Role of Nursing Officer in clinical assessment of clients

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Outline

- Taking Blood pressure measurements accurately
- Performing blood investigations
  - Total cholesterol
  - Blood glucose
- Interpretation of findings

The five steps of accurate blood pressure measurement

1. Positioning
2. Proper cuff size selection
3. Cuff placement and position
4. Arm supported on a flat surface
5. Patient sitting quietly

Steps to be taken prior to the measurement of BP

- The patient should avoid caffeine, exercise, smoking for at least 30 min before BP measurement
- Ensure the patient has emptied the bladder
- Patient should be seated comfortably on a chair, feet touching the floor in a quiet environment for 5 min before beginning BP measurements
- Remove all the clothing covering the location of cuff placement
- Neither patient nor observer should talk during the period of rest and measurement
- Use a standard bladder cuff (12-13cm wide and 35cm long)
- The cuff should be positioned at the level by the heart, with the back and arm supported to avoid muscle contraction and keep legs uncrossed

Measuring blood pressure

- Make sure to use a properly maintained, calibrated and validated device.
- Check whether the sphygmomanometer works properly.
- If it's digital check the battery.
- Ensure that cellular phones, PCs or other electrical devices are not placed near the sphygmomanometer as measurements might be affected by strong magnetic fields

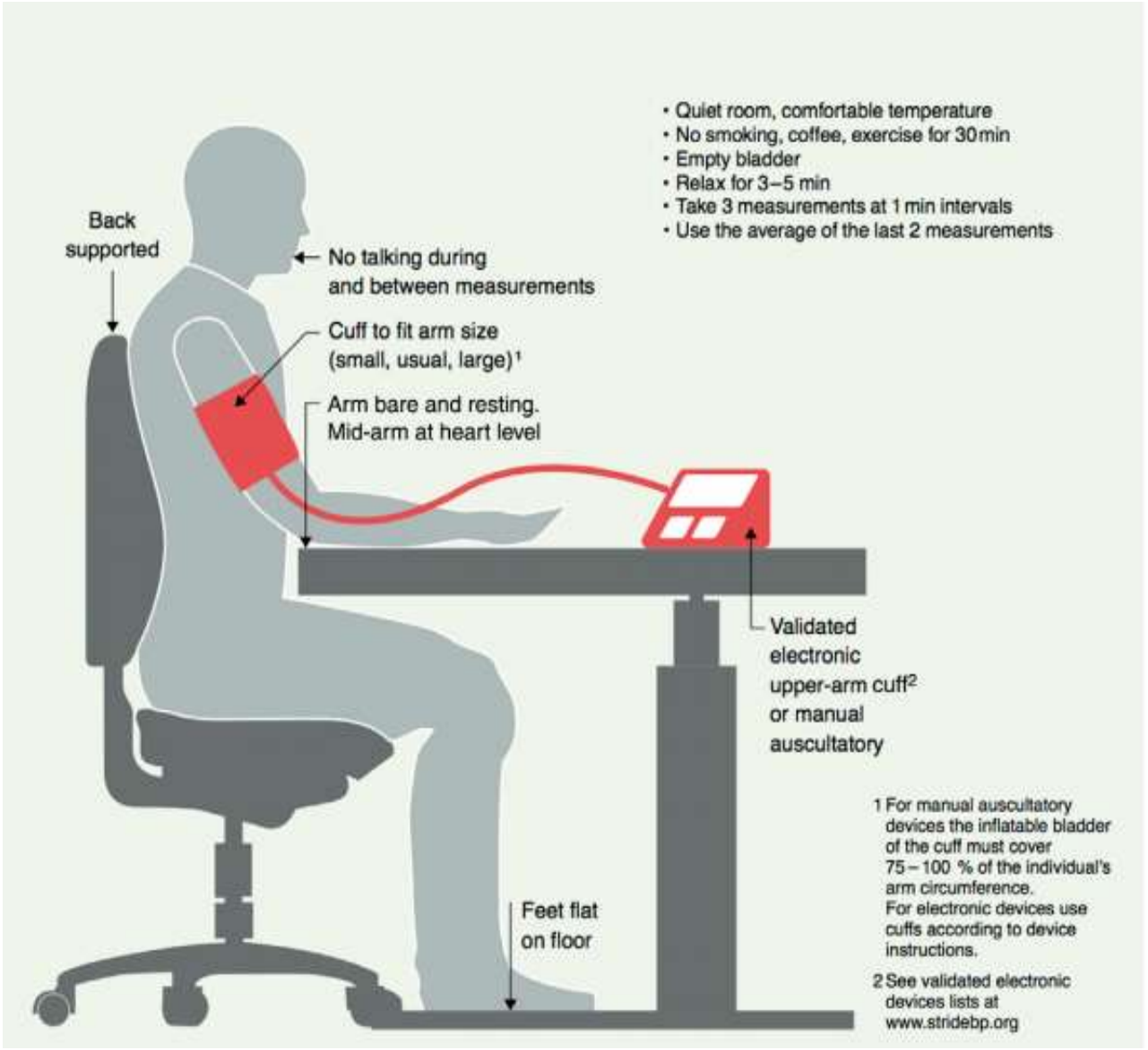
Blood pressure measurement procedure

- Ask the participant to sit on a chair with the back supported and place their feet flat on the floor (legs should not be crossed)
- Remove any tight-fitting clothing from the upper arm.
- Place the arm of the participant on the table so that the arm cuff and the heart are at the same level.
- Put the cuff on the upper arm without wrinkles. Make sure that there is a space of about two fingers between the cuff and arm.

Measuring blood pressure

- Take 2-3 measurements in one minute intervals
- If there is a big difference in two measurements take a third measurement also
- Take the average of the last two measurements
- Check BP in both arms

Measuring Blood pressure



Interpretation of readings

If systolic blood pressure is greater than or equal to 140 mmHg, or diastolic blood pressure is greater than or equal to 90 mmHg

- Explain to the participant that their blood pressure is high
- Blood pressure can be rechecked after 1-2 minutes afterwards.
- Ideally to estimate the individual's level of blood pressure an average of ≥ 2 readings obtained on ≥ 2 occasions to be taken

Types of Blood Pressure Devices

Types of Blood Pressure Devices

BP device	Advantages	Disadvantages
Oscillometric devices- automated devices	Ease of use No need for a stethoscope Some cuffs cover a large range of arm sizes	Obtains an estimated blood pressure Usually needs a power source Risk of using unvalidated devices
Aneroid devices -manual	Portable and lightweight Simple to use	Loses accuracy quickly and requires calibration Requires a stethoscope Prone to inaccuracy from improper technique
Mercury-containing devices- Manual	Accurate if measured appropriately by trained personnel	Environmental hazard (mercury device) Requires a stethoscope Prone to inaccuracy from improper technique

Rating of Blood Pressure Devices

This cheat sheet provides a rating of oscillometric, aneroid, and mercury devices based on four categories: accuracy, ease of operation, ease of maintenance, and consistency across manufacturers. Devices are rated on a scale of one star (low) to three stars (high).

	 Oscillometric Devices	 Aneroid Devices	 Mercury Devices
ACCURACY	☆☆☆ (If validated)	☆☆	☆☆ (☆☆☆ If measured appropriately by trained personnel)
EASE OF OPERATION	☆☆☆	☆	☆
EASE OF MAINTENANCE	☆☆☆	☆	☆☆
CONSISTENCY ACROSS MANUFACTURERS	☆☆	☆	☆☆☆

The Use of non-digital Blood Pressure Monitors

- Feel for the artery and inflate the cuff at least 30 mmHg above the estimated systolic blood pressure until the pulse disappears.

- Gently place the stethoscope on the cubital fossa below the cuff.

- Deflate the cuff at a speed of 2-3mm/sec. The first and last audible sounds should be recorded as systolic and diastolic pressure, respectively. Measurements should be given to the nearest 2 mm Hg.

The Use of Digital Blood Pressure Monitors

- Confirm that the cuff is set in an appropriate position.
- Press the “start” button.
- Wait until the value of blood pressure appears on the screen.

Reasons for errors in the measurement of blood pressure

- Defective equipment.
- Using an inappropriate-sized cuff.
- When the cuff and heart are not at the same level

Digital BP Monitor

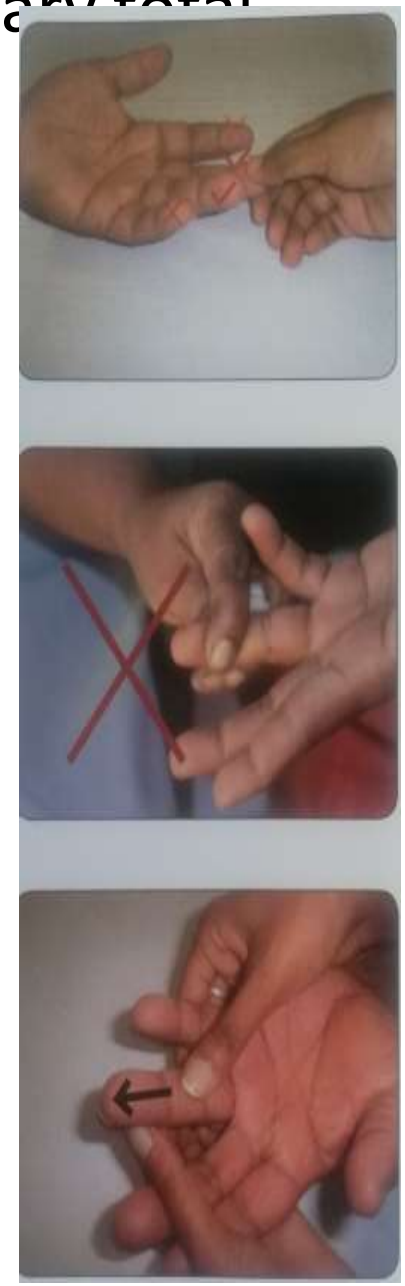
- The measurement of each digital sphygmomanometer may vary. When the difference is more than 10 mmHg the device should be repaired.
- It is advisable to check the digital BP monitor against a aneroid sphygmomanometer or another device occasionally.
- It is important to calibrate a device according to the manufacturer's instructions.
- It is generally recommended to have each device inspected every two years to maintain proper function and accuracy. Contact MO/NCD or RDHS when requesting service from the authorized dealer.

Investigations

- Blood sugar levels (Fasting/random)- Capillary/venous
- Serum total cholesterol level
- Serum Creatinine (When facilities available)

Procedure (capillary blood sugar, capillary total cholesterol)

- Confirm the patient identity
- Insert the strip and keep the meter ready
- Wash hand, wear gloves
- Choose 3rd-4th finger (avoid index and thumb)
- Puncture the fingertip in the fleshy part of the finger, slightly to the side using a sterile lancet (But not the tip).
- Wipe away the first drop of blood with a sterile gauze.
- Allow another large drop of blood to form.
- Collect drops of blood into the collection device by gently massaging the finger. Avoid excessive pressure that may squeeze tissue fluid into the drop of blood.



Interpretation of results

Test	Diagnostic cut-off		Instructions for the clients
	mmol/l	mg/dl	
1. Fasting blood glucose (FBG)a,b	=>7	=>126	**venous glucose** level after 8 -10 hours overnight fasting. Has to refrain from caloric food or drink. Can take water. (If lipid profiles performed along with FBS, fasting should be 12hrs)
2. Random plasma glucose (RPG)b	=>11.1	=>200	Random **venous glucose** levels
3. PPBS	=>11.1	=>200	venous glucose level 2 hours after a meal. Timing should count from the start of the meal. Usual anti-diabetic drugs should be taken on regular intervals.

a. In symptomatic patients single abnormal test is diagnostic
b. In primary health care institutions FBS or in symptomatic patients RBSis encouraged. In asymptomatic patients a repeat test should be performed.

Blood Pressure Categories

CATEGORY	SYSTOLIC		DIASTOLIC
NORMAL	LESS THAN 120	AND	LESS THAN 80
AT RISK	120-139	OR	80-89
HIGH BLOOD PRESSURE	140 OR HIGHER	OR	90 OR HIGHER

Grading of Hypertension

Category	Systolic (mmHg)		Diastolic (mmHg)
Normal BP	<130	and	<85
High-normal BP	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	≥160	and/or	≥100
Isolated systolic hypertension	≥ 140	and	<90

Health Promotion/life modification

- Targeting most significant risk factor in the area
- Innovative programs
- Community mobilization

Eg:

Tobacco free zones

Regular Yoga/Physical exercise classes