Steps to Blood Pressure Measurement:

Rest: Have the patient rest for 5 minutes before attempting a reading.

Positioning: Subject should be sitting, with back supported, and legs straight. (Uncrossed ankles)
Talking: the patient should remain quiet during the blood pressure measurement cycle. Staff should not be asking questions to the patient.

Arm Position: Mid point of arm should be at heart level. (arm below/ dangling below heart level can produce a false high reading) (arm above heart level may produce a false low reading) This can affect blood pressure readings as much as 10mmHg. For every inch the arm is above heart level, you should add 1.8mmHg to the systolic reading, for each inch below heart level you should decrease the systolic reading by 1.8mmHg.

Cuff: The cuff should be placed on a bare arm only. Never place a blood pressure cuff over clothing which may cause inaccurate/ false or high readings.

Fit: Appropriate cuff size for accurate readings: measure the inside of the arm from the axilla to the antecubital area at the midpoint of the arm measure the arm circumference. The cuff should be about 40% of the patient's arm at the midpoint. (too small or a too short of a cuff can produce a false high reading (cuff hypertension), too big or too long of a cuff may produce a false low reading. The cuff should fit nice and snug, yet allowing 1-2 fingers under the inside of the cuff when it is not inflated.

Welch Allyn Cuffs: Use the artery index marker and range marker labeled on the cuff to insure an accurate cuff fit. If the patients arm is too large or too small and does not fall within the range marker, the clinician should use a cuff that will fit the patient within the range marker as indicated on the cuff. Remember too small of a cuff can cause an inaccurate high reading and too large of a cuff can cause an inaccurate low reading.

Blood pressure notes: In healthy adults systolic blood pressure can drop 10-20 mmHg from initial to follow-up readings especially if the patient were initially brought into **triage** and then rested 15 minutes and the reading was repeated.

Manual Reading Comparison:
When you are comparing electronic blood pressure measurement to manual, use the following AAMI and AHA guidelines:

- **Check the aneroid gauge to verify that it is within calibration**. In the totally deflated position, look at the face plate; it should have a small square box at the six o'clock position on the dial. The measurement pin/hand should lie within that box. If it is not resting within the calibration box, it should be checked to confirm calibration of the unit. If it is within calibration continue with the following steps.
- **Inflate the blood pressure cuff rapidly to 70mmHg while the radial pulse is being palpated (16), then slowly increasing by increments of 10mmHg while**

palpating the radial pulse. Note the level of pressure at which the pulse disappears and subsequently reappears during deflation. This is called the palpatory method,(16) this gives an approximate determination of the blood pressure.(16)

- Now prepare to take an aneroid blood pressure reading, inflate the cuff 20-30mmHg over the previous palpated method. (16) Example: If the palpated pulse reading was 140mmHg, inflate the cuff to 160-170mmHg. This helps to avoid under inflation of the cuff in patients with an ausultatory gap.(16)
- Now deflate the cuff, do not bleed the manual cuff too fast. It should be bled at a rate of 2-3 mmHg per pulse beat (17).

Comparing Devices (Randomizing Readings)

Patient #1

1. Perform a device reading (turn the device away from your view, so you cannot see the reading when it is completed)
2. Wait 1-2 minutes
3. Now perform a manual reading
4. Compare the readings.

It is recommended: Blood pressure should be taken 3 times 1 minute apart and average the two better readings to determine the patients current blood pressure status.

Patient #2

1. Perform a manual reading
2. Wait 1-2 minutes
3. Perform a device reading
4. Compare the readings

It is recommended: Blood pressure should be taken 3 times 1 minute apart and average the two better readings to determine the patients.

References

AHA, (2001) *Human Blood Pressure Determination by Sphygmomanometry*
P. 16,17

AAMI, (2003) *Association for the Advancement of Medical Instrumentation ANSI/AAMI SP:10 2002*
p.41