

Blood pressure measurement

Theory

BP is measured with a sphygmomanometer, usually at the brachial artery.

Machines, operated by nurses or health-care assistants usually measure BP, but these are not fool-proof and a good working knowledge of the “old-fashioned,” manual method of BP measuring is still essential.

A cuff is applied to the upper arm and inflated to cut off the arterial supply. The pressure is released slowly and a stethoscope used to listen for the blood flow.

When the pressure in the cuff equals the systolic blood pressure, blood will audibly pulse through the artery. When the cuff pressure falls below the diastolic blood pressure, the blood will flow continuously and the sound of intermittent blood flow will disappear.

Equipment

- A (functioning) sphygmomanometer with:
- An appropriately sized cuff (see Table 18.1)
- Stethoscope

Procedure

- Introduce yourself, explain the procedure, and obtain verbal consent.
- ▶ Check that the sphygmomanometer is working and is within the calibration box or that the dial reads “0.”
- The patient should be sitting, relaxed for 5 minutes beforehand.
- Apply the cuff to the upper arm with the air bladder anteriorly (indicator over the brachial artery).
- Using your left arm, support the patient’s arm so that it is held horizontally at the level of mid-sternum (avoid hyperextension of elbow).
- Close the valve (may be a screw or lever), monitor the patient’s radial artery, and inflate the cuff until the radial pulse is no longer palpable.
- Listen over the brachial artery at the antecubital fossa, using the diaphragm or the bell of the stethoscope, while deflating the cuff at a rate of 2–3 mmHg/second.
- Note the point at which the pulsation is audible (Korotkoff* phase I—the systolic BP)

Table 18.1 National Guideline Clearinghouse guidelines for choice of BP cuff*

Arm circumference (cm)	Cuff size	Bladder dimensions (cm)
22–26	Small adult/child	12 × 22
27–34	Adult	16 × 30
35–44	Large adult	16 × 36
45–52	Adult thigh cuff	16 × 42

*Available at: www.guideline.gov

- And the point at which the sounds disappear (Korotkoff phase V—the diastolic BP).
- Record the BP as “systolic/diastolic” to the nearest 2 mmHg.

▶ **Hints**

- In some people with normal blood pressure, the sounds may not disappear completely. In this case, a distinct muffling of the noise (Korotkoff phase IV) should be used to indicate the diastolic BP.
- BP recording may be particularly difficult in a noisy environment or at the time of an emergency (which is when providers are most often asked to record the BP) or when the BP is very low. In this case, a rough estimation of the systolic BP may be made by feeling for the return of the radial pulse as the cuff is deflated.

