Idaho WIC Training

Anthropometric

Trainer

IDAHO DEPARTMENT OF HEALTH & WELFARE
DIVISION OF PUBLIC HEALTH

WIC is an equal opportunity provider.

What Will They Learn?

Measuring the height, weight, and length of women, infants, and children is an excellent tool for assessing development. These measurements are an important step towards helping staff determine if a participant has a potential health risk. The learner will understand and demonstrate the importance of taking extremely accurate and precise measurements, and interpretation of the measurements including how to discuss measurement results with a WIC participant or responsible adult.

Instruction Level

Prerequisite for taking the Anthropometrics course: None

Items Needed for This Course

The Idaho WIC website www.wic.dhw.idaho.gov houses all the online materials for staff under the staff page.

- Access to the Policy Manual.
- Growth Charts and Prenatal Weight Gain Charts for all ranges of Pre-Pregnancy BMI. The charts are in the Computer Down Kit.
- See additional Job Aids under Anthropometrics.
- The links to the videos are within the guidebook. To access them please use "Ctrl + Click" on the links.

Note: Arizona WIC developed this course. Any issues with the Video will need to be communicated to the Idaho WIC State Office so we can provide a better video.

Recommended Time

- Approximate time it takes to complete the online Anthropometric course: 1-2 hours
- Approximate time it takes to complete the face-to-face activities and discussion: 3-4 hours

Module 1: Anthropometric Measurements

Activity 1

COMPETENCIES:

1. Learner is able to accurately and precisely demonstrate two weight measurements for an infant.
2. Learner is able to accurately and precisely demonstrate two length measurements for an infant.

Instructions: With your trainer, correctly demonstrate the accurate and precise techniques for measuring recumbent length and weight for an infant.

Technique for measuring an infant's recumbent length on a measuring board (Module 1, minute 17 and 24 seconds):

- Before measuring, have the caregiver remove shoes and any heavy clothing the infant might be wearing.
- Make sure a paper liner is placed onto the board (use one new paper liner per each infant to measure both length/weight), and the infant's diaper/pull-up is dry. Have the caregiver change the diaper, if necessary.
- Since the headboard needs to rest flat against the infant's head, make sure anything like hair clips or hats are removed. Some hairstyles, like braids, can also prevent the headboard from resting flat, causing an inaccurate measurement. Under these circumstances, have the caregiver do their best to flatten the hair. If the caregiver is unable to do so, record it in the chart.
- The caregiver will then gently place the infant flat on his/her back and hold the infant's head firmly against the headboard by gently cupping their hands over the infant's ears. The WIC employee can then bring the infant's legs together by holding both of the infant's ankles with one hand. Use your hand and arm to firmly, but gently, push down on the legs to straighten them out.
- Make sure the infant's head is flat against the headboard, and both legs are straight and feet are flat against the footboard, as this will ensure an accurate measurement. You can then slide the footboard flat against the bottom of the infant's feet using your free hand.
- Make a note of this measurement.
- Check the measuring board manufacturer's instructions to see if two measurements are required to ensure accuracy. If yes, move the footboard out. Recheck the infant's position to make sure the infant's head is flat against the headboard, and the legs are straight, and then reposition the footboard. Make sure the infant's feet are flat before taking the second measurement. These two measurements need to be within ¼ inch of each other. If they are not, take a third measurement and average the two closest measurements.
- Enter the final value into the WIC computer system.
- Sanitize the measuring board between participants.

- Note: Since infants are not comfortable in this measuring position, they might become fussy or cry. Encourage the WIC employee being trained to stay patient and focus on getting accurate measurements. With time and practice, the WIC employee will perfect their ability and become very skilled at this technique.

Technique for measuring an infant's weight on an infant Balance Beam Scale (Module 1, minute 7):

- Before weighing, have the caregiver take off the infant's clothes which will affect the weight, such as shoes, pants, jackets, sweaters, or hats. A t-shirt or onesie and dry diaper are fine.
- Have the caregiver check the infant's diaper/pull-up and change it, if needed, as a wet/full diaper could weigh up to two pounds.
- Make sure a paper liner is placed onto the scale before weighing (use one new paper liner per each infant to measure both weight/length), and the upper and lower counterbalance weights are at the far left at zero.
- Have the caregiver gently place the child onto the center of the scale. Younger infants should be measured lying down. You may consider weighing older infants sitting up, so they fit comfortably in the center of the scale.
- Make sure the infant does not hang onto the caregiver nor can the caregiver hold or touch the infant; all of the infant's body must be within the scale's tray, the infant cannot touch the sides of the scale as this will affect the weight.
- Move the lower weight over to the right until the indicator arm drops down. You can then move the smaller weight over to the right, until the indicator arm balances in the center.
- Make a note of the measurement and have the caregiver remove the infant from the scale.
- Check the scale manufacturer's instructions to see if two measurements are required to ensure accuracy. If yes, return the weights to their zero positions and have the caregiver place the infant back onto the scale. Once again, make sure the infant does not hang onto the caregiver nor can the caregiver hold or touch the infant; all of the infant's body must be within the scale's tray, the infant cannot touch the sides of the scale as this will affect the weight. Move the lower weight over to the right until the indicator arm drops down. You can then move the smaller weight over to the right, until the indicator arm balances in the center. Record this measurement to the nearest one ounce. The two measurements need to be within one ounce of each other. If they are not, take a third measurement, and use the average of the two closest measurements.
- Enter the final value into the WIC computer system.
- Sanitize the scale between participants.

Technique for measuring an infant's weight on an infant Electronic Scale (Module 1, minute 7):

- Before weighing, have the caregiver take off the infant's clothes which will affect the weight, such as shoes, pants, jackets, sweaters, or hats. A t-shirt or onesie and dry diaper are fine.
- Have the caregiver check the infant's diaper/pull-up and change it, if needed, as a wet/full diaper or pull-up could weigh up to two pounds.
- Make sure a paper liner is placed onto the scale before weighing (use one new paper liner per each infant to measure both weight/length), and the scale is turned on and set to zero.

- Have the caregiver gently place the child onto the center of the scale. Younger infants should be measured lying down. You may consider weighing older infants sitting up, so they fit comfortably in the center of the scale.
- Make sure the infant does not hang onto the caregiver nor can the caregiver hold or touch the infant; also, the infant cannot touch the sides of the scale, and all of the infant's body must be within the scale's tray, as this will affect the weight.
- Depending upon the type of electronic scale your clinic uses, this measurement will be displayed in pounds and ounces or pounds and tenths of a pound or kilograms and grams.
- Make a note of the weight, and have the caregiver remove the infant from the scale. This will cause most electronic scales to reset to zero.
- Check the scale manufacturer's instructions to see if two measurements are required to ensure accuracy. If yes, repeat the process to obtain a second weight. These two measurements need to be within one ounce of each other. If they are not, take a third measurement, and use the average of the two closest measurements. Once again, make sure the infant does not hang onto the caregiver nor can the caregiver hold or touch the infant; also, the infant cannot touch the sides of the scale, and all of the infant's body must be within the scale's tray.
- Enter the final value into the WIC computer system.
- Sanitize the scale between participants.

A. With your trainer, review the type of infant scale you will use in your clinic.
   - Possible responses vary by clinic/agency
     - Infant balance beam scale
     - Infant electronic scale

B. Describe the difference between accuracy and precision in measuring.
   - Precision is the ability of a measurement to be consistently repeated over and over. 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.

C. Describe when recumbent length is still used with children up to 36 months old.
   - Children 24-36 months who cannot stand unassisted or measure <30 inches must be measured lying down.

Activity 2

COMPETENCIES:

1. Learner is able to accurately and precisely demonstrate two weight measurements for an adult.
2. Learner is able to accurately and precisely demonstrate two height measurements for an adult.

Instructions: With your trainer, correctly demonstrate the accurate and precise techniques for measuring weight and height for an adult.

Technique for measuring an adult or child's weight on a Balance Beam Scale (Module 1, minute 12):

- Before weighing, have the participant take off his/her shoes and any heavy clothing such as a jacket or sweater.
- Situate the upper and lower counterbalance weights at the far left at zero.
- Have the participant step onto the scale, and remain still. Move the lower weight over to the right until the indicator arm drops. You can then move the upper weight to the right, until the indicator arm balances in the center.
- Make a note of the measurement.
- Check the scale manufacturer's instructions to see if two measurements are required to ensure accuracy. If yes, have the participant step off the scale, move the two weights back to their zero positions, and then have the participant step back onto the scale. Once again, have the participant remain still. Move the lower and upper weights over to the right until the indicator arm balances in the center. These two measurements need to be within a ¼ pound of each other. If they are not, take a third measurement, and use the average of the two closest measurements.
- Enter the final value into the WIC computer system.

Technique for measuring an adult or child's weight on an Electronic Scale (Module 1, minute 13 and 54 seconds):

- Before weighing, have the participant take off her shoes and any heavy clothing such as a jacket or sweater.
- Make sure the scale is on and set to zero.
- Have the participant step onto the scale and remain still until the scale finishes adjusting, which is usually a couple of seconds. Depending upon the type of electronic scale your clinic uses, this measurement will be displayed in pounds and ounces or pounds and tenths of a pound or kilograms and grams.
- Make a note of the measurement.
- Have the participant step off the scale. This will cause most electronic scales to reset to zero.
- Check the scale manufacturer's instructions to see if two measurements are required to ensure accuracy. If yes, have the participant step back onto the scale for a second measurement. These two measurements need to be within four ounces of each other. If not, take a third measurement, and use the average of the two closest measurements.
- Enter the final value into the WIC computer system.

Technique for measuring an adult or child's height on a Manual Stadiometer (Module 1, minute 22 and 30 seconds):

- Before measuring, have the participant take off her shoes, and any heavy clothing she might be wearing.
- Since the headboard needs to rest flat against the participant's head, make sure anything like hair clips or hats are removed. Some hairstyles, like braids, can also prevent the headboard from

resting flat, and can cause an inaccurate measurement. Under these circumstances, have the participant do his/her best to flatten his/her hair. If the participant is unable to do so, record it in the chart.

- Have the participant stand under the headboard. Make sure the participant's heels, buttocks, shoulders, and head are all flat up against the vertical beam before lowering the headboard. This will ensure an accurate measurement.
- Loosen the wing nut that holds the headboard in place, then lower the headboard gently onto the participant's head and re-tighten the nut. Read the measurement at the "Read Here" arrow or designated line to the nearest one eighth of an inch.
- Make a note of the measurement.
- Check the stadiometer manufacturer's instructions to see if two measurements are required to ensure accuracy. If yes, loosen and move the headboard up. Recheck the participant's position to make sure their heels, buttocks, shoulders, and head are all flat against the vertical beam. Lower the headboard firmly onto the participant's head and take a second measurement. These two measurements need to be within ¼ inch. If they are not, take a third measurement and use the average of the two closest measurements.
- Enter the final value into the WIC computer system.

Technique for measuring an adult or child's height on an Electronic Stadiometer (Module 1, minute 22 and 30 seconds)

- Before measuring, have the participant take off his/her shoes, and any heavy clothing he/she might be wearing.
- Since the headboard needs to rest flat against the participant's head, make sure anything like hair clips or hats are removed. Some hairstyles, like braids, can also prevent the headboard from resting flat, and can cause an inaccurate measurement. Under these circumstances, have the participant do his/her best to flatten his/her hair. If the participant is unable to do so, record it in the chart.
- Have the participant stand under the headboard. Make sure the participant's heels, buttocks, shoulders, and head are all flat up against the vertical beam before lowering the headboard. This will ensure an accurate measurement.
- Lower the headboard gently onto the participant's head and note the measurement.
- Check the stadiometer manufacturer's instructions to see if two measurements are required to ensure accuracy. If yes, raise the headboard, double check the participant's position to make sure the participant's heels, buttocks, shoulders, and head are all flat against the vertical beam. Lower the headboard firmly onto the participant's head and write down the second measurement. These two measurements need to be within ¼ inch. If they are not, take a third measurement and use the average of the two closest measurements.
- Enter the final value into the WIC computer system.

Activity 3

COMPETENCIES:

1. Learner is able to accurately and precisely demonstrate two weight measurements for a child ≥2 years.
2. Learner is able to accurately and precisely demonstrate two height measurements for a child ≥2 years.
3. Learner is able to specify the correct age at which it is appropriate to measure children's length (in a recumbent position) vs. height (in a standing position).

Instructions: With your trainer, correctly demonstrate the accurate and precise techniques for measuring weight and height for children ≥2 years old. (Module 1, slides 14-30)

See instructions in Activity 2 for the correct technique for measuring weight and height for a child.

A. At what age do you begin measuring a child's height in the standing position?
   - 24 months and older

B. Review with your trainer the type of scale you will use to weigh children/adults in your clinic/agency.
   - Possible Responses varies by clinic/agency
     - Electronic Scale
     - Balance Beam Scale

C. For weight, what is the unit of measurement which appears on the child/adult scale in your clinic?
   - Varies by clinic/agency depending on equipment
   - WISPr allows US standard or metric measurements
     - US Standard = pounds in decimal form, pounds and ounces, or pounds and fraction of a pound
     - Metric = kilograms in decimal form

D. Does the WIC computer system auto-default to recumbent length for children 24 months and younger?
   - Yes, the WIC computer system auto-defaults to recumbent length if the child is <24 months old.

E. For the child/adult stadiometer in your clinic, what is the unit of measurement you will enter into the WIC computer system for height?
   - Varies by clinic/agency depending on equipment
   - WISPr allows US standard or metric measurements
     - US Standard = inches and either decimal or fraction of an inch
     - Metric = centimeters and decimal of a centimeter

Activity 4

COMPETENCY:

1. Learner is able to identify and avoid common weight measurement errors.

Balancing and Calibrating a Scale: Scales must be kept in zero balance in order to provide accurate measurements. The scale should be zero balanced at the beginning of each clinic day, whenever the scale is transported and set up at a new location, or per the manufacturer's directions. Ask your trainer to show you how to zero balance the scale in your clinic. Scale calibration is required quarterly. Ask your trainer to show you how to calibrate the scale in your clinic and where it is documented. Practice calibrating the scale with your trainer observing. Ask if you will be responsible for calibrating the scales in your clinic. Trainer assists learner to practice how to balance/calibrate the scale and document it.

Instructions: Name as many common errors as possible in measuring weight for infants, children, and adults.

Possible responses:

- Outer clothing not removed
- Shoes not removed
- Child weighed with wet or soiled diaper
- Electronic scale not set to zero before weighing
- Kilograms entered into WISPr instead of pounds or visa-versa
- Quarter pound or tenth of a pound measurements not properly converted
- Child or adult not in center of scale or moving around or holding onto an object or a person
- Using the wrong equipment, such as a bathroom scale
- Poorly maintained equipment
- Equipment not properly calibrated
- Reading and recording measurements incorrectly

Take a precise and accurate weight measurement of a child or woman. Document this number. Next, using the same child or woman, weigh the person with their shoes and outer clothes (if applicable) on. Document this number. Compare the numerical difference between the first and second weight measurements.

Take a precise and accurate weight measurement of a child or woman. Document this number. Next, using the same child or woman, weigh the person as they stand towards the edge of the scale rather than in the center of the scale. Document this number. Compare the numerical difference between the first and second weight measurements.

How can the difference between an accurate and an inaccurate weight measurement potentially affect WIC data in the computer system?

- Growth charts and prenatal weight gain charts may have incorrect plot points.
- Incorrect nutrition risk criteria may be assigned for the participant.
- Incorrect referrals may be generated for the participant.
- Reports may have incorrect data regarding BMI, nutrition risks, and referrals.

Activity 5

COMPETENCY:

1. Learner is able to identify and avoid common recumbent length measurement errors.

Instructions: 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, hats, and hair accessories not removed
- Board not firmly against both heels
- 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 WIC computer system.
- Body not straight
- Eyes not looking forward
- Body or knees arched or bent
- Board not on flat surface

Show the trainer the correct place to read the measurement on the recumbent length board.

Take a precise and accurate recumbent length measurement of an infant. Document this number. Next, using the same infant, measure the length using only one leg for the measurement. Document this number. Next, using the same infant, measure the length with the infant's toes pointed. Document this number. Compare the numerical differences between the first, second, and third recumbent length measurements.

How can the difference between an accurate and an inaccurate length measurement potentially affect WIC data in the computer system?

- Growth charts may have incorrect plot points.
- Incorrect nutrition risk criteria may be assigned for the participant.

- Incorrect referrals may be generated for the participant.
- Reports may have incorrect data regarding BMI, nutrition risks, and referrals.

Activity 6

COMPETENCY:

1. Learner is able to identify and avoid common height measurement errors.

Instructions: 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 WIC computer system.
- Head not held straight or eyes not looking forward
- Knees bent

Take a precise and accurate height measurement of a child or woman. Document this number. Next, using the same child or woman, have the child or woman drop their head downward so their chin is near their chest. Measure this height and document this number. Compare the numerical difference between the first and second height measurements.

How can the difference between an accurate and an inaccurate measurement potentially affect WIC data in the computer system?

- Growth charts and prenatal weight gain charts may have incorrect plot points.
- Incorrect nutrition risk criteria may be assigned for the participant.
- Incorrect referrals may be generated for the participant.
- Reports may have incorrect data regarding BMI, nutrition risks, and referrals.

Module 2: Defining Body Mass Index & How to Interpret Growth Charts

Activity 7

COMPETENCIES:

1. Learner is able to appropriately explain a child's growth patterns to the child's responsible adult(s).

Instructions: Review three children's growth chart information below; blank growth charts may be printed from the online Idaho WIC Policy Manual, Computer Down Kit.

- For each child, determine if the growth pattern indicates normal height growth, short stature, tall height growth, normal weight, underweight, or overweight.
- For each child, practice having a conversation with the child's responsible adult to discuss the findings of the weight and height assessment. Please be sensitive to the feelings of the child and responsible adult(s):
    - A 3-year-old male charted as 94 percentile height-for-age.
      His weight-for-height charted at 97 percentile weight-for-height.
    - A 2-year-old female charted as 55 percentile height-for-age.
      Her weight-for-height charted at 9 percentile weight-for-height.
    - A 4-year-old female charted at 10 percentile height-for-age.
      Her weight-for-height charted at 90 percentile weight-for-height.

NOTE: For part "2," the trainer leads a discussion about appropriately communicating information about height and weight.

It is important to avoid making the caregiver feel defensive or judged. Instead, the learner should explain how the growth chart can be used to assess the pattern of growth and discuss behaviors related to weight, such as feeding routines and appetite.

- Some helpful phrases to share and discuss with the learner (from the resource "Examples and Tips on How to Discuss and Explain Growth and Weight Gain Charts" located on the Idaho WIC website):
    - "In general, [kids/pregnant women] plot somewhere between these lines. [You are/your child is] plotting here today
    - We only have one measurement to look at today, what is more important is how this looks over time.
    - The [growth/weight grid] is only one piece of the puzzle when it comes to nutrition. I would like to hear more about how you feel [your/his/her] appetite is

Activity 8

COMPETENCY:

1. Learner is able to correctly plot weight on the prenatal weight gain charts.

Instructions: Review the weight and weight gain data for two pregnant women. Answer the questions and graph the data on the appropriate prenatal weight gain chart available in your clinic; the charts may be printed from the online Idaho WIC Program Policy Manual, Computer Down Kit. (Module 2, slides 14-21)

- Marci is 16 weeks gestation with a singleton pregnancy. Her pre-pregnancy height is 5'2" and pre-pregnancy weight is 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.
  - What is Marci's pre-pregnancy weight status based off her BMI? Overweight
  - How much total weight is recommended for Marci to gain throughout her pregnancy based upon her pre-pregnancy BMI? 15-25 pounds
  - How many weeks does Marci have left if she delivers a full-term baby? 24 weeks left
  - Choose the appropriate prenatal weight gain chart and graph Marci's weight progress. Use prenatal weight gain-single grid for BMI 25-29.9

- Natasha is 30 weeks gestation with a singleton pregnancy. Her pre-pregnancy height is 5'8" and pre-pregnancy weight is 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.
  - What is Natasha's pre-pregnancy weight status based off her BMI? Normal Weight
  - How much total weight is recommended for Natasha to gain throughout her pregnancy based upon her pre-pregnancy BMI? 25-35 pounds
  - How many weeks does Natasha have left if she delivers a full-term baby? 10 weeks left
  - Choose the appropriate prenatal weight gain chart and graph Natasha's weight progress. Use prenatal weight gain-single grid for BMI 18.5-24.9