

2.12 Anthropometric Measurements

POLICY:

Each participant shall be weighed and measured as part of their nutrition assessment during each certification and sub-certification according to the procedures below.

PROCEDURE

A. WEIGHT

1. Appropriate scales will be used. Infants and children less than 24 months of age will be weighed on accurately calibrated pediatric beam balance scales or digital scales. Children more than 24 months of age, pregnant women, and postpartum women will be weighed on accurately calibrated adult beam balance scales or digital scales. (See policy 2.12, D for policy related to weighing equipment).
2. Dress allowed during weighing will be appropriate to the age and category of the participant, as below. It is not necessary to subtract the weight of any clothing worn, including dry diapers.
3. The parent shall have the most contact with the infant/child when obtaining measurements. When a WIC employee must undress the infant/child, the employee must have the parent or guardian's permission.
4. Infants and Children under 24 months of age
 - a. Infants and children less than 24 months old will be weighed in no more than a dry diaper.
 - b. Cover the scale with scale liner or table paper. Change the liner for each participant.
 - c. Adjust the scale if it is out of zero balance.
 - d. Place the infant or child on his/her back in the center of the covered scale bed. The infant should be placed lying down in a comfortable position unless he/she can sit up alone. The child should not touch any surface but the scale.
 - e. Read the measurement in pounds and ounces, rounding up or down to the nearest ounce.
 - f. Record the measurement on the growth chart. Enter the measurement data in the STORC system.
5. Children older than 24 months and Pregnant and Postpartum women
 - a. Children will be weighed in no more than light undergarments which can include t-shirt, shorts and socks. Pregnant and postpartum women will

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remove only shoes and heavy outdoor clothing such as coats or bulky sweaters prior to weighing.

- b. Adjust the scale if it is out of zero balance.
- c. Have the participant step onto the center of the scale platform.
- e. Read the measurement in pounds and ounces, rounding up or down to the nearest ounce.
- f. Record the measurement on the growth chart. Enter the measurement data in the STORC system.

B. LENGTH or HEIGHT

1. Equipment appropriate for age and category will be used. Infants and children less than 24 months will be measured lying down using a recumbent board. Older children who cannot stand up, or are too short to be measured standing up, or those whose measurements cannot be plotted on the 2 to 5 chart will be measured using the recumbent board. Children more than 24 months of age and pregnant and postpartum women will be measured in a standing position using a stadiometer. See policy 2.12, D. for policy related to equipment requirements.
2. Dress allowed during length and height measurements will be appropriate to the age and category of the participant, as below.
3. Infants and Children under 24 months of Age
 - a. Infants and children under 24 months of age will be measured without shoes or hair ornaments that could prevent accurate measurement from the crown of the head. Only light underclothing or a diaper should be worn.
 - b. Cover the recumbent board with scale liner or table paper. Change the liner for each participant.
 - c. Place the infant or child on his/her back on the recumbent board and parallel to the measuring tape, so that the crown of the head is in contact with the immobile head board. Check to make certain head, trunk and legs are in a straight line.
 - 1) Have the parent/caretaker hold the infant's head so that the infant's eyes are looking straight up.
 - 2) With one hand, hold the child's legs together just above the knees and gently push both legs down against the recumbent board, fully extending child. Both legs are required to be used to ensure an accurate measurement.

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- 3) With the other hand, pull the moveable footboard forward until it is in contact with the child's heel, toes pointing straight up, and heel in contact with the base of the recumbent board.
 - 4) Sighting directly over the measurement indicator, read the measurement in inches and 1/8th inches, rounding up or down to the nearest 1/8th inch.
 - 5) Record the measurement on the growth chart. Enter the measurement data in the STORC system.
4. Children older than 24 months and Pregnant and Postpartum women
- a. Children older than 24 months of age and pregnant and postpartum women will be measured without shoes or hair ornaments that could prevent accurate measurement from the crown of the head.
 - b. Have the participant stand with his/her back against the stadiometer. Heels should be in a vertical line with the backboard of the stadiometer. Feet should be positioned comfortably without altering the natural stance of the body. Knees should not be bent. Buttocks and shoulders should touch the surface of the measuring board. The head should be held erect, eyes level, looking straight ahead.
 - c. Lower the stadiometer head piece until it snugly contacts the crown of the head, with sufficient pressure to compress the hair.
 - 1) Read the measurement at eye level, in inches and 1/8th inches. Round up or down to the nearest 1/8 inch. If the individual is taller than the measurer, the measurer should use a stool to read the measurement at eye level.
 - 2) Record the measurement on the growth chart. Enter the measurement data in the STORC system.

C. SPECIAL CONSIDERATIONS

1. When participants have casts, braces or missing limbs, congenital or metabolic disorders, or other conditions that could result in highly unusual measurements, weigh, measure and plot as usual, but the nature of the condition should be noted on the growth chart.
2. Premature infants are weighed and measured using the same equipment and procedures as full-term infants.
3. The Local Agency may reschedule a participant who is not cooperative during an appointment in which anthropometric measurements are required.
4. When a parent or guardian refuses to allow the WIC Clinic to obtain accurate anthropometric measurements for certification or subcertification, services will be denied.

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5. Anthropometric measurements taken by another medical provider may be used in lieu of WIC Clinic measurements if the measurements are less than 60 days old, provided that data for women certified as pregnant is collected during pregnancy, and data for women certified as postpartum or breastfeeding is collected after the termination of pregnancy. If the information is obtained by telephone, document the provider's name, and date of measurements in the medical record. Verbal anthropometric measurements for an infant, child, postpartum or breastfeeding participant may only be taken from a medical provider.
 - a. Anthropometric measurements used must reflect the most current nutritional status of the participant. For example, measurements taken of an infant at 1 week of age would not be reflective of an infant at 6 weeks of age.
 - b. Measurements from another medical provider must be signed and dated by the medical provider and contain the appropriate measurements. A copy of the measurements used must be placed in the participant's chart.

D. EQUIPMENT

1. WEIGHT

- a. Weight should be obtained with a beam-balance scale with non-detachable weights and a zero-balance adjuster. Digital scales may be used only if additional criteria below are met. Infants and children under 24 months of age will be weighed on a pediatric beam balance scale, and older children and adults on a floor model beam balance scale. The scales must have following characteristics:
 - 1) Pediatric scales must have at least a forty pound capacity and weigh in ½ ounce increments, with a tray large enough to support the infant. The scale should be placed on a sturdy table.
 - 2) Scales for adults and children over 24 months of age must weigh in at least quarter-pound increments, and be placed on an uncarpeted floor or other rigid surface.
 - 3) All scales must have a zero-balance adjuster, must be accurately calibrated, have no length or stature device attached (or in use) and be easily read at eye-level.
 - 4) If digital scales are in use, in addition to the above requirements, the digital scale must have a motion detector/stabilizer, it must lock weight in, it must be easily tared to zero, and be easily calibrated. It should maintain accuracy even when affected by electronic fields or wide temperature variations.
 - 5) No spring-type scales are suitable.

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2. LENGTH

- a. A recumbent board will be used to obtain an accurate length measurement of an infant or young child less than 24 months of age. A pediatric exam table or other dual use equipment is not acceptable for measuring length. Recumbent boards consist of:
- 1) A rigid flat horizontal surface with an attached rigid measuring tape calibrated in 1/8 inch increments.
 - 2) The tape shall be “zeroed” exactly at the point where the infants crown meets the headboard.
 - 3) A stationary headboard at a right angle to the tape.
 - 4) A movable footboard perpendicular to the tape.
 - 5) The measurement should be readable while the infant is on the board.

3. STATURE

- a. A stadiometer will be used to obtain standing height for women and children 24 months of age and older. A stadiometer has the following characteristics:
- 1) A rigid vertical board with an attached rigid measuring tape calibrated in 1/8 inch increments.
 - 2) A easily moveable, horizontal headboard that can be brought into contact the crown of the head
 - 3) A wide and stable platform or firm uncarpeted floor as the base.
 - 4) The platform or floor must allow vertical alignment of the heels with the vertical surface of the stadiometer. Buttocks should be vertically aligned with the vertical surface as well.
 - 5) Preferably the stadiometer is permanently mounted on a stable wall. Portable stadiometers are acceptable if the stadiometer base is large enough to provide stability.
 - 6) The measuring tape shall be “zeroed” exactly at the point where the platform or floor meets the heels.

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4. EQUIPMENT MAINTENANCE

- a. Equipment will be maintained in an accurate condition.
 - 1) All scales will be checked for zero balance before each clinic day.
 - 2) All beam balance scales will be tested with standard weights (calibration) on at least a quarterly basis, and each time the equipment is moved.
 - 3) For digital scales, calibration will be performed on an annual basis by following manufacturer's instructions.
 - 4) Stadiometers and recumbent boards will be checked for accuracy on at least a quarterly basis, and each time the equipment is moved.
 - 5) A log of the above maintenance activity must be kept on the Calibration Log. See Attachment 1,2, 3, 4 and 5
 - 6) Follow manufacturer's instructions for operation and care of the equipment.

E. CHARTING OF ANTHROPOMETRIC MEASUREMENTS

- 1. CDC Growth Charts are to be plotted at each certification for all infants and children and at the mid-certification visit for infants, and at high-risk follow-up visits when the reason for follow-up is anthropometric in nature. (see policy 5.06, Guidelines for Serving High-Risk Participants).
- 2. All pregnant women are to have a Prenatal Weight Gain Chart plotted at the time they are certified. Any subsequent plots are at the CPA's discretion, except that plots are required for high-risk follow-up visits when the reason for follow-up is anthropometric in nature. (see policy 5.06, Guidelines for Serving High-Risk Participants).
- 3. There are no charting requirements for Postpartum or Breastfeeding participants.

F. CHART SELECTION

- 1. The following variables determine chart selection for infants and children: the child's sex, measurement position (recumbent or standing) and age. The age used must be the adjusted age when selecting a chart for premature infants and children less than 24 months of age that were born prematurely. (see policy 2.12 G. 2).
 - a. Full-term infants and children up to 24 months of age (gestation of 38 weeks or greater), use:

CDC Growth Charts - Girls, Birth to 36 months - WIC-43
Boys, Birth to 36 months - WIC-45

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- b. Pre-term Infants and children up to 2 years of age (gestation of 37 weeks or less)
The chart is selected based on the child's adjusted age at the time of the infant's first visit to the clinic, and the child's birth weight.
- 1) When adjusted age is less than zero months use the following charts specific to the child's sex and birth weight:

IHDP (Infant Health and Development Program) Charts -
 Low Birth Weight Premature Girls
 Very Low Birth Weight Premature Girls
 Low Birth Weight Premature Boys
 Very Low Birth Weight Premature Boys

 - 2) All low birth weight (LBW) and very low birth weight (VLBW) infants who have reached the equivalent of 40 weeks gestation, when adjusting for gestational age, use:

CDC Growth Charts - Girls, Birth to 36 months - WIC-43
 Boys, Birth to 36 months - WIC-45

* Regardless if previous plots have been compiled on other charts.

 - 3) Age must be adjusted on either chart for all subsequent plots until the premature child is 24 months of age.
 - a. Children 24 months of age to 36 months of age, measured for recumbent length, use the CDC Growth Chart Birth to 36 Months appropriate to the child's sex.

 - b. Children 24 months of age and older, measured for stature, use:
 Girls, 2 to 5 years - WIC-44
 Boys, 2 to 5 years - WIC-46

 - c. Low birth weight children (5 pounds, 8 ounces or less) that are full-term (38 weeks of gestation or more) should be plotted on the CDC Charts. Special charts for genetic and congenital disorders may be plotted at the CPA's discretion but will be in addition to, not a substitute for, the charts listed above.

 - d. When an infant is too small or too large to plot on their age-adjusted appropriate chart, a note will be made on the chart indicating that the infant was too small or too large to plot. Weight amount, length, adjusted age, and date of measurement will be recorded as usual.

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2. The Prenatal Weight Gain Chart, based on the Institute of Medicine's 2009 recommendations for weight gain, is to be plotted for pregnant women. There are four Prenatal Weight Gain Charts: Pre-Pregnancy Underweight (WIC-60), Pre-Pregnancy Normal Weight (WIC-61), Pre-Pregnancy Overweight (WIC-62), and Pre-Pregnancy Obese (WIC-63). The woman's pre-pregnancy BMI will determine which Prenatal Weight Gain Chart she is placed on.

G. AGE CALCULATIONS FOR PLOTTING GROWTH CHARTS

1. All children will have their exact age calculated and then rounded for plotting using the following formula. Premature children will have the resulting age further adjusted for their prematurity.

Subtract the child's birth date from the date of measurement. To subtract, it will be necessary to convert months to days and years to months if either the month or day in the birth data is larger than the date of measurements. When converting one month to days, subtract 1 from the number of months in the date of the measurement, then add 28, 30 or 31, as appropriate, to the number of days. When converting one year to months, subtract 1 from the number of years, then add 12 to the number of months. Round the exact age to the nearest month and plot. To plot BMI, round to the quarter-year.

Calculate Exact Age, then...

...round Exact Age for Plotting

Example:	Year	Month	Day
Date of Measurement	1998	4	4
<i>Convert 1 month to days</i>		(-1)	(+30)
	1998	3)
<i>Convert 1 year to months</i>	(-1)	(+12)	34
	1997	15	34
Birth Date	1994	9	15
Child's Age	3	6	19

Days≡Month		Months ≡Year	
0-15	0	0-1	0
16-31	1	2-4	1/4
		5-7	1/2
		8-10	3/4
		11-12	1

2. Premature infants and children born prematurely will have the period of missed gestation subtracted from their chronological age, until 24 months of age. Convert the weeks of missed gestation into months by dividing by 4.3 and rounding to the nearest month. Subtract the "months early" from the child's months of age.

Example:

Baby J was born at 26 weeks gestation

He was 14 weeks premature (40 weeks - 26 weeks = 14 weeks premature)

14 weeks/4.3 = 3.25 months = 3 months

Today it is 6 months past the day he was actually born (see 1. Above)

Chronological Age = 6 months minus 3 months premature

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Baby J is 3 months adjusted age.

Plot this child's measurements as though he were 3 months old.

H. DOCUMENTATION ON CDC GROWTH CHARTS

1. The infant or child's name and participant number will be recorded on the growth chart.
2. The infant or child's date of birth will be recorded on the growth chart.
3. Each date on which measurements occur will be recorded on the growth chart.
4. The infant or child's age used for plotting (see 2.12 G.) will be recorded on the growth chart for each measurement date.
5. When an infant or child is premature, the number of months the age is adjusted for prematurity must be noted, along with the words "adjusted age" on the chart. The adjusted age, not the actual age, must be used for plotting purposes.
6. For infants and children less than 24 months of age, their length in inches and 1/8th inches must be written on the chart. Their weight in pounds and ounces must be written on the chart. A plot for each measurement must be completed on the length for age chart, the weight for age chart, and the weight for length chart.
7. For children more than 24 months of age, their length in inches and 1/8th inches must be written on the chart. Their weight in pounds and ounces must be written on the chart. A plot for each measurement must be completed on the length for age chart, the weight for age chart, and the Body Mass Index chart.
8. Unusual circumstances, such as the presence of casts, or missing limbs must be noted on the chart.
9. Errors on chart recordings and plots must be clearly marked as "error".

I. DOCUMENTATION ON IHDP CHARTS FOR PREMATURITY

1. The infant or child's name and date of birth will be recorded on the front page.
2. The date of each measurement, with corresponding actual age and gestation-adjusted age, weight, and length measurements will be recorded on the front page.
3. A plot using gestation-adjusted age for weight and length for each date measurements were taken must be completed.
4. Errors on chart recordings and plots must be clearly marked as "error".

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J. DOCUMENTATION ON THE PRENATAL WEIGHT GAIN CHART

1. The participant's name, stature measurement, self-reported pre-pregnancy weight, and pre-pregnancy BMI will be recorded on the chart.
2. The date of each measurement, along with the corresponding weeks of gestation and the participant's current weight will be recorded on the chart.
3. A plot for each measurement to show pounds gained or lost for weeks gestation.
4. Errors on chart recordings and plots must be clearly marked as "error".

K. DOCUMENTATION FOR POSTPARTUM OR BREASTFEEDING PARTICIPANTS

1. There are no documentation requirements for postpartum or breastfeeding participants.

REFERENCES:

1. WIC Regulations 246.7(d)(1), Determination of nutritional risk
2. Kuczmarski RJ, Ogen CL, Guo SS, et al. 2000 CDC Growth Charts for the United States: Methods and Development. NCHS, Vital Health Statistics 11 (246). 2002
3. Use and Interpretation of the CDC Growth Charts, An Instructional Guide, CDC, National Center for Chronic Disease Prevention and Health Promotion, Nutrition and Physical Activity, http://www.cdc.gov/nccdphp/dnpa/growthcharts/guide_intro.htm
4. CDC Growth Charts Interactive Training modules, <http://www.cdc.gov/growthcharts/>
5. Anthropometric Standardization Reference Manual (Lohman, T., Roche A., Martorel, R., eds., 1988, Human Kinetic Books)
6. National Health and Nutrition Examination Survey (NHANES) III, Anthropometry Manual, 1988, Westat, Inc.
7. Kuczmarski RJ, Ogden C, Grummer-Strawn LM, et al. CDC Growth Charts: United States. Hyattsville, MD: U.S. Department of Health and Human Services, 2000. NCHS Advance Data Report No. 314.
8. Institute of Medicine: Weight gain during pregnancy: reexamining the guidelines. National Academy Press, Washington D.C.; 2009
9. WIC-60, Prenatal Weight Gain Chart, Pre-Pregnancy Underweight
10. WIC-61, Prenatal Weight Gain Chart, Pre-Pregnancy Normal Weight
11. WIC-62, Prenatal Weight Gain Chart, Pre-Pregnancy Overweight
12. WIC-63, Prenatal Weight Gain Chart, Pre-Pregnancy Obese

ATTACHMENTS:

1. Calibration Log, Adult Scale
2. Calibration Log, Pediatric Scale
3. Calibration Log, Stature and Length Equipment
4. Calibration Log, Electronic Pediatric Scale
5. Calibration Log, Electronic Adult Scale