Pediatric and Adolescent Overweight Assessment

MANAGEMENT GUIDELINES

A summary to the companion Child and Adolescent Obesity Provider Toolkit

HealthNet.com

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, CalViva Health and Health Net are pleased to present the Pediatric and Adolescent Overweight Assessment and Management Guidelines flip chart. As part of our 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 Child and Adolescent Obesity Provider Toolkit produced by the California Medical Association (CMA) Foundation and an expert panel of health care professionals, on behalf of CalViva Health, Health Net created this flip chart to offer the latest tools and practice recommendations for providers in addressing overweight and 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)
- 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

This quick, easy-to-use flip chart, filled with innovative, yet practical, preventive and treatment options, is designed 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 every day, 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 websites, 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.

For additional information, visit the CMA Foundation website at www.thecmafoundation.org.

Clinical Evaluation

Physical examination

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

WHO growth standards

Beginning October 2013, Child Health and Disability Prevention (CHDP) program providers are required to use the World Health Organization (WHO) growth charts for children under age 2 during CHDP examinations. Refer to the next page for more detail on WHO growth standards.

Body mass index

The calculation of BMI is recommended to screen for overweight children beginning at age 2. Refer to the BMI tables under the Body Mass Index tab, which show the obese, overweight, healthy weight, and underweight categories for boys and girls from ages 2 to 20. Use these tools when considering treatment for overweight or obese patients. BMI percentile is not a measure for children under age 2.

Blood pressure

Blood pressure levels for children and adolescents have increased over the past 20 years, resulting in increased prevalence of prehypertension and hypertension. Elevated blood pressure is one of the more common and more easily identifiable risk factors associated with obesity and being overweight. It is important to screen for comorbidities that may be associated with overweight and obesity.

WHO Growth Standards

WHO released international growth standards in 2006, based on the growth of children living in environments with optimal conditions. These include exclusive breastfeeding for six months, standard pediatric care, and a smoke-free environment.

AAP recommends the use of WHO growth charts for children under age 2, and the Centers for Disease Control and Prevention (CDC) growth charts for children from ages 2 to 20.

CHDP providers are required to use WHO growth charts for children under age 2.

Growth parameters from birth to age 2 include:

- Boys length-for-age and weight-for-age percentiles
- Boys head circumference-for-age and weight-for-length percentiles
- Girls length-for-age and weight-for-age percentiles
- Girls head circumference-for-age and weight-for-length percentiles

WHO percentile cut-off values

BMI percentile	Nutritional status
< 2nd Percentile	Low weight-for-length
2nd – 98th Percentile	Healthy weight
> 98th Percentile	High weight-for-length

More information and training on using WHO growth charts is available online as follows:

- www.cdc.gov/nccdphp/dnpao/growthcharts/who/index.htm
- www.who.int/childgrowth/en/

Body Mass Index Calculation

CDC growth charts should be used to calculate BMI for children ages 2 to 20. Providers must:

- Accurately measure weight and height
- Calculate BMI using weight and height
- Plot BMI for age on the gender-appropriate CDC BMI-for-age growth charts to determine the patient's BMI percentile
- Record BMI and BMI percentile in the patient's medical chart

To access an online BMI calculator, visit the CDC website at http://apps.nccd.cdc.gov/dnpabmi/.

BMI formulas

Weight in kilograms (kg) divided by the square of height in meters (m^2)	Weight in pounds (lbs) divided by the square of height in inches (in^2), multiplied by 703
$\text{BMI} = \frac{\text{weight (kg)}}{\text{height squared } (m^2)}$	$\text{BMI} = \frac{\text{weight (lbs)}}{\text{height squared } (in^2)} \times 703$

BMI percentile and nutritional status

BMI percentile	Nutritional status
< 5th Percentile	Underweight
5th – < 85th Percentile	Healthy weight
85th – < 95th Percentile	Overweight
≥ 95th Percentile	Obese
> 99th Percentile	Classification of BMI in this percentile should be noted in the patient's chart

BMI 99th 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

Boys: Blood pressure levels, ages 1 to 17

Age in years	Blood pressure percentile	Systolic blood pressure (mm Hg)							Diastolic blood pressure (mm Hg)						
		Height percentile							Height percentile						
		5%	10%	25%	50%	75%	90%	95%	5%	10%	25%	50%	75%	90%	95%
1	90th	94	95	97	99	100	102	103	49	50	51	52	53	53	54
	95th	98	99	101	103	104	106	106	54	54	55	56	57	58	58
2	90th	97	99	100	102	104	105	106	54	55	56	57	58	58	59
	95th	101	102	104	106	108	109	110	59	59	60	61	62	63	63
3	90th	100	101	103	105	107	108	109	59	59	60	61	62	63	63
	95th	104	105	107	109	110	112	113	63	63	64	65	66	67	67
4	90th	102	103	105	107	109	110	111	62	63	64	65	66	66	67
	95th	106	107	109	111	112	114	115	66	67	68	69	70	71	71
5	90th	104	105	106	108	110	111	112	65	66	67	68	69	69	70
	95th	108	109	110	112	114	115	116	69	70	71	72	73	74	74
6	90th	105	106	108	110	111	113	113	68	68	69	70	71	72	72
	95th	109	110	112	114	115	117	117	72	72	73	74	75	76	76
7	90th	106	107	109	111	113	114	115	70	70	71	72	73	74	74
	95th	110	111	113	115	117	118	119	74	74	75	76	77	78	78
8	90th	107	109	110	112	114	115	116	71	72	72	73	74	75	76
	95th	111	112	114	116	118	119	120	75	76	77	78	79	79	80
9	90th	109	110	112	114	115	117	118	72	73	74	75	76	76	77
	95th	113	114	116	118	119	121	121	76	77	78	79	80	81	81
10	90th	111	112	114	115	117	119	119	73	73	74	75	76	77	78
	95th	115	116	117	119	121	122	123	77	78	79	80	81	81	82
11	90th	113	114	115	117	119	120	121	74	74	75	76	77	78	78
	95th	117	118	119	121	123	124	125	78	78	79	80	81	82	82
12	90th	115	116	118	120	121	123	123	74	75	75	76	77	78	79
	95th	119	120	122	123	125	127	127	78	79	80	81	82	82	83
13	90th	117	118	120	122	124	125	126	75	75	76	77	78	79	79
	95th	121	122	124	126	128	129	130	79	79	80	81	82	83	83
14	90th	120	121	123	125	126	128	128	75	76	77	78	79	79	80
	95th	124	125	127	128	130	132	132	80	80	81	82	83	84	84
15	90th	122	124	125	127	129	130	131	76	77	78	79	80	80	81
	95th	126	127	129	131	133	134	135	81	81	82	83	84	85	85
16	90th	125	126	128	130	131	133	134	78	78	79	80	81	82	82
	95th	129	130	132	134	135	137	137	82	83	83	84	85	86	87
17	90th	127	128	130	132	134	135	136	80	80	81	82	83	84	84
	95th	131	132	134	136	138	139	140	84	85	86	87	87	88	89

Girls: Blood pressure levels, ages 1 to 17

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

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 95th 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

Cardiovascular	Orthopedic	Endocrine	Psychologic
• Dyslipidemia • Hypertension • Left ventricle hypertrophy • Atherosclerosis	• Slipped capital femoral epiphysis • Blount's disease	• Metabolic syndrome • Diabetes mellitus type 2 • Polycystic ovarian syndrome	• Quality of life • Depression • Negative self-image

Hepatic	Pulmonary	Nervous	Reproductive
• Nonalcoholic steatohepatitis • Nonalcoholic fatty liver disease	• Asthma • Obstructive sleep apnea	• Pseudotumor cerebri	• Oligomenorrhea • Amenorrhea

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, CalViva Health and Health Net recommend 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
Glucose tolerance test (plasma glucose level 2 hours after a 75-gram glucose drink)	Less than 140	140-199 (IGT)**	Greater than or equal to 200 (confirmed by a second test)

*IFG – Impaired fasting glucose
**IGT – Impaired glucose tolerance

Cholesterol screenings (children and adolescents ages 2 to 19)

Category	Total cholesterol, mg/dL	Low-density lipoprotein, mg/dL
Acceptable	Less than 170	Less than 110
Borderline	170-199	110-129
High	200 or greater	130 or greater

Triglyceride screenings

Age in years	50^{th} - 95^{th} percentile (mg/dL)	
	Male	**Female**
5-9	48-85	57-120
10-14	58-111	68-120
15-19	68-143	64-126

Source: Lipid Screening and Cardiovascular Health in Childhood, Stephen R. Daniels, Frank R. Greer and the Committee on Nutrition, Pediatrics, Volume 122, July 2008, pages 198-208
http://pediatrics.aappublications.org/cgi/reprint/122/1/198

Multicultural Communication With Families

The influence of culture is a prominent component of the provider-patient experience. The varieties in values, beliefs, attitudes, and expectations can be a challenge for providers when extending care that is both culturally acceptable and assists in addressing the childhood obesity epidemic.

Cultural background influences how patients communicate with physicians, respond to diseases, decide the types of activities to enjoy, and develop food preferences.

Cross-cultural suggestions

Below are some cultural engagement guidelines to help providers discuss weight management, food choices and activity options with parents of overweight pediatric patients.

1. **Focus on the healthy family.** If a change in diet is healthier for one family member, it is generally healthier for all family members. Instead of focusing on the dietary changes for the one person that may need weight management, suggest that everyone in the household eat more healthfully.
2. **Exercise preferences vary by culture.** Some cultures may prefer high-impact, shorter-duration forms of exercise, while other cultures prefer low-impact exercises with longer duration. Identify and encourage patients to incorporate their preferred forms of exercise consistently into the daily or weekly routine.
3. **Every culture has a wide range of healthy food options.** Patients may find it easier to select healthier foods if they are substituting foods that meet culturally established expectations for taste, texture, smell, and flavor. To help patients select healthy culturally preferred foods, provide short descriptions of what makes a food healthy, such as being high in fiber, low in saturated fats and low in sugar. Provide simple explanations of how it affects the body.
4. **Meals and food may carry symbolic meaning based on cultural heritage.** Meals represent cultural traditions that connect a group's past to the present and contribute to cultural identity for the future. There may be basic dishes or foods that must be offered at each meal to make it culturally acceptable. Encourage a reduction of the food choices that make it difficult to manage weight, but are essential to the meal, instead of removing the food entirely from meals. Emphasize moderation when it comes to foods associated with celebrations and special events.
5. **Identify what is most important to the patient.** Cultures may influence what is considered an acceptable body shape, figure or weight. As a result, it may be difficult for patients to accept that weight is a health problem. Providers may need to engage patients through open-ended questions to identify their goals for healthy living. Set recommendations that help patients meet their goals.

Online Resources

For more information about childhood obesity and resources for teens who are overweight or obese, visit the following websites.

Centers for Disease Control and Prevention

Visit the CDC website at 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 website at http://apps.nccd.cdc.gov/dnpabmi/.

California Medical Association Foundation

For more information on the Child and Adolescent Obesity Provider Toolkit, visit the CMA Foundation website at www.thecmafoundation.org > *Projects* > *Obesity_Prevention_Project* > *Child and Adolescent Obesity Provider Toolkit*.

American Academy of Pediatrics

Information on overweight and obesity is also available on the AAP website at www.aap.org/obesity/.

Weight-Control Information Network

Visit www.win.niddk.nih.gov/publications/index.htm for various publications and resources on nutrition, physical activity and weight control.

National Initiative for Children's Healthcare Quality (NICHQ)

Obesity fact sheets providing the most recent national, state and county-based data regarding childhood overweight and obesity prevalence are available at www.nichq.org/advocacy/obesity_resources/index.html.

CalViva Health and Health Net recommend that providers review three key steps from the NICHQ Childhood Obesity Action Network implementation guide:

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)

The complete implementation guide is available at www.nichq.org/documents/coan-papers-and-publications/COANImplementationGuide62607FINAL.pdf.

Healthy eating and fitness

- Let's Move Campaign
  www.letsmove.gov
- Network for a Healthy California – Champions for Change
  http://cachampionsforchange.net/en/Resources.php

Cultural competency resources and training

For cultural competency information, visit www.thinkculturalhealth.hhs.gov/.

For a no-cost cultural competency training module, log in to https://cccm.thinkculturalhealth.hhs.gov.

Childhood obesity assessment and treatment algorithm

Assess all children for obesity

- Calculate BMI based on height and weight
- Determine percentile by plotting BMI on growth chart
- Diagnose nutritional status

Clinical evaluation

- Measure blood pressure and pulse
- Take a focused family history, specifically asking about obesity, type 2 diabetes, cardiovascular disease, and early deaths from cardiovascular disease

Assess health behaviors and attitudes

- Diet behaviors
- Physical activity behaviors
- Attitudes

Order any appropriate lab tests

- Fasting lipid profile
- ALT and AST
- Fasting glucose
- Other tests, as indicated by health risks

Give consistent, evidence-based messages to all patients

Example:
5 or more fruits and vegetables
2 hours or less of television per day
1 hour or more of physical activity
0 sweetened beverages

Determine course of action

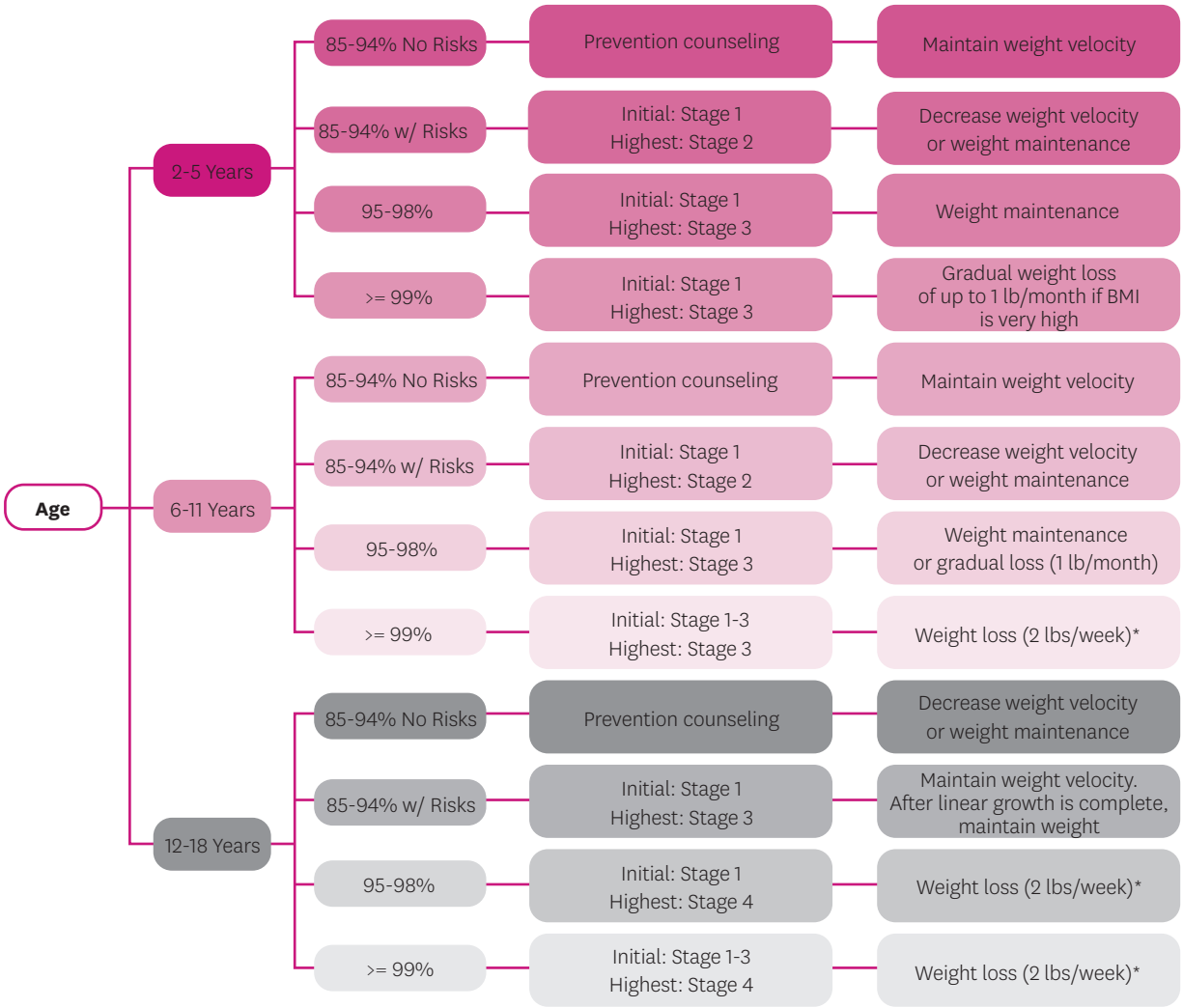
- Prevention counseling
- Prevention plus
- Structured weight management
- Comprehensive multidisciplinary intervention
- Tertiary care intervention

QUICK REFERENCE

BMI percentile	Nutritional status
< **5th**	Underweight
5th – < **85th**	Healthy weight
85th – < **95th**	Overweight
≥ **95th**	Obese

Risk factors
• Family history of overweight/obesity
• Diet behaviors
• Physical activity behaviors
• Ethnicity

Adapted from NICHQ Childhood Obesity Action Network Implementation Guidelines.



*Evaluate excessive weight loss for high-risk behaviors.

Stage	Technique	Provider	Key components
1	Prevention plus	Primary care office	• Individual or group visits with the family, occurring monthly • Emphasize the 5-2-1-0 rule (see Overview tab) • Health care professional sets behavioral goals • If no improvement after 3-6 months, patient moves to next stage
2	Structured weight management	Primary care office with support	• Includes family visits with physician or health professional specifically trained in weight management • Monthly visits can be individual or group
3	Comprehensive, multidisciplinary intervention	Pediatric weight management center	• Conducted by a multidisciplinary team with experience in childhood obesity • More active use of behavioral strategies, more formal monitoring, and increased feedback regarding progress • Frequency is often weekly for 8-12 weeks with follow up
4	Tertiary care intervention	Tertiary care center	• Interventions include medications, very low-calorie diets and weight control surgery • Recommended for select patients only when provided by experienced programs with established clinical or research protocols

Adapted from NICHQ Childhood Obesity Action Network Implementation Guidelines.

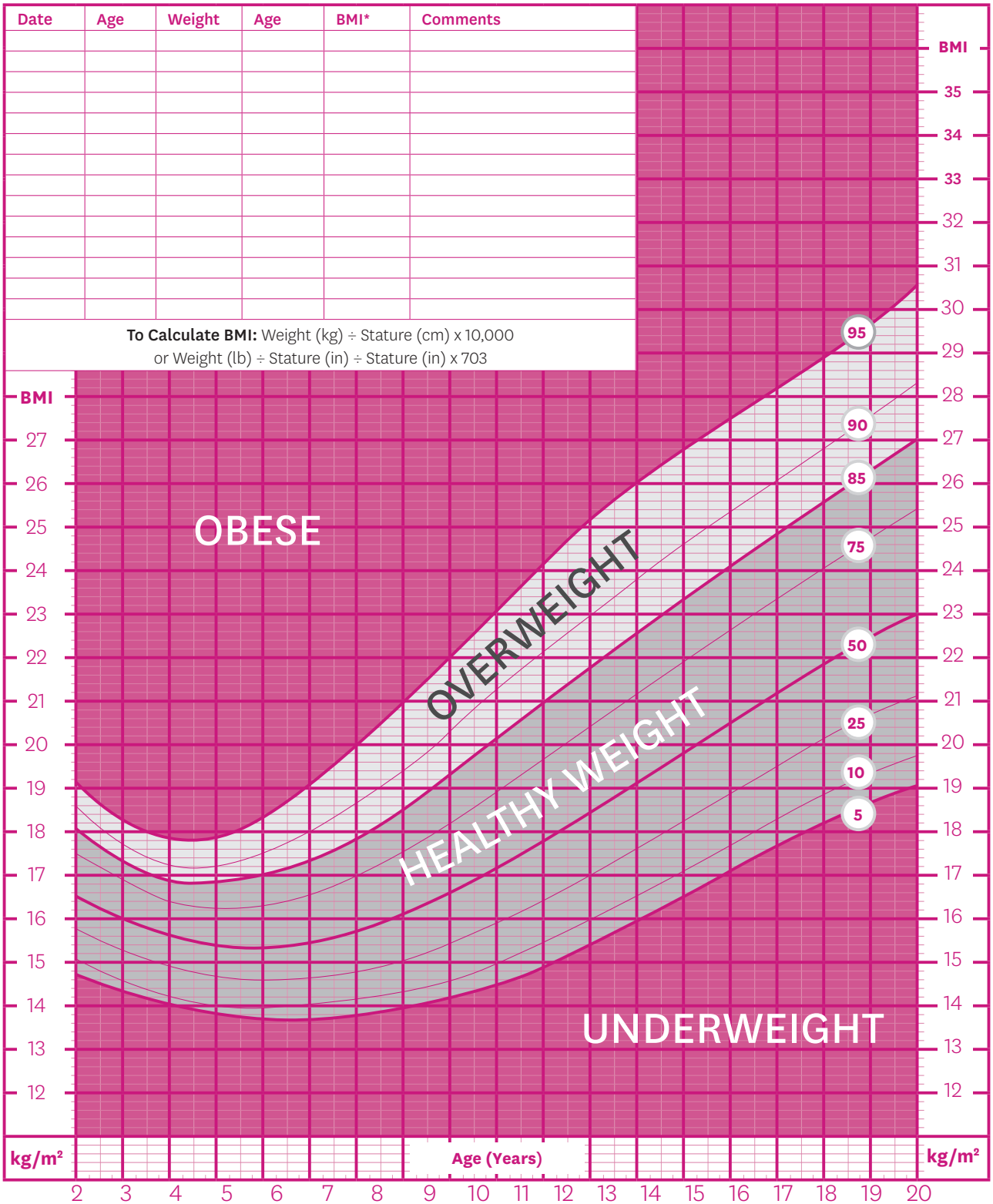
BOYS: 2 TO 20 YEARS
BODY MASS INDEX-FOR-AGE PERCENTILES

Name _____

Record# _____

Date	Age	Weight	Age	BMI*	Comments

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



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). www.cdc.gov/growthcharts

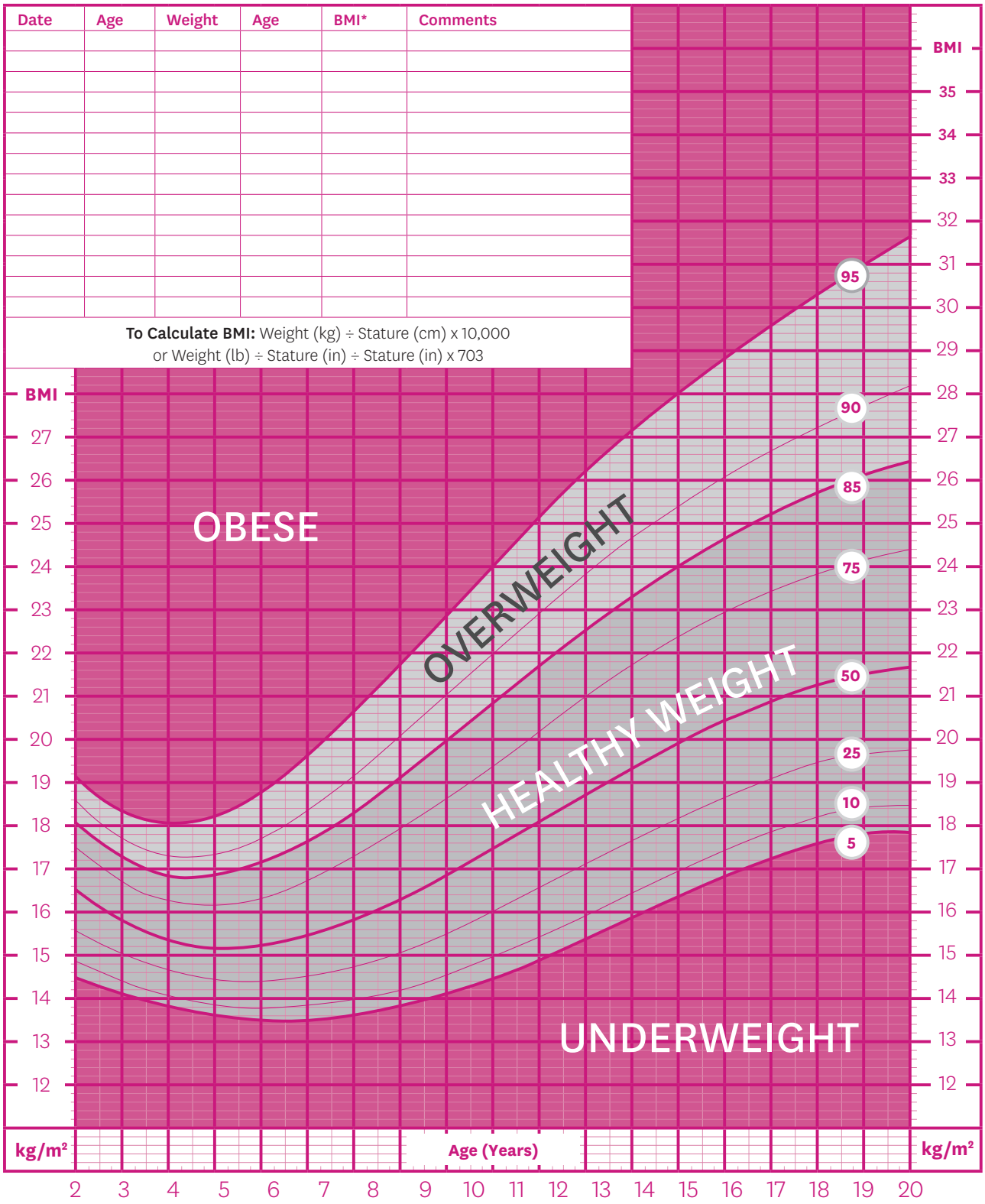
GIRLS: 2 TO 20 YEARS
BODY MASS INDEX-FOR-AGE PERCENTILES

Name _____

Record# _____

Date	Age	Weight	Age	BMI*	Comments

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



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). www.cdc.gov/growthcharts

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