



Title: Blood Pressure Monitoring Using a Digital or Mercury Sphygmomanometer

SOP Number: 6 Version 1.0

Effective Date: Jan 15, 2026

Review Due Date: January 14, 2028

Prepared by: Dr. Devanshi Somaiya, Clinical Director, Cervical Cancer Prevention Program

Approved by: Dr. Raghavi Karanam, Head of Clinical and Biomedical Services

Department/Function: Community Health/Clinical Medicine

1. PURPOSE:

- 1.1. To provide standardized guidelines for accurate and consistent measurement of blood pressure using either a digital or mercury sphygmomanometer to aid in hypertension screening, diagnosis, and follow-up.

2. SCOPE:

- 2.1. This SOP applies to all healthcare personnel involved in measuring blood pressure in clinical or community health settings, including physicians, nurses, health assistants, and adequately trained interns/fellows.

3. DEFINITIONS AND ACRONYMS

- 3.1. **Sphygmomanometer:** An instrument used to measure blood pressure.
- 3.2. **BP:** Blood Pressure
- 3.3. **SBP:** Systolic Blood Pressure
- 3.4. **DBP:** Diastolic Blood Pressure
- 3.5. **mmHg:** Millimeters of mercury, unit of pressure
- 3.6. **Hypertension:** High blood pressure condition
- 3.7. **Korotkoff Sounds:** Sounds heard during BP measurement with a stethoscope and a mercury sphygmomanometer.

4. MATERIALS:

- 1.1. Stethoscope (for manual measurement), Chair with back support, Table or surface for patient arm support
- 1.2. Calibrated sphygmomanometer (manual or digital)
- 1.3. Appropriate-sized BP cuff (child, adult, large adult)
- 1.4. Alcohol swabs/spray for equipment cleaning
- 1.5. Recording sheet or EMR (Electronic Medical Record)

2. ROLES AND RESPONSIBILITIES: Physicians, Nurses, , Health Assistants And Adequately Trained Interns/Fellows.

- 2.1. Explain the procedure to the patient
 - 1.1. Select appropriate equipment and cuff size (See below Procedure section, subsection 1)
 - 1.2. Position the patient correctly
 - 1.3. Measure and record BP following correct protocol
Clean equipment after each use

2. PROCEDURE

2.1. Contraindications:

- 2.1.1. Limb injury, infection, or lymphedema on the arm to be used for BP measurement
- 2.1.2. Arterio-Venous fistula or surgical scars on the selected arm
- 2.1.3. Avoid using digital monitors in patients with arrhythmias (use manual method instead)

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**2.2. Pre-Procedure Preparation: Nurse/Assistant**

- 2.2.1. Calibrate and test the digital or mercury sphygmomanometer for accuracy
- 2.2.2. Disinfect cuff and stethoscope using alcohol swabs or spray after each use
- 2.2.3. Select correct cuff size; bladder should cover 80% of arm circumference.
- 2.2.4. Ensure it is intact to avoid “miscuffing,” where an inaccurate BP reading is displayed.

2.3. Patient Preparation: Nurse/Assistant

- 2.3.1. Explain the procedure to the patient
- 2.3.2. Ensure the patient has rested for at least 5 minutes
- 2.3.3. Confirm no smoking, caffeine, or heavy activity in the past 30 minutes
- 2.3.4. Seat the patient with back supported, feet flat on the ground (legs not crossed), arm supported at heart level and relaxed
- 2.3.5. Ensure the patient does not talk or move during the rest and measurement periods
- 2.3.6. BP Cuff should be placed on bare skin or only covered with thin clothing. Thick clothing or sweaters covering the BP measurement site are not recommended.

2.4. Procedure Steps**2.4.1. For Mercury Sphygmomanometer**

- Place the cuff on the upper arm if possible, on bare skin or thin clothing, 2–3 cm above the elbow crease, with tubing over the brachial artery.
- Palpate the brachial artery and position the stethoscope diaphragm over it.
- Inflate cuff to 20-30 mmHg above expected SBP, disappearance of the radial pulse
- Slowly deflate cuff (2-3 mmHg/sec)
- Note SBP at the first Korotkoff sound
- Note DBP when the Korotkoff sounds disappear
- Remove cuff and clean stethoscope

1.1.1. For Digital Sphygmomanometer

- Place the displayed marker aligned over the brachial artery
- Apply the cuff to the upper arm, 2-3 cm above the elbow crease, snugly but not tightly
- Press start and allow device to auto-inflate and deflate
- The record displayed SBP and DBP
- Remove the cuff and clean device

1.2. Post-Procedure Care**1.2.1. Provider Instructions**

- Inform the patient of their blood pressure (BP) reading.
- Provide guidance on next steps depending on the BP category.
- **Blood Pressure Categories and Recommended Actions:**
 - **Low BP (Hypotension): SBP < 90 mmHg or DBP < 60 mmHg**
 - Encourage increased hydration.
 - Monitor for symptoms such as dizziness, fainting, or weakness.
 - If symptomatic or persistent, refer for further evaluation.
 - **Normal BP: SBP 90–119 mmHg and DBP 60–79 mmHg**
 - Reassure the patient.
 - Continue periodic monitoring and encourage a healthy lifestyle.
 - **Elevated BP: SBP 120–129 mmHg and/or DBP 80-89 mmHg**

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- Recommend lifestyle modifications (diet, exercise, stress reduction, sodium restriction).
- Encourage follow-up at health center within 1–2 weeks to reassess.
- **Hypertension Stage 1: SBP 130–139 mmHg and/or DBP 80–89 mmHg**
 - Advise lifestyle modification.
 - Recommend follow-up with health center within 1–2 weeks.
 - Consider medical management if cardiovascular risk factors are present.
- **Hypertension Stage 2: SBP $\geq$ 140 mmHg or DBP $\geq$ 90 mmHg**
 - Recommend prompt follow-up with primary health center.
 - Initiate or adjust antihypertensive treatment if indicated.
 - Reinforce lifestyle modifications.
- **Hypertensive Crisis (Emergent BP): SBP > 180 mmHg or DBP > 120 mmHg**
 - Requires urgent evaluation and intervention.
 - Arrange immediate follow-up or emergency referral.
 - If associated with symptoms (e.g., chest pain, shortness of breath, neurological changes), treat as a medical emergency.

1.2.2. Repeat Measurement

- If a reading is outside the normal range, wait 1–2 minutes and repeat the measurement in the same arm.
- If there is a significant discrepancy between readings, obtain a third measurement and use the average of the last two.
- For initial visits, measure BP in both arms and record the higher reading.

1.2.3. Additional Guidance

- Educate patients on lifestyle factors that influence BP (e.g., diet, physical activity, stress management, smoking cessation).
- Encourage regular monitoring, especially for high-risk patients or those with abnormal readings.
- Ensure the patient has PHRII contact information and, if available, offer health education and informational materials.

2. SAFETY AND PRECAUTIONS

- 2.1. Wash hands/use hand sanitizer with each new patient
- 2.2. If the patient has any breaks in the skin, has wounds or visible soilage in the area of BP measurement, please use gloves.
- 2.3. If the provider has any breaks in the skin or wounds on their hands, the provider should wear gloves.
- 2.4. Clean cuff and stethoscope diaphragm with alcohol swab/spray between patients.

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**3. QUALITY CONTROL AND ASSURANCE**

- 3.1. Equipment calibration every 6 months
- 3.2. Proper storage of sphygmomanometer and stethoscope with attention to tubing
- 3.3. Conduct periodic skill refresher training annually on proper BP measurement.
- 3.4. Random audits of technique and documentation
- 3.5. Replace cuffs and batteries as needed

4. DOCUMENTATION AND RECORDKEEPING

- 4.1. Document date, time, equipment used (digital/mercury), and BP reading (SBP and DBP) in mmHg. Use WHO categories for classification. Note any abnormal findings and escalate as needed.

Normal: <120/80 mmHg

Elevated: 120–129/<80 mmHg

Stage 1 Hypertension: 130–139/80–89 mmHg

Stage 2 Hypertension: ≥140/90 mmHg

5. COMPETENCY AND PROFICIENCY: All staff measuring BP must understand

- 5.1. Basics of BP physiology
- 5.2. Proper use of digital and mercury devices per this SOP
- 5.3. How to conduct the cuff deflation, listen to Korotkoff sounds, and read the sphygmomanometer simultaneously.
- 5.4. Accurate reading and documentation
- 5.5. Identification of hypertensive urgencies
- 5.6. Avoid common errors such as wrong cuff size, cuff over thick clothing, unsupported arm, too rapid deflation, talking during measurement, and incorrect positioning.
- 5.7. Trained staff must approve new staff before they measure BP, and all new staff must sign this SOP to confirm understanding.

6. REVIEW AND REVISION:

- 6.1. This SOP will be reviewed every 2 years or as new evidence and guidelines become available.

7. REFERENCES

- 7.1. Muntner, P., Shimbo, D., Carey, R. M., Charleston, J. B., Gaillard, T., Misra, S., Myers, M. G., Ogedegbe, G., Schwartz, J. E., Townsend, R. R., Urbina, E. M., Viera, A. J., White, W. B., & Wright, J. T. (2019). Measurement of Blood Pressure in Humans: A Scientific Statement From the American Heart Association. *Hypertension*, 73(5). <https://doi.org/10.1161/hyp.0000000000000087>
- 7.2. Armstrong, C. (2014). JNC 8 guidelines for the management of hypertension in adults. *American Family Physician*, 90(7), 503–504. <https://www.aafp.org/pubs/afp/issues/2014/1001/p503.html>
- 7.3. World Health Organization. (2023). *Hypertension*. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/hypertension>
- 7.4. *Low blood pressure (hypotension) - Symptoms and causes*. (2024). Mayo Clinic. <https://www.mayoclinic.org/diseases-conditions/low-blood-pressure/symptoms-causes/syc-20355465>

8. APPENDICES

None

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Signature _____

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Title: Director, Cervical Cancer Prevention Center

Approved By: Dr. Raghavi Karanam,
Title: Head of Clinic and Biomedical Services

Signature _____

Effective Date: _____

Review Date: _____

Acknowledgment of Review and Agreement to Comply

The following personnel have reviewed this SOP. By signing below, the undersigned confirm that they have read, understood, and agree to follow the above SOP to the best of their ability.

They affirm that:

- All questions have been clarified and answered to their satisfaction.
- They accept responsibility to comply with the SOP as written.
- They will bring any new queries or uncertainties to their supervisor, and if needed, escalate up the chain of command until the question is resolved to their satisfaction.

No.	Name	Title/Position	Signature	Date
1.	Mrs. Poornima Jayakrishna	Chief Administrator Officer		
2.	Dr. Purnima Madhivanan	Founder, Chief Research Director		
3.	Dr. Kiranmayee Murlidhar	Director, Community Outreach, Interns/Fellowships		
4.	Dr. Raghavi Karanam	Clinic Chief Physician		
5.	Ms. Kavitha Chandrappa	Director, Laboratory		
6.	Ms. Anisa Khan	Associate Directory, Laboratory		
7.	Dr. Devanshi Somaiya	Directory, Cervical Cancer Prevention Program		
8.	Mrs. Rashmi	Staff Supervisor		
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