



Procedure: Growth Charts for Infants and Children

Volume: Nutrition Services/Breastfeeding

Section: Anthropometric Measurement

Citation: 246.7(e)(1)(i)(A)&(B); PM 2011-5

Approval Date: 11.2012

Revised Date:

Purpose

Explaining:

- Selection of appropriate growth chart
- Plotting length/height and weight measurements on growth chart
- How to determine Body Mass Index (BMI) for children ≥ 24 months of age
- Plotting BMI/age for children ≥ 24 months of age

Use of Growth Charts

Using the CDC growth charts, WIC staff can compare growth in infants and children with a national reference source (World Health Organization (WHO) growth standard charts or CDC growth reference charts).

Comparing measurements on the appropriate age-and-gender specific growth chart allows for monitoring of growth patterns and identification of nutritional risk factors.

Preparations

1. Obtain accurate measurements of the child's length/height and weight.
 - Accurate measurements are critical to correct plotting and interpretation of growth and assessment of nutritional risk.
2. Select the appropriate growth chart.
3. Record the date, the child's name, age, weight, and length/height on the spaces provided on the chart.
4. For premature infants and children ≤ 23 months of age, attach a "Plot Adjusted Age" reminder sticker to the chart and document number of weeks early.

Selection of Appropriate Growth Chart

Select the growth chart to use based on the age and gender of the child being weighed and measured, and on the method of measurement.

Infants and Children ≤ 23 months of age	Children ≥ 24 months of age
<ul style="list-style-type: none">• <i>Uses WHO Growth Standard Charts</i>• Recumbent length is measured• Plotted on birth to 24 months chart• Plot weight-for-age• Plot length-for-age• Plot weight-for-length	<ul style="list-style-type: none">• <i>Uses CDC Growth Reference Charts</i>• Standing height is measured• Plotted on 2 to 5 years chart• Plot height-for-age• Plot weight-for-age• Plot BMI-for-age

Calculate the Child's Age

For infants and children ≤ 23 months of age, and for children 2 years of age and older, determine age to the nearest month.

Round the child's age to the nearest month using the following guidelines:

- Days 0-14, round down to the previous month
- Days 15-31, round up to the next month

Examples

Date of Measurement	Child's Birth Date	Child's Age	Plot Age
August 1, 2012	October 28, 2008	3 yrs 9 months 4 days	3 years 9 months
August 1, 2012	March 14, 2011	1 yr 4 months 18 days	2 years 5 months
August 1, 2011	June 1, 2011	2 months	2 months

Gestational Age Adjustment for Preterm Infants and Children ≤ 23 Months of Age

- All preterm infants (born at less than or equal to 37 weeks gestation) should be plotted on the birth-to-36 months growth charts using adjusted gestational age.
- Age-adjusted growth chart plotting should continue until a child reaches 24 months of age

Calculating Gestation-Adjusted Age

- Determine the number of weeks early using the mother/caregiver self-report, use of gestational wheel, or referral information from a medical provider.
- Subtract the number of weeks early from the infant/child's chronological age to determine the child's gestation-adjusted age.
- Document the number of weeks early in the following two places:
 1. On the "Plot Adjusted Age" reminder sticker attached to the birth-to-36 months growth chart
 2. In the WKS EARLY field on page 2 of the certification screen in the WIC computer system
- *An infant who has not yet reached the equivalent of 40 weeks gestation **cannot** be plotted on the birth-36 months growth chart*

Round the child's age to the nearest month using the following guidelines:

- Days 0-14, round down to the previous month
- Days 15-31, round up to the next month

Examples

Date of Measurement	Child's Birth Date	Actual Age	Weeks Early	Gestational Adjusted Age
July 1, 2012	April 1, 2012	3 months	6	2 months
July 1, 2012	May 15, 2012	1 mo 16 days	4	1 month
July 1, 2012	July 1, 2011	1 year	8	10 months
July 1, 2012	June 15, 2012	16 days	4	N/A

Plotting Length/ Height-for-age and Weight-for-age Measurements

On the appropriate growth chart, plot the measurements taken.

- Accurate measurements are critical to correct plotting and interpretation of growth and assessment of nutritional risk.
- Plot length/height-for-age and weight-for-age measurements for all infants and children.
- For premature infants and children ≤ 23 months of age, measurements should be plotted using adjusted gestational age
- A “Plot Adjusted Age” reminder sticker should be affixed to the birth-to-36 months growth chart to indicate the number of weeks that should be used to determine the gestation-adjusted age.

Infants who have not reached the equivalent age of 40 weeks gestation will not be plotted on the growth chart

1.	Find the child’s age on the horizontal axis and then follow the vertical line from that point up to the measurement of the child.
2.	Use a precise plot growth-plotting aid to line up the age and the measurement on the growth chart.
3.	Place one axis of the growth-plotting aid on the age of the child and the other axis of the growth-plotting aid on the measurement. Using the center of the growth plotting aid, make a small dot where the two lines intersect.
4.	When measuring the child the next time, draw a straight line to connect the measurements.

Plotting Weight-for-Length Measurements

Plot weight-for-length for children ≤ 23 months of age.

- Plot weight-for-length on the reverse side of the birth to 36 months growth chart.

1.	Find the child’s length on the horizontal axis and then follow the vertical line from that point up to the weight of the child.
2.	Place one axis of the growth-plotting aid on the length of the child and the other axis of the growth-plotting aid on the weight of the child. Using the center of the growth-plotting aid, make a small dot where the two lines intersect.
3.	When measuring the child the next time, draw a straight line to connect the measurements.

Determine the Percentile Rank

- The curved lines on the growth chart show selected percentiles that indicate the rank of the child’s measurement.
 - The percentile rank of the measurement is determined by comparing the dot to the percentile line closest to the measurement.
-

**WIC Computer System
Percentile Calculations
for Children Age 2
Years and Older**

For children age 2 and older, the WIC System will automatically calculate the following percentile rank based on the measurements entered.

- **WIC Computer system calculated percentiles should be used in determination of nutritional risk for children 2 and older.**

<ul style="list-style-type: none"> • Height-for-age • BMI-for-age 	WIC CERTIFICATE																				
	AGCY: 260/00 CLINIC: 08/00 ID: 405311 ACTI																				
	CLIENT LAST NAME: _____																				
	<table border="1" style="width: 100%;"> <tr> <th>ST</th> <th>DATE OF CERT.</th> <th>MEDICAL DATE</th> <th>AGE YR MO</th> <th>HT</th> <th>WT</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>										ST	DATE OF CERT.	MEDICAL DATE	AGE YR MO	HT	WT					
ST	DATE OF CERT.	MEDICAL DATE	AGE YR MO	HT	WT																
Wt/Lt; Ht/Age; BMI/Age: ____% ____% ____%																					

**WIC Computer System
Percentiles for Infants
and Children Under 2
Years of Age**

DO NOT USE the WIC System percentiles to determine nutritional risk for infants and children birth to 2 years of age

As of October 1, 2012, WHO Growth Standards will be used to determine nutritional risk for infants and children under two years of age.

The WIC System percentiles will not be accurate to use for children under 2, because these percentiles are based on the 2000 CDC Growth Charts. Because of the age of the WIC system and the instability to support complex programmatic changes, calculations for these fields cannot be changed.

Do Not Use <ul style="list-style-type: none"> • Weight-for-length • Height-for-age 	WIC CERTIFICATE																				
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Wt/Lt; Ht/Age; BMI/Age: ____% ____% ____%																					

Nutritional risk criteria for infants and children under two will be determined by using the percentiles obtained from manually plotting length-for-age, weight-for-age and weight-for length on CDC growth charts for birth to 24 months of age, based on WHO growth standards.

Determine BMI

For children 2 years of age and older, Body Mass Index (BMI)-for-age is the measurement used to determine nutritional risk.

- The WIC Computer System will automatically calculate the BMI-for-age for children when height and weight are entered.
- BMI-for-age should be plotted on the growth chart using the WIC Computer System calculated percentiles.

Plotting BMI-for-age

The WIC Computer system automatically calculates the BMI-for-age percentiles from the height and weight measurements entered in the system.

The percentile rank should be plotted on the growth chart, for education purposes and for ease in tracking growth patterns.

To obtain a clear understanding of the growth pattern observed on the BMI-for-age chart, the weight-for-age and height-for-age charts are plotted to help determine the pattern of weight and stature separately.

1.	Place one axis of the growth-plotting aid on the age of the child and the center of the growth-plotting aid on the percentile line (or approximate range of the percentile) indicated by the WIC computer system. <ul style="list-style-type: none">• Using the center of the growth-plotting-aid, make a small dot on the approximate percentile.
2.	When plotting BMI-for-age of the child the next time, draw a straight line to connect the measurements.

When BMI-for-age percentile is above the 99th

The WIC computer system may calculate the BMI-for-age of a child at 99%.

- A computer system calculated BMI of 99th percentile means the BMI-for-age can be at or above the 99th percentile.
- In order to more accurately track the pattern of growth, and ensure the most accurate assessment of growth of the child, manual calculation and plotting of the BMI-for-age percentile should be done when BMI-for-age is above the 99th percentile.
- Manual calculation and plotting can be done at any time to provide the WIC CPA the most accurate and complete indication of the child’s growth pattern.

Growth Standards versus Growth References

The WHO and the CDC growth charts differ in their overall conceptual approach to describing growth

- Growth Standards describe how healthy infants and young children should grow under optimal environmental and health conditions.
- Growth References describe growth of infants and children in the United States.

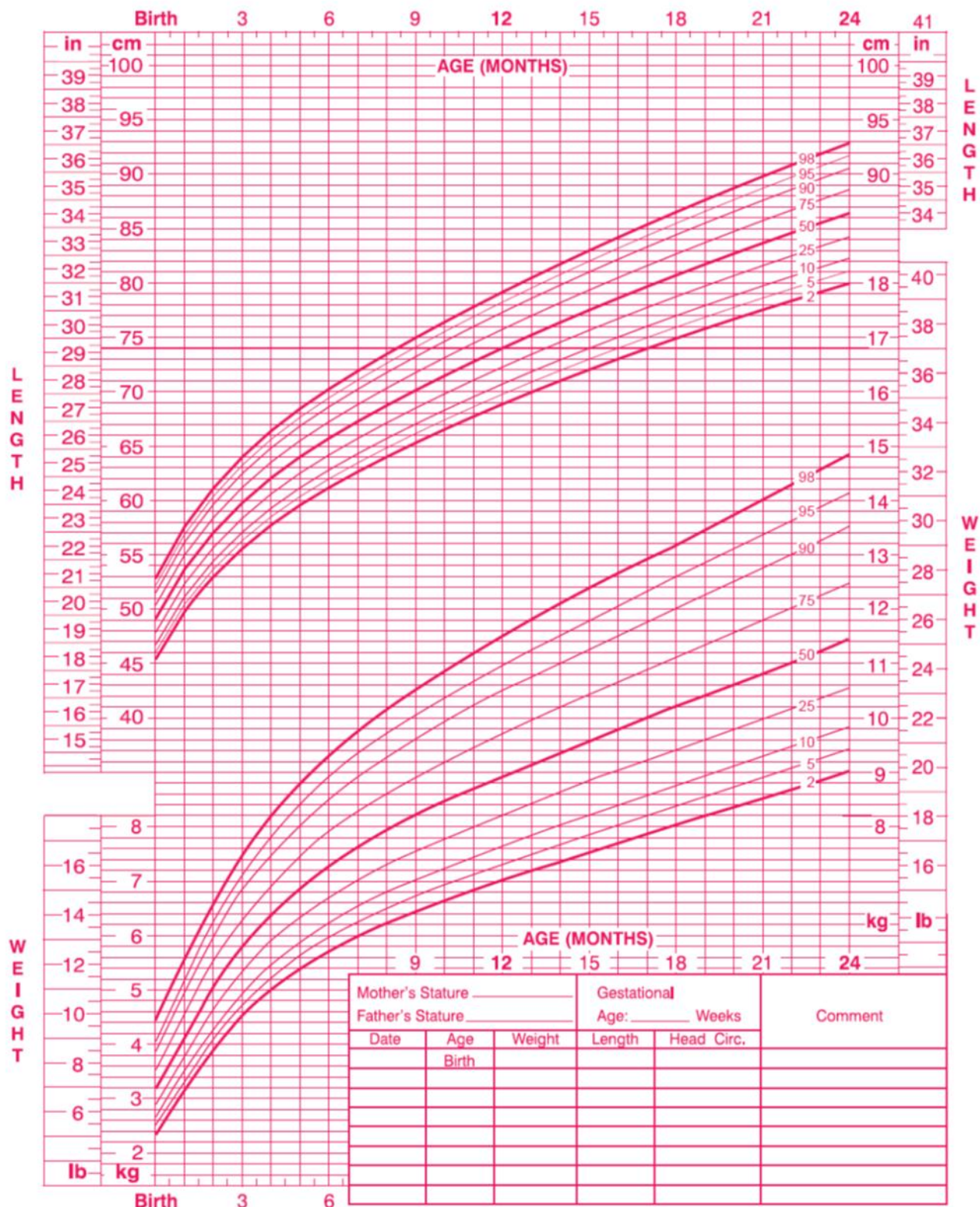
***Growth Standards
versus Growth
References
(cont)***

WHO Growth Charts	<ul style="list-style-type: none">• Are prescriptive because they describe growth under optimal environmental conditions and included healthy infants who were well-fed according to international recommendations.• Were designed to be an international standard for infants and young children.• Provided a standard against which all infants should be compared.• Create an opportunity for clinicians to identify and address environmental conditions that might be negatively affecting growth.
CDC Growth Charts	<ul style="list-style-type: none">• Are descriptive because they indicate how children grew in a particular place and time.• Indicate how children grew in the United States during approximately 30 years (1963 – 1994)• Do not imply that the pattern of growth they represent is healthy.

Birth to 24 months: Girls
Length-for-age and Weight-for-age percentiles

NAME _____

RECORD # _____



Published by the Centers for Disease Control and Prevention, November 1, 2009
 SOURCE: WHO Child Growth Standards (<http://www.who.int/childgrowth/en>)



RECORD # _____

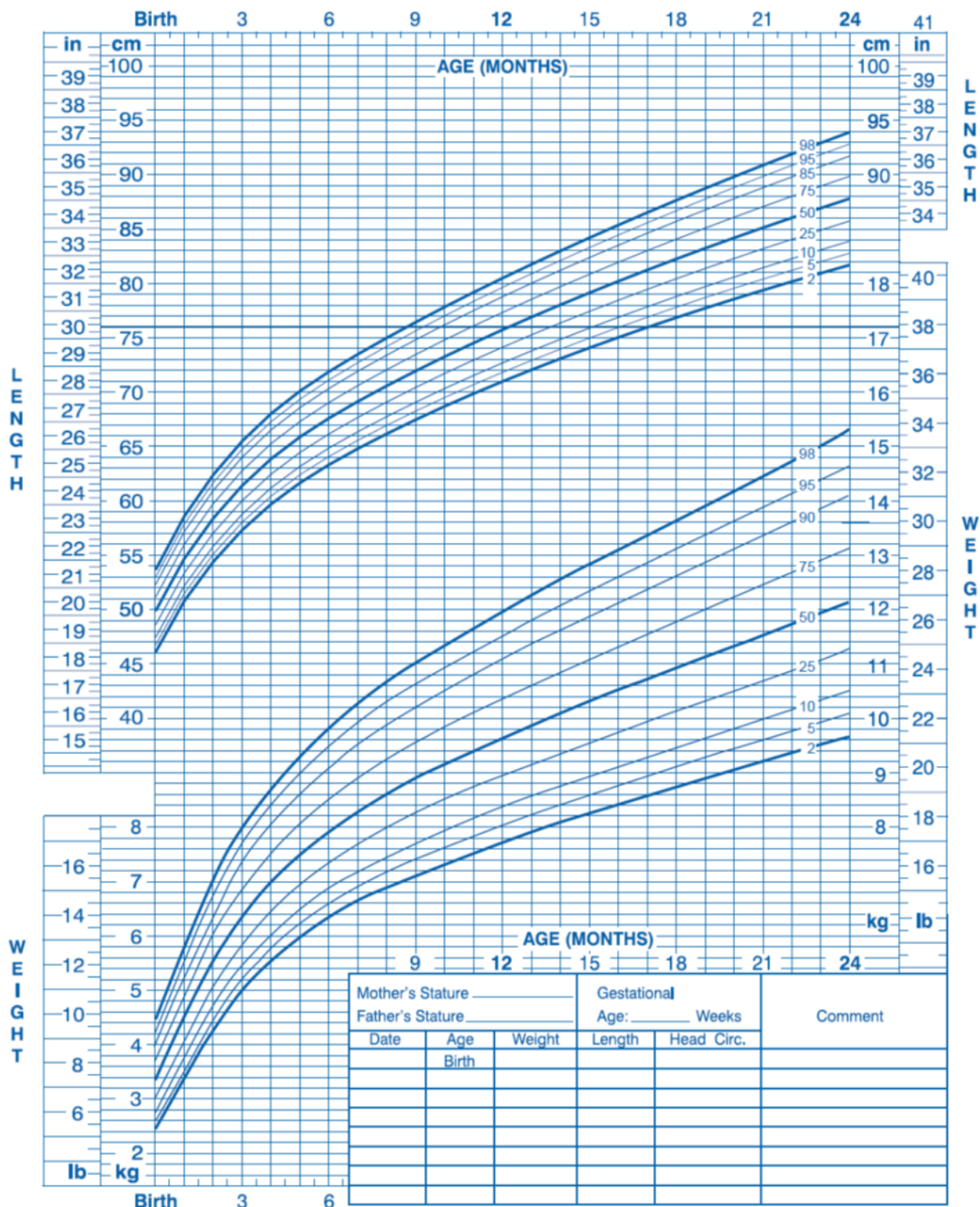


Birth to 24 months: Boys

Length-for-age and Weight-for-age percentiles

NAME _____

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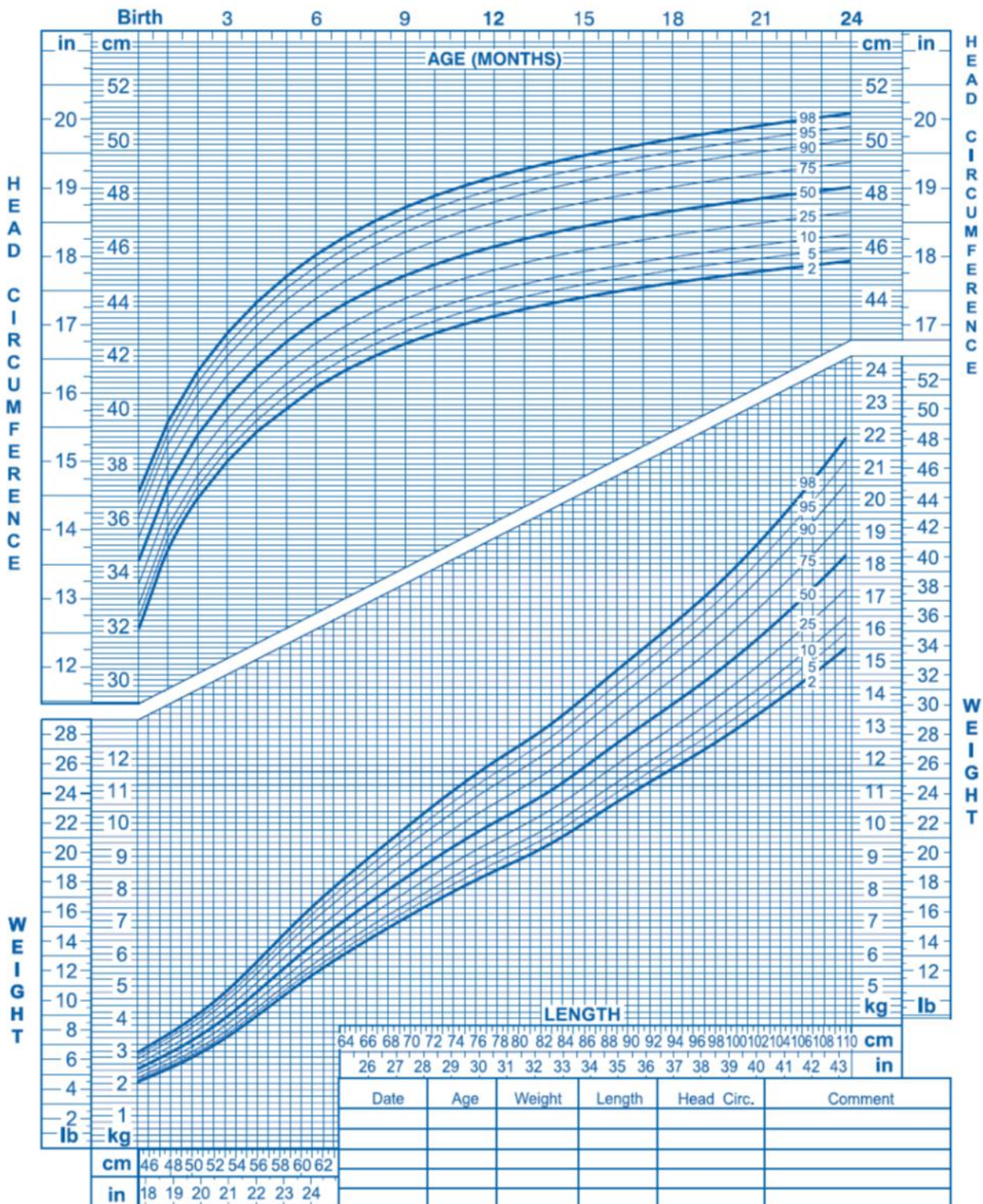
Published by the Centers for Disease Control and Prevention, November 1, 2009
 SOURCE: WHO Child Growth Standards (<http://www.who.int/childgrowth/en>)



Birth to 24 months: Boys
Head circumference-for-age and
Weight-for-length percentiles

NAME _____

RECORD # _____



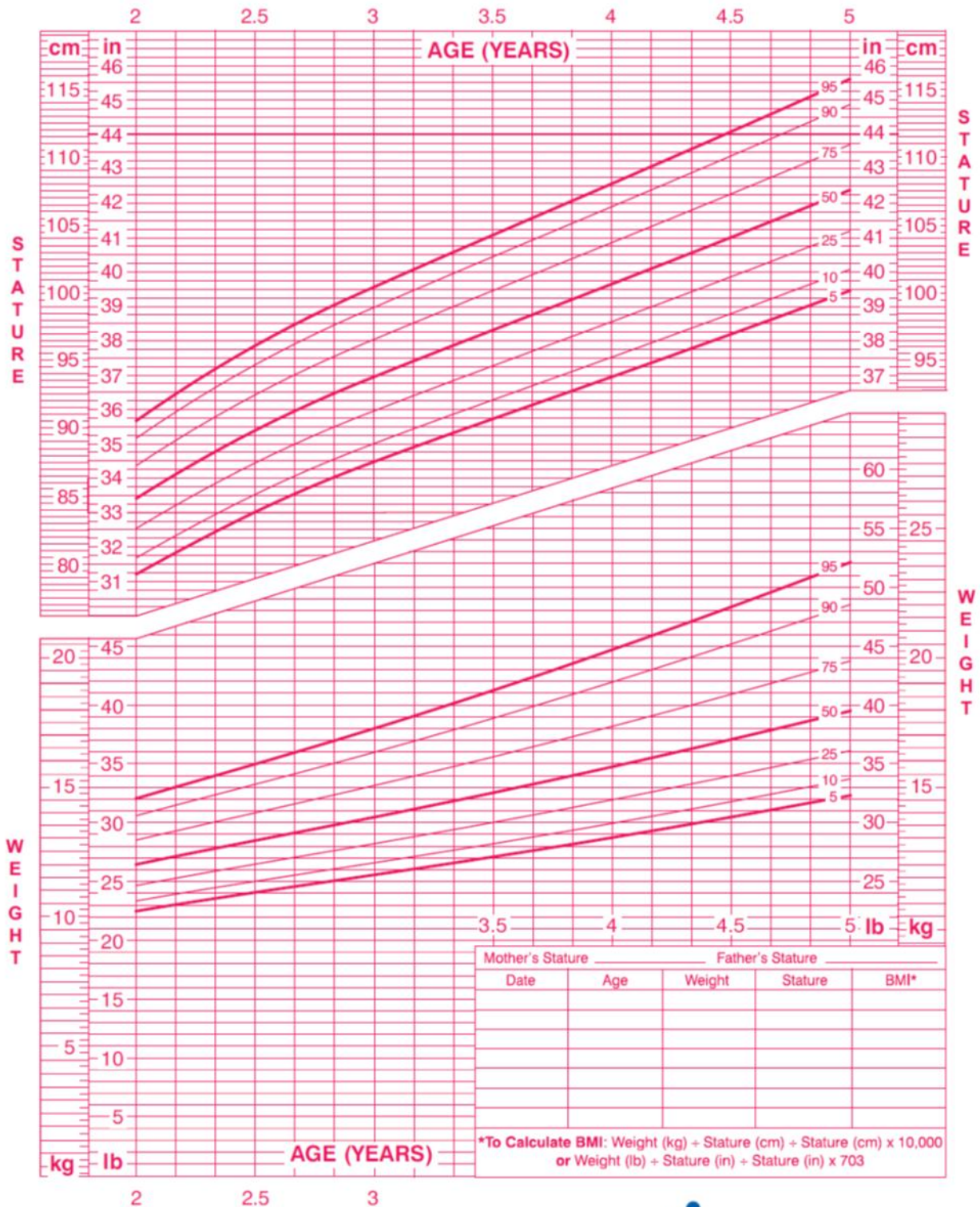
Published by the Centers for Disease Control and Prevention, November 1, 2009
 SOURCE: WHO Child Growth Standards (<http://www.who.int/childgrowth/en>)



2 to 5 years: Girls Stature-for-age and Weight-for-age percentiles

NAME _____

RECORD # _____


Available at <http://www.nal.usda.gov/wicworks>

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2002).
<http://www.cdc.gov/growthcharts>



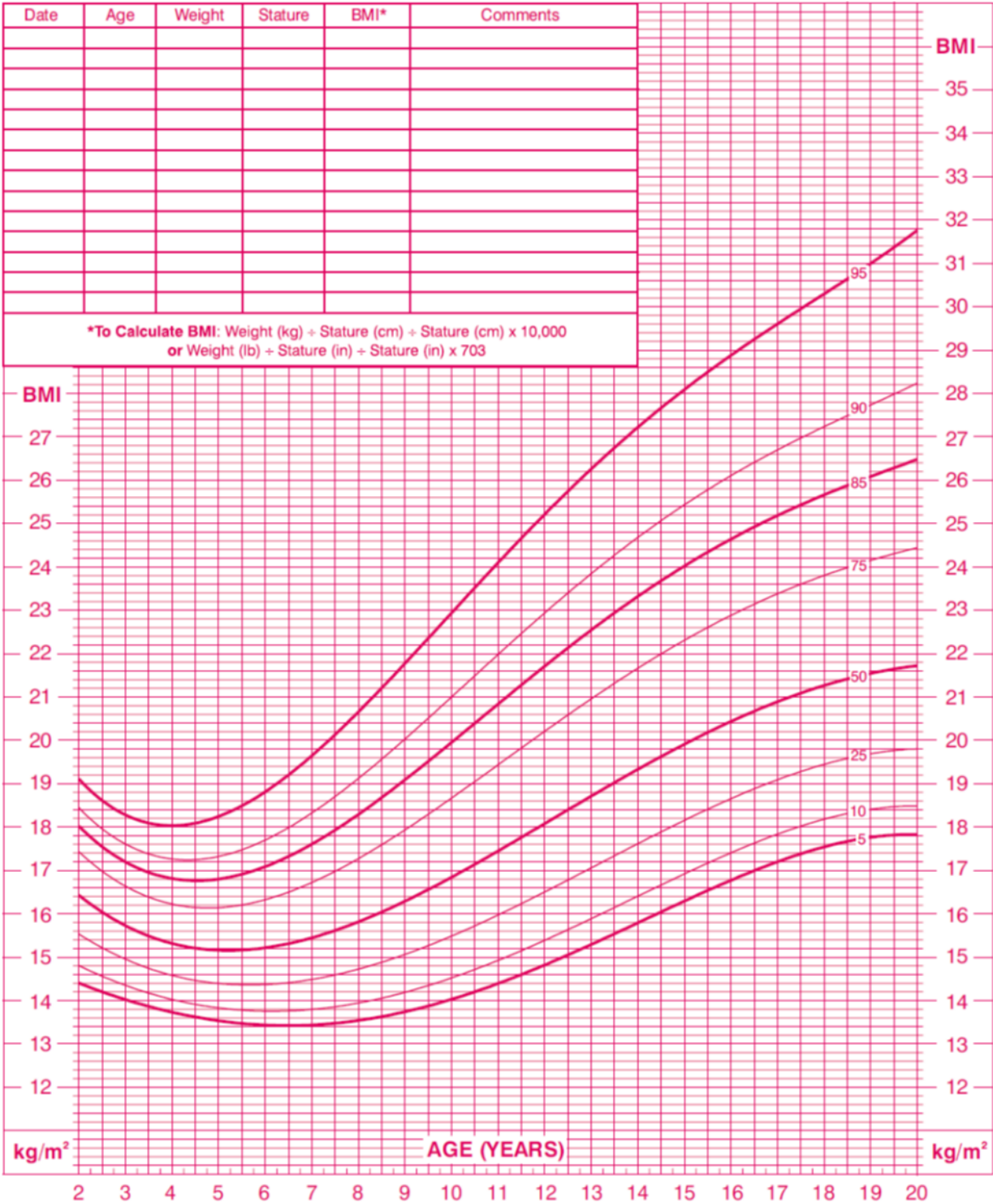
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2 to 20 years: Girls
 Body mass index-for-age percentiles

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>

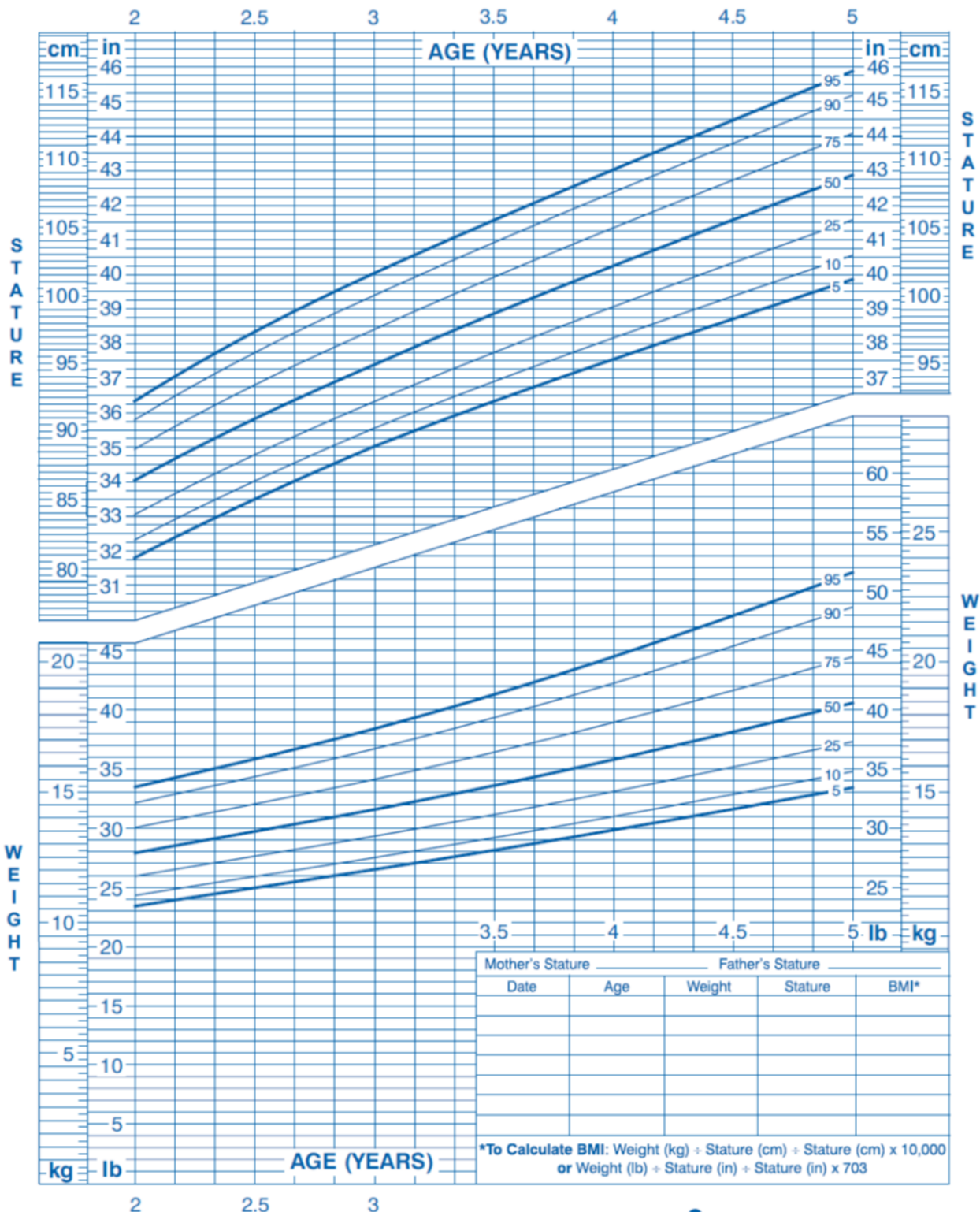


2 to 5 years: Boys

Stature-for-age and Weight-for-age percentiles

NAME _____

RECORD # _____



Available at <http://www.nal.usda.gov/wicworks>

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2002).
<http://www.cdc.gov/growthcharts>



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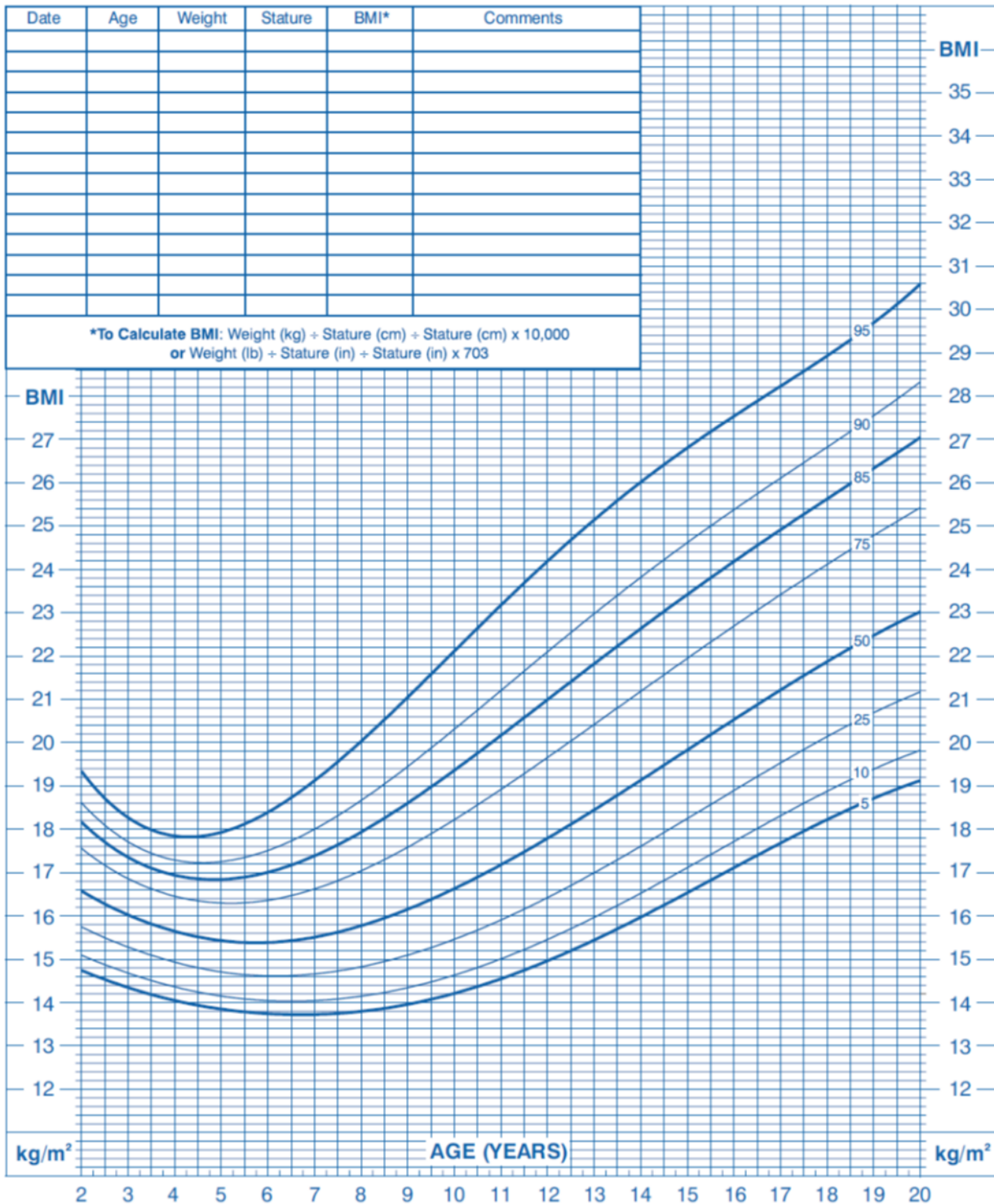
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2 to 20 years: Boys

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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