North Dakota WIC

Anthropometric Measurements Manual
For Women, Infants and Children

North Dakota Department of Health
Division of Nutrition and Physical Activity
### ANTHROPOMETRIC MEASUREMENTS

#### OVERVIEW

**INTRODUCTION**

Anthropometric measurements (measurements of body size and growth) are required to be taken on all WIC participants to determine WIC eligibility at certification. Measurements help nutritionists develop care plans and make appropriate referrals.

#### STATURE

Stature is measured on all participants using appropriate procedures for length or height depending on the age of the participants.

#### WEIGHT

Weight is measured using appropriate procedures on all participants.

#### HEAD CIRCUMFERENCE

Head circumference is an important measure in infants and children because it reflects brain growth.

#### EQUIPMENT

Anthropometric measuring equipment should be well maintained, safe, and easily calibrated.

#### INTERPRETATION

Appropriate interpretation of anthropometric measurements aids in determining eligibility, developing care plans, and making appropriate referrals.

#### SPECIAL NEEDS PARTICIPANTS

Some special needs participants cannot be weighed and measured using standard procedures. Use professional judgment to determine which method of measuring is most appropriate for each situation.

#### SANITATION

Appropriate sanitation procedures require the use of a clean paper towel on the measuring board or scale for each participant. In addition, measuring equipment must also be cleaned.
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INTRODUCTION

SUMMARY
Anthropometric measurements (measurements of body size and growth) are required to be taken on all WIC participants to determine WIC eligibility at certification. Measurements help nutritionists develop care plans and make appropriate referrals.

INFANTS/CHILDREN
Measurements taken and recorded over time provide essential information necessary to monitor an infant/child's growth pattern and compare it to growth patterns of other infants/children of the same sex and age.

Careful measuring, recording, and evaluating of anthropometric measurements provide reassurance to most parents that their infant/child is growing at a normal rate.

If growth is not proceeding as expected for an infant/child, then referral for additional evaluation may be necessary to address the concern before serious health problems develop. This is true for an infant/child with inadequate growth or a high body mass index as both can have impacts on nutrition and health status.

WOMEN
Regular measurements during pregnancy monitor weight gain patterns, comparing individual weight gains to established norms. Adequate weight gain during pregnancy is important for positive health outcomes for the infant.

ACCURACY
Accuracy is important in obtaining measurements because these measurements will be used as a part of participant’s nutrition assessment. If measurements are taken incorrectly, then the participant’s nutrition assessment will not accurately reflect their health status.
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**INTRODUCTION**

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SUMMARY
Stature is measured on all participants using appropriate procedures for length or height depending on age of the participant.

LENGTH
Length is measured in the recumbent or lying down position. Infants and children have their length measured until two years of age.

MEASURING LENGTH

Equipment
Use measuring boards with fixed headboards, adjustable footboards, and an attached metal hard plastic measuring tape. The measuring boards should be placed on a flat, sturdy surface longer than the board.

Preparation
1. Clean the measuring board and wash your hands. Cover the board with a clean paper towel.
2. Remove the infant/child's shoes and heavy outer clothing. Infants and children can be measured in lightweight clothing.
3. Remove hair ornaments, braids, or ponytails from the top or back of the head.
4. Have someone ready to assist you in the following procedure.

Procedure
1. Have the parent or assistant place the infant/child on the measuring board with their head touching the fixed headboard and their body straight in line with the board (shoulder and buttocks lying flat against the measuring surface).
2. Have the assistant place one hand on each side of the infant/child's head, holding their head firmly so their eyes are looking straight up.
3. Gently but firmly press the infant/child's knees down with your left hand.
4. Using the right hand, slide the moveable footboard firmly against the infant/child's feet. Make sure the toes are pointed straight up.

5. Read the measurement to the nearest 1/8 inch. Write it down immediately.

6. Slide the footboard away. Readjust the infant/child's legs and repeat the measurement.

7. Compare the two measurements. If they agree within 1/4 inch, use the second measurement. If they do not agree, repeat the procedure until two consecutive measurements agree.

8. Remove the infant/child. Discard the paper towel.

9. Record the measurement on the Anthropometrics panel in LegeNDS. The measurement may also be written down and given to the parent/guardian.

Tips

1. If the infant/child is uncooperative, allow the parent to calm them.

2. A toy or mobile might help to distract the infant/child during the procedure.

3. Gently rubbing the bottom of the infant's feet or tummy may relax them enough to make straightening the legs easier.

HEIGHT

Height is measured in the standing position. Children 24 months or older, who can stand alone, and adults have height measurements recorded.

Women

Do not use self-reported height measurements. Current, accurate height measurements will be taken for all women at every certification.

Children

Children are measured in the standing position starting at age two. Children measured lying down will measure slightly longer. This difference may be noticed when a
child is first measured in a standing position. The different growth charts take this factor into consideration.

**Exception**

Children who are unable to stand should be measured lying down. For children over 2 years of age, mark the measurement as inaccurate by choosing the “Recumbent > age 2” reason in the inaccurate reason drop down box on the Anthropometrics panel in LegeNDS. The child’s length will display as an inaccurate measurement on any growth charts that plot height measurements.

**MEASURING HEIGHT**

**Equipment**

Use a wall-mounted measuring board with moveable headboard. Boards equipped with ball bearing slide are recommended when purchasing new or replacement stature measuring equipment. The board must be attached against a flat wall at the correct height determined by using a standardized measuring stick (like a metal yard stick). A separate 90-degree angle board or attached sliding headboard must be used. If the board is mounted on brackets several inches from the wall, a block the same size as the distance the board is from the wall should be attached to the wall below the board.

A flat metal tape attached securely to the wall may also be used. A separate right angle board must be used when reading the participant’s height measurement. Do not use the rod on the scale to measure height.

**Preparation**

1. Clean the headboard surface and wash your hands between participants.

2. Have women/children remove their shoes and coats.

3. Remove braids, ponytails, and hair ornaments from the top or back of the head.

**Procedure**

1. Have the woman/child stand with their back against the measuring surface. The feet should be flat on the floor/platform and close together, knees and back straight, arms at sides, and shoulders...
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relaxed. The heels, buttocks, shoulder blades, and head should be touching the measuring surface.

2. With the woman/child looking straight ahead, slide the headboard firmly down to the head, compressing the hair. Be sure the headboard is level and at a right angle to the tape.

3. With your eyes level with the indicator, read the height to the nearest 1/8 inch. Stand on a safe footstool if you cannot be at eye level with the indicator. Write the measurement down immediately.

4. Pull the headboard back up slightly. Have the person readjust. Repeat the procedure.

5. Compare the two measurements. If they agree within 1/4 inch, use the second measurement. If they do not agree, repeat the procedure until two consecutive measurements agree.

10. Discard the paper towel.

11. Record the measurement on the Anthropometrics panel in LegeNDS. The measurement may also be written down and given to the participant or parent/guardian.

INABILITY TO OBTAIN ACCURATE DATA

A measurement taken inaccurately may be marked as an inaccurate measurement in LegeNDS. Reasons a measurement may be considered inaccurate include:
• Recumbent > age 3
• Unable to stand erect
• Hair decorations
• Braces/cast
• Uncooperative
• Non-WIC measurements
• Equipment malfunction
• Medical problems/issues
SUMMARY

Weight measurements are taken using appropriate procedures for all participants.

MEASURING INFANT WEIGHT

Equipment

Weigh infants on a balance beam infant scale. A bucket seat mounted on the scale allows the infant to sit and feel secure during the weight measurement. Digital scales may also be used.

Preparation

1. Clean the scale pan or bucket and wash your hands.
2. Cover the scale pan or bucket with a clean paper towel.
3. Balance the scale on zero. When both weights are to the left at zero, the arrow should rest at the midpoint. If the scale does not balance, adjust the counterweight until the scale is balanced and the arrow rests at midpoint. If using a digital scale, make sure the reading is zero.
4. Ask the parent/guardian to remove the infant’s clothing except for an undershirt. Make sure the diaper is clean and dry.

Procedure

1. Place the infant lying or sitting in the center of the pan or bucket.
2. Move the large pound weight to the right until the balance arrow drops below the midpoint or bottom of the balance indicator area.
3. Move the large pound weight back one pound or until the balance indicator arrow rests above the midpoint.
4. Move the smaller ounce weight slowly to the right until the balance indicator arrow balances at midpoint.
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5. Read the weight to the nearest one ounce. Write the measurement down immediately.

6. Push both of the weights back to the zero point. Repeat the procedure.

7. Compare the two measurements. If they agree within ½ ounce, use the second measurement. If they do not agree, repeat the procedure until two consecutive measurements agree.

8. Remove the infant. Discard the paper towel.

9. Record the measurement on the Anthropometrics panel in LegeNDS. The measurement may also be written down and given to the parent/guardian.

Tip

If the infant is too active to get an accurate weight measurement, try to distract him with a toy or speak to him at his level. If the weight is recorded while the infant holds a toy, you must weigh the toy alone and subtract the amount from the combined weight of the infant and toy.

MEASURING WEIGHT FOR WOMEN/CHILDREN

Equipment

Children who can stand unassisted and women are weighed on a floor-model beam or digital scale. These scales should be placed on a hard floor surface (non-carpeted).

Preparation

1. Clean the scale and wash your hands.

2. Cover the scale with a clean paper towel.

3. Balance the scale on zero by moving both weights to the left to zero. The balance indicator arrow should hang at midpoint. If the arrow does not hang at midpoint, the counterweight screw must be adjusted. Turn the screw in the direction needed to balance the arrow at the midpoint. If using a digital scale, make sure the reading is zero.
4. Have women/children remove their shoes and coats. Women/children can be weighed in lightweight clothing. Women must set down their purses and empty pockets of keys and other heavy items. Women/children should not be holding items while being weighed.

**Procedure**

1. Ask the participant to step on the scale.

2. Move the larger weight to the right until the balance indicator arrow drops below the midpoint.

3. Move the larger weight back to the left one segment until the balance indicator arrow rises above the midpoint.

4. Move the smaller weight to the right until the balance indicator arrow hangs at the midpoint.

5. Read the weight to the nearest ¼ pound. Write the weight down immediately. Do not announce the weight out loud if other participants are within hearing distance.

6. Have the participant step off of the scale and repeat the procedure.

7. Compare the two measurements. If they agree within ¼ pound, use the second measurement. If they do not agree, repeat the procedure until two consecutive weights agree.

8. Have the participant step off the scale. Discard the paper towel. Set the scale back to zero.

9. Record the measurement on the Anthropometrics panel in LegeNDS. The measurement may also be written down and given to the participant or parent/guardian.

**EXCEPTIONS**

Uncooperative children - If one weight is achievable, record that weight. It is not as important to have two accurate weights as it is to see if the child’s weight has changed from the last weight measurement. A few
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WEIGHT

Children will not stand on a scale. These children can be weighed as their parent/guardian holds them. Write down the weight of the two together and the weight of the parent/guardian alone. Record the difference between the two readings as the child’s weight.

Women who are uncomfortable with being weighed every visit – Weigh all women at their initial certification. Use professional discretion regarding the frequency of weighing women at subsequent visits. If she is seeing a physician and the weight measurements are a regular part of her prenatal care, ask her to bring the written weights to her WIC appointments. Use counseling techniques that focus on good nutrition and healthy growth of the baby rather than weight gain.

INABILITY TO OBTAIN ACCURATE DATA

A measurement taken inaccurately may be marked as an inaccurate measurement in LegeNDS. Reasons a measurement may be considered inaccurate include:

- Braces/cast
- Exceeds scale capacity
- Uncooperative
- Non-WIC measurements
- Equipment malfunction
- Medical problems/issues
SUMMARY
Head circumference is an important measure in infants and children because it reflects brain growth.

AGE
Measure head circumference on all infants (optional for children 1-2 years of age).

FREQUENCY
Measure head circumference any time stature and weight are measured.

MEASURING HEAD CIRCUMFERENCE

Equipment
Use a non-stretchable narrow ¼ to ½ inch wide plastic tape. The tape should be an adjustable circle-type tape available from a health supply company. Disposable paper tapes stretch and are not recommended.

Preparation
1. Remove caps.
2. Remove hair ribbons, barrettes, ponytails, etc. that are on the back of the head.

Procedure
1. Slip the circle of tape over the child's head.
2. Pull the tape firmly around the head above the eyebrows but below the most prominent part of the forehead. The tape should be directly over the biggest part of the head.
3. Read the measurement to 1/8 inch. Write the measurement down immediately.
4. Relax the tape circle and repeat the procedure.
5. Compare the two measurements. If they agree within ¼ inch, use the second measurement. If they do not agree, repeat the procedure until two consecutive measurement agree.
6. Record the measurement on the Anthropometrics panel in LegeNDS. The measurement may also be written down and given to the parent/guardian.
Tips

1. Young infants are easily distracted and cooperate better if their parent/guardian holds them.

2. The person taking the measurement makes noises such as clicking the tongue or talking softly to distract the infant.
SUMMARY
Anthropometric measuring equipment should be well maintained, safe, and easily calibrated.

PURCHASE
Order measuring equipment from institutional or medical suppliers such as:
- Perspective Enterprises = 1-800-323-7452 or www.perspectiveent.com
- Weight and Measure, LLC = 1-877-900-9007 www.weighandmeasure.com

REPLACEMENT
Equipment must in working order. Replace:
- Head circumference tapes if they are bent or cracked.
- Moving pieces on measuring boards if they are broken or cracked or if moving the slide difficult.
- Scales that weigh inconsistently causing fluctuations in weight.
- Any damaged equipment.
- Scales and stature measuring devices if measurement numbers cannot be read.
- Wobbly infant measuring boards or scales.

CALIBRATION
Measuring equipment should be calibrated (tested for accuracy) on a regular basis.

Scale Procedure
1. Balance the scale so the balance indicator arrow hangs at mid-point when the scale weights are set on zero.

2. If the indicator arrow does not hang on zero when the scale weights are on zero, calibrate the scale by turning the balance screw until the indicator arrow hangs at mid-point.

3. Place a known weight (ten pound bag of sugar or other accurately weighed product) in the infant scale bucket or on the platform. Use a 10 pound
test weight for the infant scale, and a 20 pound test weight for the child/adult scale.

4. When the scale weight is on the known weight, the indicator arrow should hang at mid-point.

5. If the arrow does not hang at midpoint with the known weight on the scale, turn the balance screw until the arrow hangs at mid-point.

6. If the scale cannot be corrected by turning the balance screw or will not maintain the adjustment, replace the scale.

7. Follow the instruction manual for the calibration procedure for digital scales.

STATURE

Using a standardized measuring device (metal yard stick), measure the wall mounted measuring boards. Tighten screw in the wall if there is a discrepancy, (screws may become lose and the measuring boards may slip up or down). Tighten the screws. If tightening the screws does not correct the discrepancy, the board may have to be re-mounted.
SUMMARY

Appropriate interpretation of anthropometric measurements aids in determining eligibility, developing care plans, and making appropriate referrals.

Measurements that plot outside the normal range or recommended range should first be evaluated for accuracy of the measurement. Accurate measurements that indicate abnormal growth patterns or weight gain/loss must be evaluated, documented, followed-up on, and when appropriate, referred to other health care providers.

GROWTH CHARTS

WIC uses growth charts to assess growth, identify potential nutrition or health concerns, share information with parents/guardians, and have open conversations about growth, nutrition and healthy habits. The Centers for Disease Control and Prevention (CDC) recommends that WIC uses the:

- World Health Association (WHO) growth standards to monitor growth for infants and children < 24 months of age.
- CDC growth charts to monitor growth for children from 2-5 years of age.

The WHO growth charts are standards that describe how healthy children should grow in a healthy environment regardless of time, place or ethnicity. It defines what is normal or optimal.

The CDC growth charts are references that describe how certain children grew in a particular place and time. It gives a point of comparison.

A single plot of height-for-age and weight-for-age allows you to compare the child’s height and weight to children of the same age and sex. A length-for-weight chart or a BMI-for-age chart provides information about the child’s proportions. Continued use of the growth chart provides a visual portrayal of the child’s growth pattern.
**LegeNDS**

Once measurements are accurately taken and recorded in LegeNDS, BMIs are automatically calculated (for women and children ≥ two years of age) and growth charts are automatically plotted for the participant. These charts can be viewed by clicking on the links for the various charts on the Anthropometrics panel.

**INFANTS AND CHILDREN**

All infants/children should grow in stature and weight. Children may grow in spurts, but each child’s growth pattern should follow a normal growth curve.

The 50th percentile curve represents the mid-line of percentile curves. A growth pattern that deviates from the norm does not alone indicate a medical or nutritional concern. Each measurement and percentile plot must be evaluated in conjunction with information from:

- All other growth percentiles
- Medical status
- Blood, health, and dietary assessment
- Size of the parent

**Stature-for-age**

Stature-for-age includes both length-for-age and height-for-age. Stature-for-age is used to define shortness or tallness. Taller and shorter infants/children are not to be considered as having abnormal growth. Genetics and parental bone structure have the greatest impact on an infant/child’s height. Normal stature-for-age growth patterns are determined if the infant/child grows on a regular basis and maintains the same percentile curve. Use this information when explaining the growth pattern to the parent/guardian.

**Weight-for-age**

Weight-for-age is influenced by recent changes in health or nutritional status and is not used to classify infants/children as underweight or overweight. Environment and parental weight have the greatest impact on an infant/child’s weight. Normal weight-for-age growth patterns are determined if the infant/child grows on a regular basis and maintains the same percentile.
curve. Use this information when explaining the growth pattern to the parent/guardian.

**Weight-for-length**

Weight-for-length indicates if an infant/child’s weight is keeping up with the individual’s bone growth. It is normal for infants/children to grow more or less quickly than other infants/children, but each infant/child should maintain average weight for their individual bone growth. Of all the growth percentile curves, this may be the most important growth pattern to assess and share with the parent/guardian.

**HC-for-age**

Head circumference (HC)-for-age curve often follows the stature-for-age curve. Genetics and the size of the parent’s head make the greatest impact on head size. Though a small head size may indicate slow brain growth prenatally and can be identified for monitoring, it is not an indication of concern with only one measurement. Head circumference growth should be taken on a regular basis and the same curve should be maintained. Head circumference is measured to recognize deviations from the norm as related to genetic abnormalities, disease, or prenatal nutrition status. Head circumference in itself is not useful in diagnosing malnutrition or counseling on current nutritional status.

**BMI-for-age**

Body mass index (BMI)-for-age is an anthropometric index of weight and height combined with age. It is used to screen children two years of age and older as underweight, overweight, or obese. BMI changes with age. A normal pattern of growth for children would show their BMIs slightly decreasing during the preschool years, then gradually increasing through adolescence. BMI-for-age can be used to track body size into adulthood. BMI-for-age in childhood is a determinant of adulthood BMI and is related to future health status. Of all the growth percentile curves, this may be the most important growth pattern to assess and share with the parent/guardian.
GROWTH CHART INTREPRETATIONS

A series of measurements is needed to accurately evaluate a child’s growth. If you observe any of the following growth patterns, consider the corresponding factors.

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Factors to Consider</th>
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</thead>
</table>
| • Length-for-age \(\leq 2.3 \text{rd percentile} \)  
• Weight-for-age \(\leq 2.3 \text{rd percentile} \)  
• Weight-for-length \(\leq 2.3 \text{rd percentile} \)  
• BMI-for-age \(\leq 5^{th} \text{ percentile} \) | • Parents’ size  
• Recent illness  
• Appetite  
• Recent growth spurt  
• Child’s growth pattern |
| • Stature-for-age \(\geq 95^{th} \text{ percentile} \)  
• Weight-for-age \(\geq 95^{th} \text{ percentile} \)  
• Weight-for-length \(\geq 97.7^{th} \text{ percentile} \)  
• BMI-for-age between 85^{th}-94^{th} percentiles  
• BMI-for-age \(\geq 95^{th} \text{ percentile} \) | • Parents’ size  
• Expected growth spurt  
• Family stress  
• Usual growth pattern |

Movement over two growth channels for any measurement

Note: Growth channels are indicated by the 2^{nd}, 5^{th}, 10^{th}, 25^{th}, 50^{th}, 75^{th}, 90^{th}, 95^{th}, and 98^{th} percentile lines on the 0 to 24 months charts. Growth channels are indicated by the 5^{th}, 10^{th}, 25^{th}, 50^{th}, 75^{th}, 90^{th}, and 95^{th} percentile lines on the 2-5 years charts.

Flat growth curve for any measurement

• Changes in environment  
• Family history of obesity  
• Family history of short stature  
• Recent or chronic illness

WOMEN

The recommended weight gain curve is based on the woman’s BMI using her pre-pregnancy weight. The BMI is then evaluated against standards used for pregnancy. Achieving the weight in the curve is the goal. The most important achievement for the woman is to make slow, steady weight gains throughout the pregnancy. The fastest weight gain should be in the third trimester.
For breastfeeding and not breastfeeding women, their BMI is calculated using their pre-pregnancy weight. The BMI is then evaluated against standards used for healthy adults. BMI is calculated using a current weight for women who continue to breastfeed six months to one year.

NUTRITION RISK CODES

The North Dakota Nutrition Risk Manual and Guides are resources to help the nutritionist interpret any risk codes associated with anthropometric measurements and where participants fall on the growth chart. This resource can also be used when developing nutrition interventions with the participant in the care plan and during follow-up visits.
SUMMARY

Some special needs participants cannot be weighed and measured using standard equipment. Use professional judgment to determine which method of measuring is most appropriate for each situation.

Height and weight measurements may not provide an accurate assessment of fat and muscle development for children with chronic illness or disabling conditions. Triceps skin fold, body mass index, and arm circumference measurements may be better tools to assess growth and development. These procedures must be performed by people trained and experienced appropriate technique and interpretation. Communicate with the child’s health care provider to see if these measurements are available to you with the parent/guardian’s permission.

EQUIPMENT

It is not necessary to purchase special measuring equipment for special needs participants.

WEIGHT

Use standard preparation and procedure techniques as listed in policy 04-88-04, Weight, when using alternative methods for assessing weight.

When possible, braces and special shoes should be removed in order to obtain an accurate weight. If the child wears braces, the braces may be weighed once, separately, and then subtracted from subsequent weight measurements.

Casts

A leg or arm cast on a participant may prevent the use of standard measuring procedures. This is usually a temporary situation, and would be most practical to reschedule anthropometric measurements until the cast is removed.

If the certification period has been extended to the maximum and measurements are required, call the physician and request “what the cast weighs on an average”. Use the weight after subtracting the weight of the cast from the participant’s weight with the cast on.
Some children are unable to stand. Ask the parent/guardian to hold the child and weigh the parent/guardian and child together. Weigh the parent/guardian alone. Subtract the parent/guardian’s weight from the combined weights of the child and parent/guardian. Use the subtracted weight.

Amputations

Use standard weighing procedures for participants with amputation. Use the following equation to calculate estimated total body weight (WtE).

\[ WtE = \frac{Wto}{1 - P} \]

where \( Wto \) is the observed or current body weight and \( P \) is the proportion of total body weight represented by the missing limb segment(s). (See segmented man below.)

Example: The estimated total body weight (WtE) of an 85-kg person with one leg amputated at the knee would be

\[ 85 \text{ kg}/(1 - .059) = 90.3 \text{ kg} \]

The estimated weight may then be used to for plotting purposes.
Source: Nutrition Care Manual, Academy of Nutrition and Dietetics

STATURE
Use standard preparation and procedure techniques as listed in policy 04-88-03, Stature, when using alternative methods for assessing stature.

Unable to Stand
Measure children lying down as long as they cannot stand. For children over 2 years of age, mark the measurement as inaccurate by choosing the “Recumbent > age 2” reason in the inaccurate reason drop down box on the Anthropometrics panel in LegeNDS. The child’s length will display as an inaccurate measurement on any growth charts that plot height measurements.

Alternative Methods
Alternative methods to assess stature can be used when either height or length cannot be accurately measured (ex. leg contractures or spine curvatures).

Crown-rump Length

- Use a length measuring board. A long table set against a wall with a flat surface to rest the head may be used if the child is longer than the board. A metal tape must be attached to the table with beginning of the tape mounted where the headboard meets the table.

- Place the child on the measuring board with the top of the head against secure headboard or wall.

- Have the parent or assistant hold the child’s head with eyes looking up, against the headboard or wall.

- Raise the legs so that the thighs are at a 90 degree angle to the board or table.

- Move a sliding footboard against the buttocks with firm pressure.
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SPECIAL NEEDS PARTICIPANTS

Sitting Height

- Use a sitting base of a known height and a wall-mounted measuring board.

- Have the child sit on the base with buttocks, shoulders, and head in contact with the backboard of the measuring board.

- Measure total height. Subtract the height of the sitting base from the total height.

Arm span, when accurately measured, should equal stature 1:1 if growth is normal. This measurement requires two people.

- Have the child in an upright position allowing room to fully stretch the arms.

- Have the child extend both arms straight out to the sides.

- Use a measuring stick to measure from the tip of the middle finger on one hand to the tip of the middle finger on the other hand.

Note: All measurements taken from using alternative methods can be plotted on the appropriate growth chart. Even if measurements fall below the 5th percentile, they establish a pattern of growth over time.

INABILITY TO OBTAIN ACCURATE DATA

Measurement taken by alternative methods may be marked as an inaccurate measurement in LegeNDS. Reasons a measurement may be considered inaccurate include:

- Recumbent > age 2
- Unable to stand erect
- Braces/cast
- Non-WIC measurements
- Medical problems/issues
SPECIAL GROWTH CHARTS  The current CDC recommendation is to use the CDC growth charts in all cases. However, special charts may be used to illustrate to families how a specific condition can alter a child’s growth potential. Chromosomal or genetic disorders (ex. Downs Syndrome, Prader-Willi Syndrome, Turner Syndrome, etc.) may require use of a special chart. Use of special charts for children who have conditions with no genetic or chromosomal basis for an altered growth pattern (ex. cerebral palsy) is not recommended. A link to Downs Syndrome growth charts can be found in the Web Links box on the Anthropometrics panel in LegeNDS.

RESOURCE  For more information on anthropometric measurements and special needs children, go to the Maternal and Child Health Bureau Growth Charts Training at [http://depts.washington.edu/growth/index.htm](http://depts.washington.edu/growth/index.htm) (See module “Using the CDC Growth Charts for Children with Special Health Care Needs”.) This link is also included in the Web Links box on the Anthropometrics panel in LegeNDS.
SUMMARY
Appropriate sanitation procedures require the use of a clean paper towel on the measuring board or scale for each participant. In addition, measuring equipment must also be cleaned.

FREQUENCY
Sanitize scales and stature measurement equipment between participants when necessary.

PRODUCTS
Use sanitizing products such as:

- Commercially available antibacterial disinfectants or wipes.
- Bleach solution of ¼ cup household bleach to 1 quart of water. Prepare fresh solutions daily.
- One percent aqueous solution of phenolic germicidal detergent (full-strength Lysol).

STORAGE
Store sanitizing products and mixed solutions in areas not accessible to children but readily available to staff. Store all sanitizing solutions in labeled spray bottles or other covered containers.

PRECAUTIONS
1. Wear gloves when performing sanitation procedures.
2. Use paper towels to wipe the sanitizing solution from equipment surfaces.
3. Dispose of paper towels after each cleaning.