

PLANK 1

Direct Care Staff Trained in Accurate BP Measurement

All team members involved in direct patient care should be trained in taking blood pressures according to a standard process. An annual evaluation/certification should involve both the ability to follow the process and the accuracy of blood pressure measurements. The entire on-site team should, through training, be aware of the importance of hypertension management and target blood pressures.

Retraining and evaluation on blood pressure measurement technique should be required at least annually, including assessment of blood pressure measurement competency through:

- Knowledge of proper technique and different types of observer bias
- Process to properly maintain and calibrate equipment
- Interpretation of measurements including an understanding of the variability of blood pressure depending on time of day, exercise, and timing of medications
- Demonstration of accurate technique of patient positioning, selection of cuff size, obtaining a valid blood pressure measurement, recording it accurately, and reporting abnormal results

Tips for Obtaining Accurate Blood Pressure Measurement

1. Ask if the patient avoided caffeinated beverages and smoking for at least 30 minutes before the examination.
2. Have the patient sit calmly for five minutes with back supported and feet flat on the floor.
3. Patient's arm should be bare. Cuff may be applied over a smoothly rolled-up sleeve, provided there is no tourniquet effect.
4. Support the patient's arm on a firm surface at heart level, slightly flexed at elbow.
5. Both the healthcare team member and the patient should refrain from talking while BP is measured.
6. Use appropriate cuff size. The inflatable part should be long enough to encircle at least 80% of arm and wide enough to encircle 40% of arm at midpoint. When in doubt, select the larger size.

RECOMMENDED CUFF SIZES	
Arm Circumference	Adult Cuff Size
22 to 26 cm	Small adult (12X22 cm)
27 to 34 cm	Adult (16X30 cm)
35 to 44 cm	Large adult (16X36 cm)
45 to 52 cm	Adult thigh (16X42 cm)

7. Wrap the cuff snugly around bare upper arm. The lower edge should be centered two finger widths above the bend of the elbow, and the midline of the bladder should be over the brachial artery pulsation.
8. The aneroid dial or mercury column should be clearly visible and facing you.
9. Using light pressure, position stethoscope over brachial artery and not touching the cuff.
10. "Round numbers" are not acceptable : measure and record to the nearest 2 mm Hg.



Supporting Literature and Resources

1. Blood Pressure Measurement Toolkit: <http://dhs.wisconsin.gov/health/cardiovascular>
Comprehensive tool kit with detailed implementation tools for improving blood pressure procedure, including staff educational materials, checklists, training tools, equipment review, and evidence-based references.
2. Blood Pressure Simulators: www.anatomywarehouse.com
Online store to purchase anatomical models, patient education charts, and blood pressure simulators.

Suggested AMGA Case Study

Cleveland Clinic: The Hypertension Improvement Project

www.amga.org/Research/Research/Hypertension/Compendiums/cleveland.pdf



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TOOL: Hypertension Medical Assistant Training (Providence Medical Group)

TASK QUALIFICATION TRAINING PACKET

VOLUME 1

DATE _____

PERFORMING BLOOD PRESSURE CHECKS	
SUBJECT AREA	Vital Signs
EQUIPMENT REQUIRED	Blood Pressure cuff, stethoscope, and a watch with a second hand
TRAINING REFERENCE(S)	<i>Lippincott Manual of Nursing Practice</i> , Current Edition (Lippincott Williams & Wilkins); and Blood Pressure Cuff Operating Instructions in <i>Bates' Guide to Physician Examination and History Taking</i> , Current Edition (Lippincott Williams & Wilkins)
OBJECTIVE	The trainee will successfully demonstrate without error the performance aspects of measuring Blood Pressure.

EVALUATION INSTRUCTIONS

1. After the trainee has received instruction, allow sufficient practice on each part of the task.
2. Trainee should be evaluated on this task by the manual method of measuring the blood pressure.
3. The evaluator will **STOP** the procedure immediately and correct the trainee if performance could become detrimental to patient safety at any time.
4. Document task competency upon completion of the evaluation in the trainee's OJT (on the job training record).
All reoccurring training should be documented annually in the OJT.
5. Use the performance checklist to ensure all steps of the task are accomplished.
6. Document task competency upon completion of the evaluation on the trainee's record.



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MEDICAL ASSISTANT TRAINING LESSON PLAN

1. The importance of Blood Pressure measurement

- a. Hypertension or high blood pressure means that there is a higher than normal pressure in the arteries. This is important because the arteries carry blood to all of the organs and tissues in the body including the heart, the brain, and the kidneys. Pressure in the arteries causes pressure on the organs, which causes organ damage.
- b. High blood pressure is a major cause of heart attacks, heart failure, kidney damage, and strokes.
- c. Treatment of high blood pressure can dramatically decrease the risk of a poor outcome.
- d. Treatment of high blood pressure is especially important in diabetic patients.
- e. Depending on your practice setting, up to one out of every five patients you see is likely to be hypertensive and in need of treatment.

2. Importance of measuring an accurate blood pressure

- a. The blood pressure is used to initiate treatment and monitor the effects of drug therapy.
- b. A false low reading may lead to under treatment, which will lead to more organ damage.
- c. A false high reading may lead to over treatment and the possibility of drug-induced side effects.
- d. The most accurate blood pressures are taken by trained medical personnel using the manual method.

3. Describing the Blood Pressure

- a. Two pressures are detected
 - (1) Pressure in the arteries while heart is pumping = systolic blood pressure (SBP).
 - (2) Pressure in the arteries while heart is resting between beats = diastolic blood pressure (DBP).
- b. Systolic blood pressure is heard first, diastolic blood pressure is heard second.
- c. Blood pressure is measured in millimeters of mercury (abbreviated mmHg).
- d. The blood pressure is written systolic/diastolic (e.g. 140/86).
- e. There should also be an indication of the position (standing or sitting) and which arm was used.
- f. There is no such thing as a “normal blood pressure.”
 - (1) In general, a blood pressure of less than 130/85 is usually acceptable.
 - (2) Systolic Blood Pressure over 140 or a diastolic over 90 indicates a need for further evaluation.
 - (3) A systolic blood pressure of >180 or a diastolic blood pressure > 110 should be brought to the physician’s attention.
 - (4) At a systolic blood pressure of less than 90 there may not be enough pressure to push blood into the brain and the patients may have symptoms of dizziness or, in severe cases, the patient can pass out. In these cases patients are often placed reclining with the head down and feet up to keep blood flowing to the brain.

4. Anatomy and Physiology of Blood Pressure

- a. Blood pressure is usually taken in the brachial artery which runs down the inside of the arm, closest to the body.
- b. The pulse in the brachial artery can be felt just above the elbow crease.
- c. Inflation of the blood pressure cuff puts pressure on the brachial artery until the artery is completely compressed, and the circulation to arm is cut off (you should not be able to feel a pulse at this point).
- d. As the cuff is deflated, pressure in the artery increases. When the pressure in the artery is equal to the pressure in the cuff, the first sound can be heard. The sounds continue with each pulse until the pressure in the artery is less than the cuff pressure, at which point the sounds disappear. This is the resting or diastolic blood pressure.

5. Anatomy and Physiology of the Pulse

- a. The pulse reflects the number of times the heart beats in one minute (the heart rate or ventricular rate).
- b. The pulse is helpful to the physician in choosing which medication to use, the effects of therapy, and adverse effects.
- c. The pulse should be measured with every blood pressure.



6. Steps for taking the Blood Pressure

- a. Positioning the Patient
 - (1) The patient should be resting for at least 5 minutes before the blood pressure is taken.
 - (2) Legs should not be crossed- this may falsely elevate the blood pressure.
 - (3) The patient should not be talking during blood pressure measurement. This may falsely elevate the blood pressure.
- b. Choose the appropriate cuff size
 - (1) Cuff size is determined by the circumference of the arm.
 - (2) Cuff sizes are marked on the inside by a measuring line and a size: Pediatric, Adult Regular, Adult Large, and Thigh Cuff.
 - (3) Measure the cuff on the arm to make sure it is appropriately sized for the person.
 - (4) If the cuff is too small—the blood pressure will be falsely high.
 - (5) If the cuff is too large- the blood pressure may be falsely low.
- c. Choose the appropriate arm.
 - (1) You should not use an arm:
 - (a) That has a dialysis shunt placed
 - (b) On the same side as a mastectomy
 - (c) On the side affected by a stroke
 - (2) You should try to use the same arm each time the blood pressure is taken.
- d. Palpate the pulse in the brachial artery.
- e. Remove any obstructive clothing from between the blood pressure cuff and the arm. A shirt sleeve can decrease the ability to hear the pulse sounds, and may lead to inaccurate measurement.
- f. Place the cuff on the arm, checking the size and placement by use of the arrow or symbol on the cuff that should be over the artery.
- g. Loosen the stopcock on the bulb by turning it several times before tightening closed. This is to be sure you can loosen the stopcock easily with one hand.
- h. Place the blood pressure gauge in good view.
- i. The patient's arm should be placed at level even with his or her heart. If the patient is seated, rest the arm on the table. If the patient is standing, hold the arm up with your hand (see demonstration).
 - (1) If the arm is left below the heart, particularly if the patient is standing, the blood pressure can be elevated by as much as 20 mmHg.
- j. The cuff should be pumped to 10 to 20 mmHg above the usual blood pressure or, if no previous blood pressures are recorded, pump to 160 to 180 mmHg.
- k. Loosen the stopcock on the bulb so that the pressure decreases by 2-3 mmHg per second. Listen carefully for the first sound.
 - (1) If sounds are heard right away, deflate the cuff immediately.
 - (2) Let the arm rest for at least 2 minutes or switch arms if possible.
 - (3) Repeat at step J but increase the inflation target to 220 mmHg.
- l. Note the pressure at which the first sound is heard. This is the systolic pressure.
- m. Continue to deflate the cuff at 2–3 mmHg per second.
- n. Note the point at which the sounds disappear. This is the diastolic pressure.
 - (1) In some patients the diastolic pressure never completely disappears.
 - (2) In these patients note the point at which the sounds muffle.
- o. Record in the chart as systolic/diastolic and position of patient and which arm was used.

7. Taking the Pulse

- a. The pulse should be taken with each blood pressure.
- b. The pulse is best felt with the first two fingers placed at the wrist in a straight line down from the index finger.



- c. Feel for a few seconds to note whether the pulse is regular or irregular.
- d. Ideally, the number of beats should be measured for one full minute.
 - (1) In practice it is more common to take the pulse for 15 seconds and multiply by 4 or for 30 seconds and multiply by 2.
 - (2) However, if the pulse is not regular, the pulse should be taken for at least 30 seconds to get a more accurate measurement.
- e. The pulse is recorded in beats per minute or B/min.
- f. Note next to the pulse whether it is regular or irregular (Note: this is required under Medicare rules).

P = 72 reg.

8. Orthostatic Blood Pressures

- a. Orthostatic blood pressures are done when we are suspecting postural changes in blood pressure.
- b. As you move from sitting to standing the blood pressure should not change. The body reacts to push blood flow back to the heart and keep blood flowing to the brain.
- c. Some patients lose this natural response and the blood pools in the lower extremities and there is less perfusion to the brain. The patient may complain of dizziness or lightheadedness upon standing.
 - (1) This may happen naturally with age or certain diseases or conditions.
 - (2) This can also mean an excessive effect of blood pressure medication.
- d. Checking orthostatic blood pressure:
 - (1) May be done lying to sitting to standing, but usually done sitting to standing
 - (2) It is important to start in the “down” position- the patient (i.e., sitting position)
 - (3) Follow the normal procedures for blood pressure and pulse measurement
 - (4) Carefully document the blood pressure and pulse rate and the position
 - (5) Leave the cuff in position
 - (6) Have the patient stand up, being careful to support from the back and front in case of dizziness
 - (7) Let the patient stand for 1-2 minutes
 - (8) Repeat the blood pressure and pulse measurement standing, careful to keep the arm at heart level
 - (9) Record the standing blood pressure and pulse. Indicate which blood pressure was done first
 - (10) A drop in the blood pressure by 20 mmHg systolic or 10 mmHg diastolic with an increase in the pulse by at least 10 B/min indicates orthostatic blood pressure changes

160/90		Rt.	P = 72 B/min (reg)
↓			
130/80		Rt.	P = 116 B/min (reg)

9. Case Examples

- a. A 38 year old ex-football player is concerned because at a health screening they told him his blood pressure was high at 170/90. He is overweight but still lifts weights. Why could he have a falsely elevated blood pressure?
 - (1) He likely has increased arm size. If a small cuff was used the pressure could be falsely elevated.
 - (2) If the arm was left dangling when the blood pressure was taken it may be falsely elevated.
 - (3) His legs may have been crossed.
 - (4) He may have been talking during the blood pressure measurement.
 - (5) All of the above together.



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MEDICAL ASSISTANT TRAINING WRITTEN TEST

1. High blood pressure may lead to:

- a. Heart Attacks
- b. Stroke
- c. Kidney Damage
- d. All of the above

2. Accurate measurement of blood pressure is important because:

- a. You are likely to see several hypertensive patients throughout the day
- b. Blood pressure is used to diagnose and guide therapy
- c. Inaccurate blood pressure may lead to organ damage
- d. All of the above

3. Which of the following is true?

- a. The diastolic blood pressure is always greater than the systolic blood pressure
- b. The systolic blood pressure is the first sound heard
- c. Blood pressure is measured in mmH2O
- d. The vast majority of patients have a normal blood pressure

4. Blood pressure is measured using:

- a. The brachial artery
- b. The radial artery
- c. The main vein
- d. A pulse oximeter

5. Which of the following is true?

- a. It is ok to ask the patient questions while you are measuring the blood pressure
- b. The patient should cross their legs, right over left, before the blood pressure is taken
- c. A pulse is only necessary if the blood pressure is very low
- d. The marking on the blood pressure cuff should be placed over the brachial artery

6. In taking the blood pressure:

- a. You should not use the arm on the same side that was affected by a stroke
- b. The cuff should be deflated at a rate of 2-3 mmHg per minute
- c. The blood pressure should never be taken in a standing position
- d. A and B only

7. In taking the blood pressure:

- a. The cuff should never be placed on the bare arm
- b. The arm should always be below the level of the heart
- c. If the the sounds never disappear, the point at which the sounds muffle is used for the diastolic pressure
- d. None of the above

8. In taking the pulse:

- a. You should only note whether it is regular or irregular if the blood pressure is taken while standing
- b. You should only note the pulse if the blood pressure is abnormal
- c. If the pulse is regular you can measure the number of beats in 15 seconds and multiply by 10 to get the pulse rate in B/min
- d. The pulse indicates how many times the heart beats in one minute

9. If sounds are heard immediately when deflating the blood pressure cuff:

- a. The cuff pressure was too high
- b. You need to deflate the cuff and start over at a higher pressure target
- c. The diastolic blood pressure is too high
- d. All of the above

10. In checking a patient for orthostatic pressure:

- a. You should check sitting then standing
- b. The highest blood pressure should be recorded
- c. You should check standing then sitting
- d. A and B only

**BLOOD PRESSURE
WRITTEN TEST
ANSWER KEY**

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



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MEDICAL ASSISTANT TRAINING PERFORMANCE CHECKLIST

PERFORMANCE ITEMS	SAT	UNSAT
01 Greet patient and/or family member		
02 Explain procedure/treatment/task to patient and/or family member		
03 Select appropriate size cuff		
04 Inspect cuff for serviceability		
05 Palpate artery before applying cuff		
06 Attach cuff to appropriate body location with arrow pointing towards artery		
07 Choose appropriate stethoscope bell size according to patient's body size		
08 Place stethoscope ear piece in ears and bell directly over artery		
09 Ensure BP cuff valve stem is in closed position		
10 Inflate cuff until beats cannot be heard		
11 Open valve stem slowly to release pressure from cuff		
12 Listen for systolic beat		
13 Listen until diastolic beat is heard		
14 Open wide BP cuff valve stem to release air pressure from cuff		
15 Repeat steps 8-14, if unable to ascertain systolic/diastolic beats		
16 Ensure cuff has been completely deflated and there has been at least a 10 second delay before redoing above steps		
17 Remove BP cuff from patient		
18 Document appropriate forms or medical records		
19 Repeat BP in opposite arm, if reading is abnormal		
20 Inform nurse/patient care provider, if BP is abnormal		
FINAL RESULTS		

Trainer _____

Trainee _____

(Note: The information in the box below must be included at the end of all QTPs.

FEEDBACK: Using this checklist as a source of information, discuss the trainee's performance indicating strengths, weaknesses, suggested improvements, etc. If the trainee performed all steps of the task satisfactorily, document the results in the trainee's OJT record.

