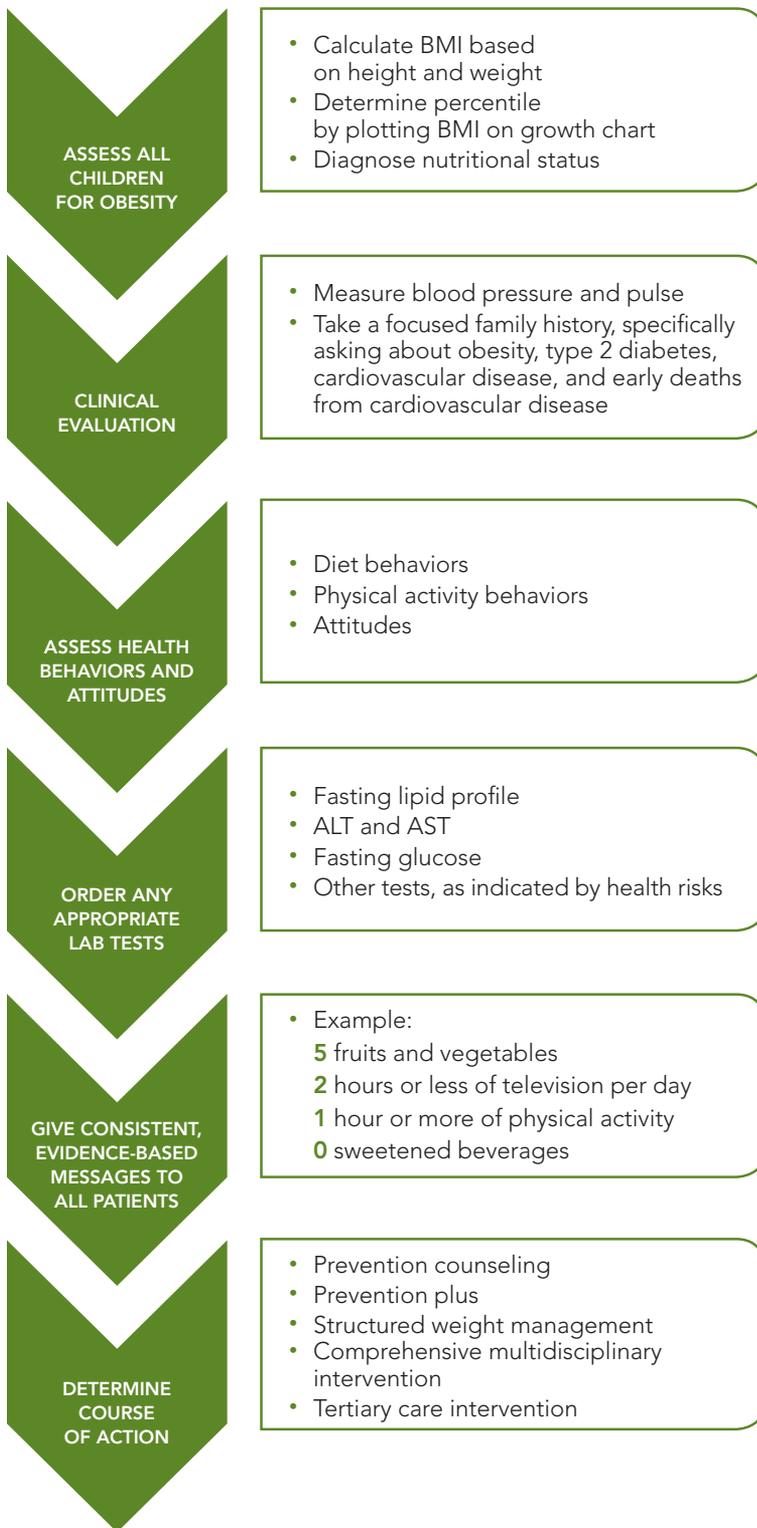
Prevention Plus Visits (Treatment)

#### STEP 3

Going Beyond Your Practice  
(Prevention and Treatment)

Log on to the AMA Web site at [www.ama-assn.org/ama/pub/category/11759.html](http://www.ama-assn.org/ama/pub/category/11759.html) to view the complete implementation guide.

# CHILDHOOD OBESITY ASSESSMENT AND TREATMENT ALGORITHM



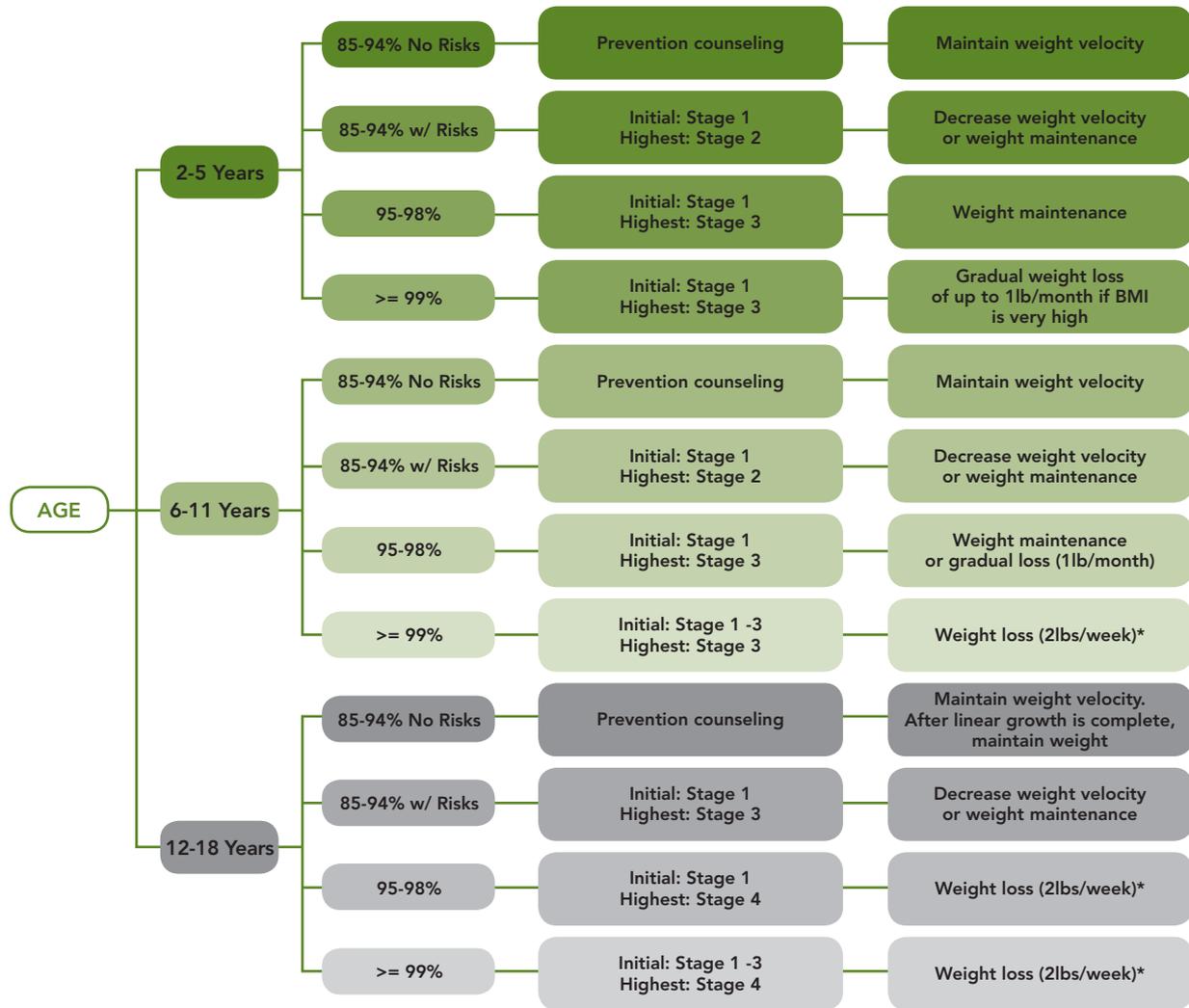
## Quick Reference

BMI Percentile	Nutritional Status
< 5 <sup>TH</sup>	Underweight
5 <sup>TH</sup> – 84 <sup>TH</sup>	Healthy Weight
85 <sup>TH</sup> – < 95 <sup>TH</sup>	Overweight
≥ 95 <sup>TH</sup>	Obese

## Risk Factors

- Family history of overweight/obesity
- Diet behaviors
- Physical activity behaviors
- Ethnicity

# CHILDHOOD OBESITY ASSESSMENT AND TREATMENT ALGORITHM



\*Evaluate excessive weight loss for high-risk behaviors.

Stage	Technique	Provider	Key Components
1	Prevention plus	Primary care office	<ul style="list-style-type: none"> <li>Individual or group visits with the family</li> <li>Occur monthly</li> <li>Health care professional sets behavioral goals</li> <li>If no improvement after 3-6 months, patient moves to next stage</li> </ul>
2	Structured weight management	Primary care office with support	<ul style="list-style-type: none"> <li>Includes family visits with physician or health professional specifically trained in weight management</li> <li>Monthly visits can be individual or group</li> </ul>
3	Comprehensive, multidisciplinary intervention	Pediatric weight management center	<ul style="list-style-type: none"> <li>Conducted by a multidisciplinary team with experience in childhood obesity</li> <li>Frequency is often weekly for 8-12 weeks with follow up</li> </ul>
4	Tertiary care intervention	Tertiary care center	<ul style="list-style-type: none"> <li>Interventions include medications, very-low-calorie diets and weight control surgery</li> <li>Recommended for select patients only when provided by experienced programs with established clinical or research protocols</li> </ul>

Adapted from NICHQ Childhood Obesity Action Network Implementation Guidelines.

## MANAGEMENT





