40 Vital Signs

Teaching Plan

To use this lesson for self-study, the learner should read the material, do the activity, and take the test. For group study, the leader may give each learner a copy of the learning guide and follow this teaching plan to conduct the lesson. Certificates may be copied for everyone who completes the lesson.

Learning objectives

After this lesson, participants should be able to:

- State how to measure pulse, respiration, body temperature, and blood pressure
- State the importance of weight measurement.

Lesson activities

Preparation:
Gather the following equipment: blood pressure cuff, stethoscope, thermometer, scale, and forms for documentation. Use the same equipment that is used in your agency for measuring vital signs and weight. Provide a copy of your documentation procedures, or an example of the correct way to document vital signs in your agency, to every learner.

Self-study:
If your workers are using this lesson plan for self-study, have them work with at least one other employee (two others is better) so they can check each other's performance of the required skills according to the skills checklist. The learners will need to read all the material, including this teaching plan, take and check the pretest (Figure 40.1), and perform the skills on the checklists before they receive the certificate. They should also review the correct way to document vital signs in your agency.

Introduction:

1. Give all learners a copy of the learning guide, and ask them to complete Figure 40.1, the pretest, by following the instructions in each section.
2. Go over the pretest with the learners, being sure they understand the correct answers, using the answer key. Allow for questions and explanations.

What's normal?

Point out to your learners that older adults tend to have slightly lower temperatures that younger people, as well as slightly higher blood pressure, pulse, and respirations. Although older people may be in a lower or higher part of the "normal" range, this may still be normal for the individual and the age. Some people may have conditions that mean their "normal" vital signs are different from the ranges given. When a patient can be expected to operate outside the normal range most of the time, the physician should be contacted to establish a normal and acceptable range for the patient. Otherwise, all vital signs outside normal ranges should be reported to the physician.

Testing vital sign measurements

1. Give the learners time to review the vital sign measurement techniques in the learning guide. Allow for questions.
2. Give each learner a copy of the approved documentation used in your agency for recording vital signs. Review the correct procedure in your agency for documenting vital signs and weight.
3. Explain that each learner will demonstrate his or her ability to correctly measure vital signs and weight as the test for this session.
4. Arrange learners into groups of three. Ask one learner in each group to be the "patient," while the other two learners measure his or her vital signs and weight. Each learner should document the vital signs they obtain. The vital signs obtained by two different people on the same "patient" should be very close to the same measurement. Variations should be checked by the teacher to determine whether there is a problem with the technique used by one of the learners.

5. Have the "patient" change places with other learners so that everyone has an opportunity to demonstrate their ability to measure vital signs correctly. Use the check-off boxes under each section of the lesson to document that each learner has demonstrated the abilities on the checklists, and keep these in your training files.

Conclusion

Have participants take the test. Review the answers together. Award certificates to those who answer at least seven (70%) of the test questions correctly

Test answers

1. c
2. a
3. a
4. a
5. b
6. b
7. a
8. b
9. c
10. b

Vital Signs

Contents:

Measuring Pulse and Respirations

- ❑ Place the patient's hand in a resting position on a surface, palm up.
- ❑ Feel along the inside of the wrist with your fingertips, locating the pulse below the patient's thumb and just below the bend of the wrist. Do not use your thumb, as it has a strong pulse of its own.
- ❑ Look at your watch and find a starting point. Count the beats you feel for 30 seconds, and then multiply that number by two. If the pulse is irregular, count for a full minute and don't multiply.
- ❑ When you have finished counting the pulse, stay in the same position and watch the patient's chest. It is best if the patient is not aware that you are counting his breathing, because he may alter his breathing rate if he is conscious of being watched.
- ❑ Look at your watch and find a starting point. Count each time the patient's chest rises and falls as one single respiration.
- ❑ Count respirations for 30 seconds and multiply by two. If breathing is irregular, count for a full minute and don't multiply.
- ❑ Document both the pulse and the respirations, writing down the number of heartbeats and the number of breaths you counted per minute.
- ❑ Notify your supervisor of irregularities or measurements outside the normal range.

Measuring Body Temperature

Oral temperature

- ❑ Wait at least 15 minutes after the patient has eaten, smoked, or had a drink.
- ❑ If using a glass thermometer, hold the end and shake the thermometer by snapping your wrist downward several times, shaking the mercury to the bottom of the glass. If you are using an electronic thermometer, check to be sure it is working. Use equipment designed for oral use, not rectal.
- ❑ Place a disposable cover on the thermometer, or follow your agency's policy for disinfecting thermometers before reusing them. Never wash a glass thermometer in hot water. Be sure the thermometer is not broken, chipped, or cracked.
- ❑ Ask the patient to wet his lips, and then insert the tip of the thermometer under the patient's tongue and slightly to the side. You may have to push a button on an electronic thermometer to activate it.
- ❑ Ask the patient to close his lips over the thermometer. A glass thermometer should stay in place for at least three minutes. An electronic thermometer should stay in place until it beeps.
- ❑ When finished, remove the thermometer from the patient's mouth and dispose of the cover.
- ❑ Hold a glass thermometer horizontally at eye level, turning it until you can see a solid line of mercury. The point at which the line stops is the temperature reading. Electronic thermometers will tell you the temperature with a digital reading.
- ❑ Document the reading. Disinfect and store the thermometer according to policy.

Axillary temperature—Under the arm

- ❑ Hold the thermometer in the center of the patient's armpit for at least nine minutes or until it beeps.

Rectal temperature

- ❑ Assist the patient to lie on her side with her upper leg pulled up toward her chest as much as possible.
- ❑ Lubricate the covered rectal thermometer or rectal electronic probe and gently insert it no further than one inch into the patient's rectum. Keep the patient covered during this procedure to protect privacy.
- ❑ Hold in place for at least 3 minutes, while supporting the patient to prevent any movement that could cause injury. Be careful to avoid trauma to the rectum. Use gloves and Standard Precautions.

Measuring Blood Pressure

- ❑ The patient should be relaxed and comfortable, either sitting or lying down. Be sure there is no tight clothing restricting circulation on the arm. The arm should be bare. Loose sleeves can be pushed up.
- ❑ Rest the patient's arm on a surface such as a table or chair arm, with the palm up and the arm out straight. The patient should not hold his arm up, as using muscles could raise the pressure.
- ❑ Use a blood pressure cuff that is the right size for the patient. The cuff should fit easily around the arm and overlap but not be so large that it overlaps itself too far. A cuff that is the wrong size will give an incorrect reading.
- ❑ Wrap the fully deflated cuff snugly (not too tight) around the patient's arm about an inch above the bend in the elbow. The cuff contains a sensor, usually marked with an arrow, which should be placed over the brachial artery. The brachial artery runs along the inside of the arm, on the side next to the body.
- ❑ Place the gauge where you can easily see it. Put your stethoscope earpieces in your ears.
- ❑ Close the valve on the sphygmomanometer bulb. This usually means turning the valve clockwise.
- ❑ Find the brachial pulse by placing your fingers just above the bend in the elbow along the side of the arm closest to the body. Keeping your fingers on the brachial artery, inflate the cuff until you can no longer feel the pulse and then continue inflating for an additional 30 mm on the gauge. Usually you will inflate the cuff until the gauge reads between 170 and 200.
- ❑ Place the flat disk part of your stethoscope (the diaphragm) on the brachial artery just below the cuff and just above the bend in the elbow.
- ❑ Open the valve on the bulb slowly and steadily, turning it counterclockwise. The cuff will begin to deflate.
- ❑ Listen closely to the sounds coming through the stethoscope. At the first pulse sound you hear, note the gauge reading. This is the systolic pressure reading.
- ❑ Note the gauge reading again when the pulse sound disappears. This is the diastolic pressure.
- ❑ Deflate the cuff and remove it. Record the blood pressure according to your agency's policy.

Weight Measurement

- ❑ Weight is not a vital sign, but changes in weight can be important symptoms of illness.
- ❑ Weigh the patient at about the same time of day each time, using the same scale. Periodically check the scale's accuracy by weighing yourself and comparing this weight with your weight on other scales.
- ❑ Place the scale on a stable, solid surface, preferably a hard floor without carpeting.
- ❑ Have the patient remove shoes and unneeded clothing. Put a paper towel on the scale.
- ❑ Be sure the scale is set at zero before having the patient step on it.
- ❑ Make sure the patient is able to stand safely, and be prepared to provide support.
- ❑ Wait until the scale stops moving before reading the measurement.
- ❑ Document the weight measurement.

Figure 40.1A

Learning Guide Pretest

How Much Do You Know?

1. **We measure four vital signs to get a picture of someone's basic health status. What are they? (Circle four)**

Skin color	Strength	Temperature
Height	Blood pressure	Pulse
Age	Respirations	Weight

2. **Match the vital sign with equipment you might use to measure it:**

Temperature	Sphygmomanometer
Pulse	Stethoscope
Respirations	Thermometer
Blood pressure	Watch or clock

3. **Write the full name of the vital sign beside the abbreviation:**

TPR is _____

BP means _____

4. **Three ways to measure temperature are:**

O stands for _____

A stands for _____

R stands for _____

5. **Match the type of pulse with its location on the body:**

Brachial	Chest
Carotid	Wrist
Radial	Inner arm
Apical	Neck

Figure 40.1A

Learning Guide Pretest (cont.)

What's Normal?

Temperature: Fill in the Chart

Our bodies make heat to keep our internal systems working. It is usually a symptom of disease when the body's temperature is above or below its normal range. The normal range varies depending on how the temperature measurement is obtained. Fill in normal ranges on the chart.

If measured orally (older adults run at the lower end of the range)	_____ degrees Fahrenheit
If measured rectally or in the ears (tympanic)	_____ degrees Fahrenheit
If measured under the arm (axillary):	_____ degrees Fahrenheit

Pulse: Fill in the Blanks

Measuring the pulse tells us how often the heart beats. The normal adult range is from _____ to _____ beats per minute. While it is usually measured at the wrist by placing the fingertips on the radial artery, you may also count it at the chest (apical pulse) with a stethoscope.

Respiration: Fill in the Blanks

Counting the respirations tells us how many breaths the resident takes. The normal adult range is from _____ to _____ per minute.

Blood Pressure: Fill in the Blanks

Blood pressure measurement tells us two things about the circulation of blood through the arteries.

1. *Systolic pressure* tells how much force is being put on the arteries when the heart is contracting and pushing the blood outward through the arteries. This is the top number in a written blood pressure and is normally between _____ and _____ in adults. A higher range of 140 to 160 systolic pressure is normal for older adults.
2. *Diastolic pressure* measures how much force is on the arteries when the heart is relaxing and not pushing the blood outward. This is the bottom number in a blood pressure, and a normal adult reading is between _____ and _____.

Figure 40.1B

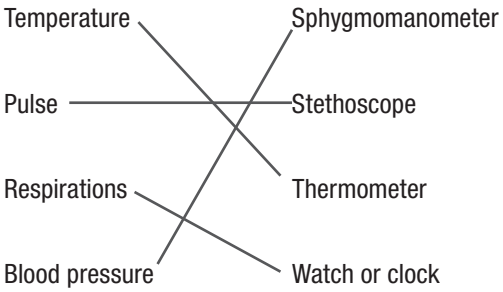
Learning Guide Pretest Answer Key

How Much Do You Know?

1. We measure four vital signs to get a picture of someone's basic health status. What are they? (Circle four)

Skin color	Strength	Temperature
Height	Blood pressure	Pulse
Age	Respirations	Weight

2. Match the vital sign with equipment you might use to measure it:



3. Write the full name of the vital sign beside the abbreviation:

TPR is temperature, pulse, respirations

BP means blood pressure

4. Three ways to measure temperature are:

O stands for orally (by mouth)

A stands for axillary (under the arm)

R stands for rectally (in the rectum)

5. Match the type of pulse with its location on the body:

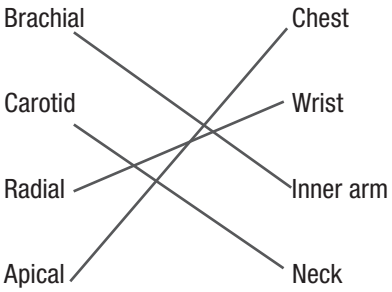


Figure 40.1B

Learning Guide Pretest Answer Key (cont.)

What's Normal?

Temperature: Fill in the Chart

Our bodies make heat to keep our internal systems working. It is usually a symptom of disease when the body's temperature is above or below its normal range. The normal range varies depending on how the temperature measurement is obtained. Fill in normal ranges on the chart.

If measured orally (older adults run at the lower end of the range)	96.5 to 99.6 degrees Fahrenheit
If measured rectally or in the ears (tympanic)	98.6 to 99.6 degrees Fahrenheit
If measured under the arm (axillary):	96.6 to 98.6 degrees Fahrenheit

Pulse: Fill in the Blanks

Measuring the pulse tells us how often the heart beats. The normal adult range is from 60 to 100 beats per minute. While it is usually measured at the wrist by placing the fingertips on the radial artery, you may also count it at the chest (apical pulse) with a stethoscope.

Respiration: Fill in the Blanks

Counting the respirations tells us how many breaths the resident takes. The normal adult range is from 14 to 25 per minute.

Blood Pressure: Fill in the Blanks

Blood pressure measurement tells us two things about the circulation of blood through the arteries.

1. *Systolic pressure* tells how much force is being put on the arteries when the heart is contracting and pushing the blood outward through the arteries. This is the top number in a written blood pressure and is normally between 100 to 140 in adults. A higher range of 140 to 160 systolic pressure is normal for older adults.
2. *Diastolic pressure* measures how much force is on the arteries when the heart is relaxing and not pushing the blood outward. This is the bottom number in a blood pressure, and a normal adult reading is between 60 to 90.

TEST Vital Signs

Name _____ **Date** _____ **Score** _____

Directions: Fill in or circle the correct answer.

1. **What is a sphygmomanometer used for?**
   a. Temperature
   b. All vital signs
   c. Blood pressure
   d. None of the above

2. **Which term refers to how much force is being put on the arteries when the heart is contracting?**
   a. Systolic
   b. Diastolic
   c. Respiration
   d. Radial

3. **Where is an apical pulse taken?**
   a. Chest
   b. Carotid
   c. Wrist
   d. Leg

4. **When measuring pulse, you should _____.**
   a. place the pateint's hand in a resting postion on a surface, palm up
   b. use your thumb
   c. count beats for 30 seconds even if the beat is irregular
   d. none of the above

TEST Vital Signs (cont.)

5. **When measuring body temperature, you should wait how long after a patient has eaten, smoked, or had a drink?**
   a. 1 minute
   b. 15 minutes
   c. A day
   d. An hour

6. **When taking blood pressure, the pateint's arm should be _____.**
   a. flexed, with the hand in a fist
   b. out straight with the palm of the hand up
   c. higher than his chest
   d. none of the above

7. **When taking blood pressure, you need to find what type of pulse?**
   a. Brachial
   b. Chest
   c. Radial
   d. Carotid

8. **Normal values for diastolic blood pressure is between _____.**
   a. 20 and 70
   b. 60 and 90
   c. 100 and 140
   d. 150 and 200

9. **Normal respirations are between how many per minute?**
   a. 70 and 75
   b. 10 and 25
   c. 14 and 25
   d. 14 and 35

10. **Weight is a vital sign.**
    a. True b. False