Trainer Edition

Arizona WIC Training

Anthropometrics Guidebook

WIC ARIZONA

ARIZONA DEPARTMENT OF HEALTH SERVICES

Contents

What Will You Learn?

Measuring length (or height) and weight is a simple and effective way to identify healthy growth patterns or to detect potential concerns for WIC participants. Accurate measures of length, height, and weight provide key information needed for a full nutrition assessment. Assessing growth and weight is an important step for helping WIC counselors determine if a participant has potential health risks.

After completing the Anthropometrics LMS Course and this associated guidebook, you will be able to:

- Demonstrate proper techniques for taking accurate and precise measurements (Module 1)
- Avoid common errors when taking measurements (Module 1)
- Interpret and explain anthropometric charts to participants (Module 2)

Items Needed for This Course

- Pen or pencil
- Local Agency Referral List
- Access to Anthropometrics LMS Course
- Access to the Arizona WIC Anthropometrics Manual (https://azdhs.gov/documents/prevention/azwic/manuals/wic-anthropometrics-module.pdf)
- Access to the Arizona WIC Anthropometrics Tool (https://azdhs.gov/documents/prevention/azwic/program-integrity/anthro-tool.pdf)
- Access to the Arizona WIC Nutrition Risk Manual (https://azdhs.gov/documents/prevention/azwic/manuals/nutrition-risk-manual.pdf)

Recommended Time

- Approximate time it takes to complete the Anthropometrics LMS Course: One to two hours
- Approximate time it takes to complete the activities in this Anthropometrics Guidebook and discuss with your trainer: One to two hours

Things to Remember

- The guidebook is yours to keep.
- You are encouraged to take notes, highlight, and write in the guidebook.
- As your trainer chooses, you may work in a group or as an individual.
- You are encouraged to ask your trainer for help, ask questions about the information in the course, or ask any questions about additional topics related to anthropometrics.

TRAINER NOTE: As the trainer, you are assessing trainees' understanding of the Anthropometrics competencies for each module. The guidebook training activities are intended to help you assess both trainees' ability to apply basic knowledge and their critical thinking skills.

Participation by trainees in the face-to-face activities and discussions is required in order for you to thoroughly assess their skills and level of competence.

Anthropometrics Course Instructions

- ☐ Log onto https://az.train.org/DesktopShell.aspx
- ☐ Open the Anthropometrics LMS Course and complete the Anthropometrics Activities in this guidebook as they correspond to each module of the Anthropometrics LMS course.
- ☐ At your trainer's direction, complete the Anthropometrics LMS Course and guidebook, either individually, with other trainees, or with your trainer. Note that some activities require the presence of your trainer. Please meet with your trainer prior to beginning those activities.
- ☐ Complete the Anthropometrics LMS Course Post-Test
- ☐ Meet with your trainer at their direction to discuss each module of the Anthropometric LMS Course and the associated activities in this guidebook, either after each module or after all modules have been completed.

TRAINER NOTE:

Trainer Steps:

- ☐ **At your discretion, trainees may work in groups or as individuals.**
- ☐ **At your discretion, you may review answers with trainees periodically as they complete guidebook activities, or after they have fully completed it.**
- ☐ **"Possible responses" provided throughout the guidebook are suggested responses and are often not the only answers.**
- ☐ **If training more than one person at a time, be prepared for trainees to finish the coursework at different times. In order to have the trainees review the face-to-face portions together, prepare a list of things the trainees who finish first can do during downtime (e.g., ask you questions for more clarification, check email, clinic observation, etc.).**

Module 1: Anthropometrics

TRAINER NOTE: It is recommended for you to review the competencies below with trainees.

MODULE 1 COMPETENCIES:

1. Trainees will be able to describe appropriate techniques for accurate measurement of length and weight for infants.
2. Trainees will be able to offer guidance that helps participants prepare infants to be ready for measurement.
3. Trainees will be able to guide the participant in steps to maintain the infant's comfort and position until accurate measurements are obtained.
4. Trainees will be able to describe all of the steps necessary to accurately obtain length and weight measurements for infants.
5. Trainees will be able to identify solutions for typical challenges when measuring infants (e.g., no spare diaper, tantrums, distractions, etc.).
6. Trainees will be able to describe all of the steps and techniques necessary to accurately obtain standing height and weight measurements for children and adults.
7. Trainees will be able to demonstrate accurate height and weight measurement of children and adults.
8. Trainees will be able to identify common measurement errors for infants, children, and adults.

Module 1: Activity 1

TRAINER NOTE: Allow the trainee time to read through the following activity and answer all questions. Discuss the questions together to check for understanding and consider other appropriate responses.

Instructions: For each question below, a descriptive term for collecting anthropometric data (as listed in the Anthropometrics Tool (https://azdhs.gov/documents/prevention/azwic/program-integrity/anthro-tool.pdf)) is given. Answer the questions below by explaining the meaning for each term and how it affects measurement accuracy.

1. Anthropometrics Tool: Without shoes
   a. What is meant by this phrase?

Possible responses:
- **Remove infant shoes before taking the measurement**

   b. How do shoes affect infant length and weight measurements?

Possible responses:
- **Shoes can add to length or weight measurements**

2. Anthropometrics Tool: Both legs are grasped and straightened for measurement (length)
   a. What is meant by this phrase?

Possible responses:
- **Infants' lengths must be measured with legs together and without knees bent**

   b. How does using one leg or not straightening legs affect length measurement?

Possible responses:
- **Using only one leg allows uneven positioning, bending legs reduces overall length**

3. Anthropometrics Tool: Ankles, hips, and shoulder blades aligned
   a. What is meant by this phrase?

Possible responses:
- **Ankles, hips, and shoulders should make a straight line**

   b. What is the impact on length measurement when ankles, hips, and shoulder blades are NOT aligned?

Possible responses:
- **Curved or very relaxed posture reduces overall length measurement**

4. Anthropometrics Tool: Without top hair adornment
   a. What is meant by this phrase?

Possible responses:
- **Remove hair accessories that extend above head**

   b. How is length measurement affected when infants wear large hair accessories?

Possible responses:
- **Length measurement is increased by allowing accessories above scalp level**

5. Anthropometrics Tool: Dry diaper
   a. What is meant by this phrase?

Possible responses:
- **Dry diaper means a clean diaper that has not been soiled or wet**

   b. How do soiled diapers affect weight measurement?

Possible responses:
- **Soiled or wet diapers add weight**

6. Anthropometrics Tool: Light clothing
   a. What is meant by this phrase?

Possible responses:
- **Light clothing means only a onesie or first layer of clothing is worn (removal of outer clothing such as jackets or heavy garments)**

   b. How do heavy or bulky garments affect weight measurements?

Possible responses:
- **Excess clothing adds weight to measurements**

7. What type of infant scale will you use in your clinic?
   a. Infant balance beam scale
   b. Infant electronic scale

Possible responses: (Varies by clinic)
- **Infant balance beam scale**
- **Infant electronic scale**

[LMS reference Module 1, Slide 5]

8. Describe the difference between accuracy and precision in measuring.

Possible responses:
- **Precision is the ability of a measurement to be consistently repeated over and over. In other words, how close your measurements are to one another.**
- **Accuracy is the ability of the measurement to match the actual value of the quantity being measured.**

[LMS reference Module 1, Slide 7]

9. When is a third weight measurement required?

Possible responses:

- **Take a third measurement if the first two measurements are not within ¼ pound (4 oz.) of each other. When a third measurement is required, average the two closest weights and enter that value into HANDS.**

[LMS reference Module 1, Slides 13, 15, and 17]

10. When is a third length measurement required?

Possible responses:

- **Take a third measurement if the first two measurements are not within ¼ inch of each other. When a third measurement is required, average the two closest measurements and enter that value into HANDS.**

[LMS reference Module 1, Slides 13, 15, and 21]

11. Describe when recumbent length is still used with children up to 36 months old.

Correct response:

- **Children 24-36 months who cannot stand unassisted or measure <30 inches must be measured lying down.**

[LMS reference Module 1, Slide 20]

TRAINER NOTE: The Anthropometrics Course states "Some computer systems auto-default to recumbent length for children 36 months and younger." The course says "Some computer systems…" because other WIC state agencies (who do not use HANDS) share this training course. For Arizona WIC, HANDS auto-defaults to standing height and weight for children 24 months of age and older.

Module 1: Activity 2

TRAINER NOTE: Allow the trainee time to read through the following activity and answer all questions. Discuss the questions together to check for understanding and consider other appropriate responses.

Instructions: For each scenario below, offer an example of what you might say to help a participant understand what happens next.

1. You just finished collecting income information from a participant, but before you can explain that you will escort her to the lab to collect height and weight measurements, she asks, "Are we done?"

Possible responses:

- **We still have a few things left to do today. Next we'll take your baby's weight and length in the lab. After that, we'll talk about how things are going, like doctor appointments and feeding. We'll also talk about nutrition, your experience using eWIC, and setting up your next visit. Before we head to the lab, it's important that your baby is wearing a clean diaper in order to get an accurate weight measurement. Is her diaper clean, or do you need a minute to change her diaper?**

2. While in the lab, a participant is holding her baby and waiting for your instructions to weigh her infant.

Possible responses:

- **Next we'll get your baby's weight. Please place her on the scale and try to keep her comfortable while I record her weight.**

3. While in the lab, a participant is holding her baby and waiting for your instructions to measure her infant's length.

Possible responses:

- **Next we'll measure your baby's length. Can you please place her on the length board and hold her head still against the top of the board, facing the ceiling. I'll get her legs and body aligned to get an accurate length as quickly as possible. If she gets too upset to cooperate, we can stop and try again later.**

Module 1: Activity 3

TRAINER NOTE: Allow the trainee time to read through the following activity and answer all questions. Discuss the questions together to check for understanding and consider other appropriate responses.

Instructions: For each question below, write out the best solution for the situation.

1. A participant tells you they do not have a clean diaper to replace the infant's wet diaper at the certification appointment.

Possible responses:
- **Offer participant a clean diaper (if your clinic offers diapers for these situations).**
- **Record weight information using the medical provider's documentation (if measurement was taken within 60 days).**

2. An infant is very upset and will not relax enough to allow for a proper length measurement during the certification.

Possible responses:
- **Allow infant to calm down, and attempt to take the measurement later in the appointment.**
- **Record length information using the medical provider's documentation (if measurement was taken within 60 days).**

3. Infant is flailing wildly so that weight cannot be measured.

Possible responses:
- **Weigh caregiver while holding infant, and then take another measurement of the caregiver's weight without infant. To determine the infant's weight, subtract the caregiver's weight from the caregiver's and infant's combined weight.**
- **Allow infant to calm down and attempt to take measurement later in the appointment.**
- **Record weight information using the medical provider's documentation (if measurement was taken within 60 days).**
- **If necessary, offer to reschedule the certification appointment, since weight is a requirement for certifications.**

Module 1: Activity 4

TRAINER NOTE: Allow the trainee time to read through the following activity and answer all questions. Discuss the questions together to check for understanding and consider other appropriate responses.

Instructions: For each question below, write out the best solution for the situation.

1. Which of the following child participants should be measured with standing weight and height instead of recumbent weight and length?
   a. A 23-month-old child who can stand with support
   b. A 22-month-old child who stands unassisted
   c. A 28-month-old child in a wheelchair who can stand with support
   d. None of the above

Correct response:

d. None of the above.

Children under 24 months old cannot be measured standing, even if they are able to stand unassisted. Children who require support to stand must be measured recumbently if their length is less than 30 inches.

2. Which of the following guidelines for measuring infants DOES NOT apply to children 24 months and older?
   a. Dry diaper
   b. Ankles, hips, and shoulder blades aligned
   c. Without top hair adornment
   d. Without shoes
   e. Both legs are grasped and straightened for measurement (length)

Correct response:

e. Both legs are grasped and straightened for measurement (length).

There is no need to grasp and straighten legs for standing measurements.

3. At what age do you begin measuring children's standing height vertically?

Correct response:
- **24 months and older**

[LMS reference Module 1, Slide 25]

4. What type of scale will you use to weigh children/adults in your clinic?
   a. Electronic scale
   b. Balance beam scale

Possible responses: (Varies by clinic)
- **Electronic scale**
- **Balance beam scale**

5. For weight, what is the unit of measurement that appears on the child/adult scale in your clinic?

Possible responses:
- **Pounds and tenths of a pound**
- **Kilograms/decagrams**
- **Pounds/ounces**
- **Pounds/quarter pounds**

6. For the child/adult scale, what is the unit of measurement you will enter into HANDS for weight? (Module 1, Slide 12)

Possible responses:
- **Pounds/ounces**
- **Kilograms/grams**

[LMS reference Module 1, Slide 12]

Note: Verify trainee understands how to enter metric measurements in the HANDS Medical screen. For example, if documentation from a provider has weight in kilograms and grams, or a participant requests weight to be measured in kilograms instead of pounds.

7. Using your clinic's reference sheet for converting tenths of a pound to ounces, what value would you enter into HANDS if you measured a child's weight to be 26.7 lbs?

Possible responses:
- **26 lbs/11 ounces**

[LMS reference Module 1, Slide 15]

8. For the child/adult stadiometer, what is the unit of measurement you will enter into HANDS for height?

Possible responses:
- **Inches and eighths of an inch**
- **Centimeter/millimeter**

[LMS reference Module 1, Slides 28 and 29]

Module 1: Activity 5

TRAINER NOTE: Allow the trainee time to read through the following activity and answer the questions. Discuss the questions together to check for understanding and consider other appropriate responses.

Instructions: For each activity below, enlist the help of your trainer or a coworker (if possible) to help you practice taking anthropometric measurements.

1. Take a precise and accurate weight measurement of a fellow staff member (or yourself if a coworker is not available). Document this number.

   Next, repeat the same measurement while wearing shoes and removable outer clothing (additional layers, if applicable). Document this number.

   What is the numerical difference between the first and second weight measurements?

Answers will vary

2. Take a precise and accurate weight measurement of a fellow staff member (or yourself if a coworker is not available). Document this number.

   Next, repeat the same measurement while positioning the person's body towards the edge of the scale rather than in the center of the scale. Document this number.

   What is the numerical difference between the first and second weight measurements?

Answers will vary

3. Name as many common errors as possible in measuring recumbent length.

Possible responses:
- **Incorrect equipment for the age of the child**
- **Only one leg extended**
- **Shoes or hats not removed**
- **Both heels not firmly against board**
- **Feet not parallel to movable board**
- **Head not firmly against headboard; remove braids, barrettes, pony tails or anything that prevents board from resting against the head. If unable to do so, record in HANDS.**
- **Body not straight**
- **Head not facing ceiling**
- **Body or knees arched or bent**
- **Board not on flat surface**

[LMS reference Module 1, Slide 23]

4. Name as many common errors as possible in measuring height for children and adults.

Possible responses:
- **Incorrect equipment for the age of the child**
- **Shoes and hats not removed**
- **Feet not straight or flat on the floor**
- **Shoulder, buttocks, head, and heels not firmly against the backboard**
- **Head not firmly against headboard; remove braids, barrettes, pony tails or anything that prevents board from resting against the head. If unable to do so, record in HANDS.**
- **Head not held straight facing forward**
- **Knees bent**

[LMS reference Module 1, Slide 30]

5. How can a height measurement of a child or woman be affected if their head moves downward so their chin is near their chest?

Possible responses:

- **Moving the chin toward the chest will lower head position, resulting in a reduced height measurement.**

6. How can the difference between an accurate and an inaccurate measurement potentially affect WIC data in HANDS?

Possible responses:

- **Inaccurate data may cause WIC codes to be assigned in error.**
- **Inaccurate data may prevent WIC codes to be assigned properly.**
- **Changes in growth between appointments cannot be determined with inaccurate data.**
- **Relevant referrals may be missed, or referrals may be made in error.**
- **Inappropriate nutrition education may be offered.**

Module 2: Practicing BMI and Interpreting Growth Charts

TRAINER NOTE: It is recommended for you to review the competencies below with trainees.

MODULE 2 COMPETENICES:

1. Trainees will be able to appropriately explain children's growth patterns to caregivers.
2. Trainees will be able to explain when Medical screen information is required to be updated in HANDS.
3. Trainees will be able to interpret and explain prenatal weight gain charts.

Module 2: Activity 1

TRAINER NOTE: Allow the trainee time to read through the following activity and answer the questions. Discuss the questions together to check for understanding and consider other appropriate responses.

Instructions: Review the growth measurements for the three children described below. For each child, determine if the growth pattern indicates ***normal weight, BMI at or below the 5th percentile (WIC Code 103.1), BMI between the 5th and 10th percentile (WIC Code 103.2), BMI at or above the 85th percentile but below the 95th percentile (WIC Code 114), or BMI at or above the 95th percentile (WIC Code 113)*** using the Nutrition Risk Manual as a reference (https://azdhs.gov/documents/prevention/azwic/manuals/nutrition-risk-manual.pdf).

1. A 3 y.o. male with a BMI at the 97th percentile.

Correct response:
- **BMI at or above the 95th percentile (WIC Code 113)**

2. A 2 y.o. female with a BMI at the 9th percentile.

Correct response:
- **BMI between the 5th and 10th percentile (WIC Code 103.2)**

3. A 4 y.o. female with a BMI at the 90th percentile.

Possible responses:
- **BMI at or above the 85th percentile but below the 95th percentile (WIC Code 114)**

4. Explain the circumstances when the Medical screen in HANDS needs to be updated.

Possible responses:
- **Certification**
- **Mid-certification**
- **Any Local Agency policies requiring Medical screen updates**

TRAINER NOTE: Inform trainees that HANDS doesn't force Medical screen updates for High Risk Codes

Module 2: Activity 2

TRAINER NOTE: Allow the trainee time to read through the following activity and answer the questions. Discuss the questions together to check for understanding and consider other appropriate responses.

Instructions: Review the scenarios for pregnant and child participants described below. Then answer the following questions.

Scenario 1: Marci is 16 weeks gestation with a singleton pregnancy. Her pre-pregnancy height is 5'2" and pre-pregnancy weight was 150 pounds, which is a pre-pregnancy BMI of 27.4. Her weight at 12 weeks gestation was 153 pounds. Her current weight is 155 pounds.

1. What is Marci's pre-pregnancy weight status based on her BMI?

Possible responses:

a. Overweight

[LMS reference Module 2, Slide 12]

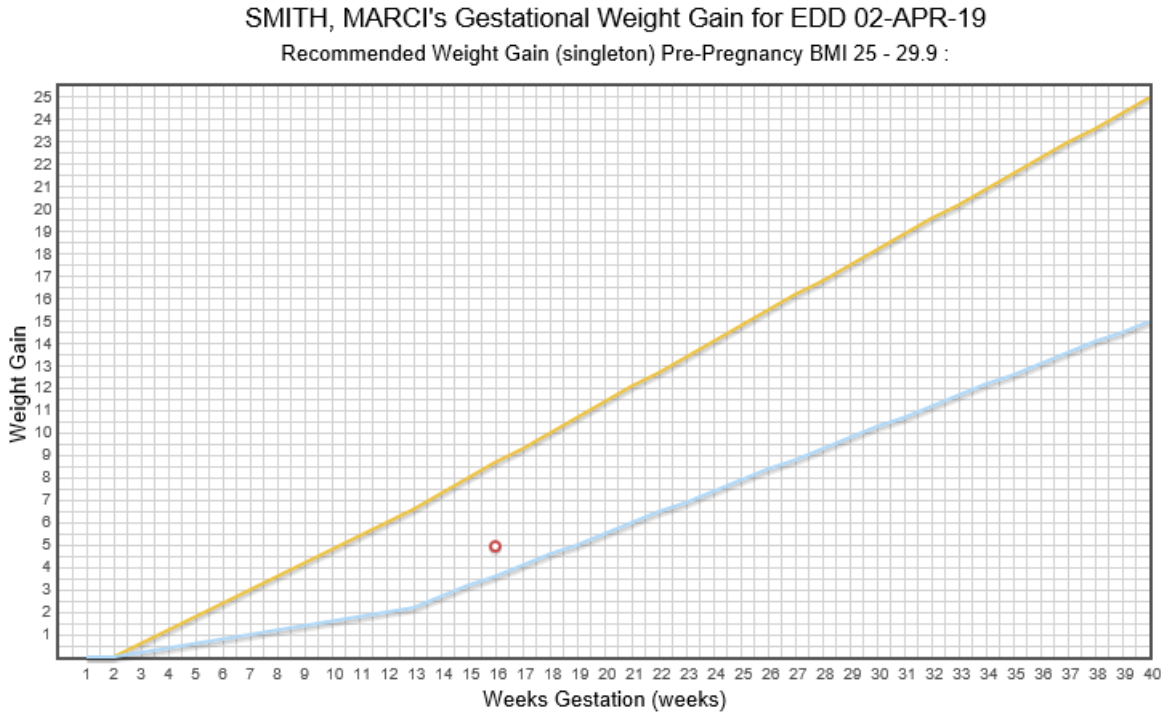
2. How much total weight is recommended for Marci to gain throughout her pregnancy based upon her pre-pregnancy BMI?

Possible responses:

b. 15-25 lbs

[LMS reference Module 2, Slide 12]

Review the pregnancy weight gain graph below for Marci. Then answer the following questions.



3. How would you explain Marci's pregnancy weight gain chart to her?

Possible responses:

- **Doctors recommend a gradual increase in weight that falls between the blue and yellow lines. Today, this red circle indicates your weight at 16 weeks, which is well within the recommended weight gain range at this point in your pregnancy.**

Scenario 2: Natasha is 31 weeks gestation with a singleton pregnancy. Her pre-pregnancy height is 5'8" and pre-pregnancy weight was 157 pounds, which is a pre-pregnancy BMI of 23.9. Her weight at 20 weeks gestation was 164 pounds. Her weight at 25 weeks gestation was 169 pounds. Her current weight is 173 pounds.

1. What is Natasha's pre-pregnancy weight status based on her BMI?

Possible responses:

b. Normal Weight

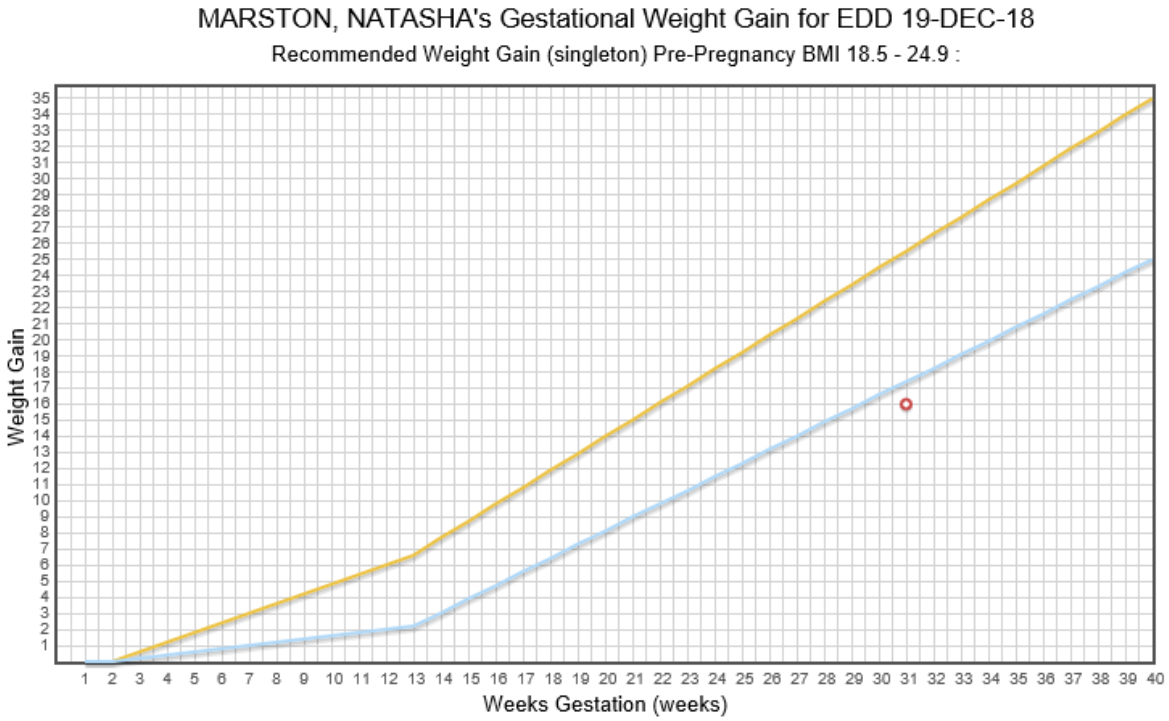
[LMS reference Module 2, Slide 12]

2. How much total weight is recommended for Natasha to gain throughout her pregnancy?

Correct response:
- **25-35 pounds**

[LMS reference Module 2, Slide 12]

Review the pregnancy weight gain graph below for Natasha. Then answer the following questions.



3. How would you explain the chart of Natasha's weight gain during pregnancy to her?

Possible responses: (Module 2, slide 16)
- **Doctors recommend a gradual increase in weight that falls between the blue and yellow lines. Today, this red circle indicates your weight at 31 weeks is here, just below the recommended range.**

Scenario 3: Luis is a 13-month-old child with a recumbent length of 28 6/8 inches and recumbent weight of 21 lbs, 4 oz. His length-for-age plots at the 45th percentile. His weight-for-length plots at the 76th percentile.

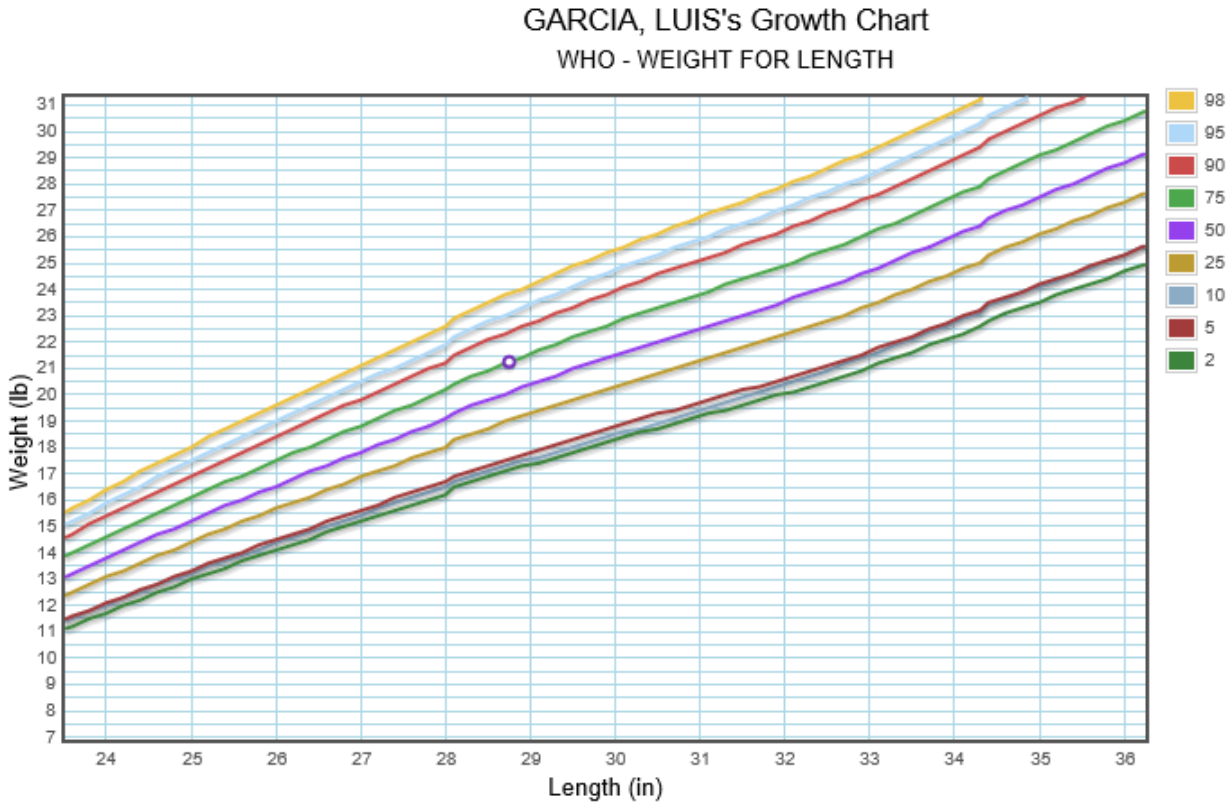
1. What is Luis's weight status based on his weight-for-length?

Possible responses:

a. Normal Weight

[LMS reference Module 2, Slide 12]

Review the growth chart below for Luis. Then answer the following question.



2. How would you explain the chart for Luis's growth to his caregiver?

Possible responses: (Module 2, slide 16)

- **Doctors recommend a gradual increase in weight that falls between these lower and upper lines. Today, this purple circle indicates Luis's weight-for-length is well within the recommended range for his growth.**

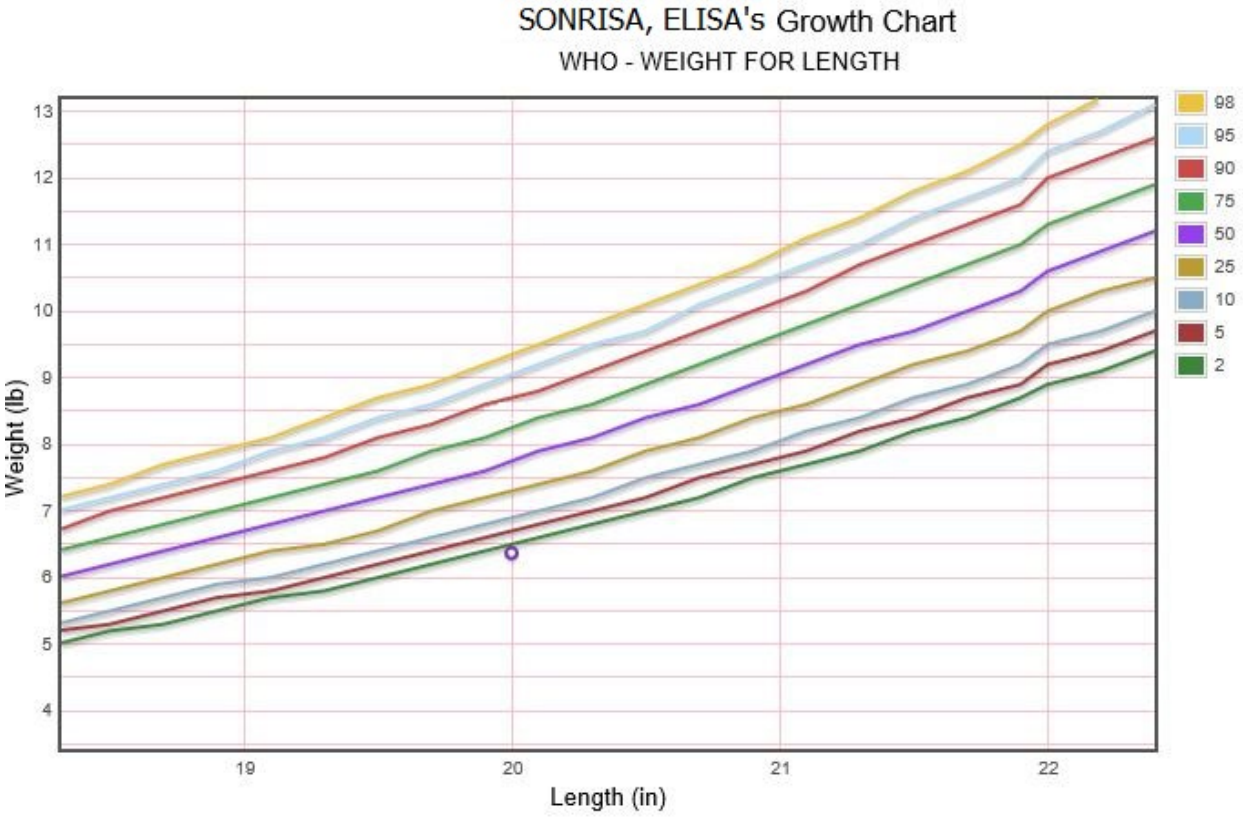
Scenario 4: Elisa is a newborn infant with a recumbent length of 20 inches and a recumbent weight of 6 lbs, 6 oz. Her weight-for-length plots below the 2nd percentile.

1. What is Elisa's weight status based on her weight-for-length?

Possible responses:

a. Weight-for-length less than or equal to the 2nd percentile (WIC Code 103.1)

Review the growth chart below for Elisa. Then answer the following question.



2. How would you explain Elisa's growth chart to her caregiver?

Possible responses: (Module 2, slide 16)

- **The weight-for-length for most infants falls between the lower and upper lines on the graph. Today, this purple circle indicates Elisa's weight-for-length is just below the 2nd percentile.**