



MEASURING ACCURATELY to improve hypertension control



STRATEGY: Measuring Accurately means getting an actionable, representative blood pressure to diagnose hypertension and assess control.

Actionable and representative blood pressure (BP) measurements are essential to make a diagnosis of hypertension (HTN) and assess BP control. A few points to keep in mind about blood pressure measurement:

- BP is constantly changing in people. A single measurement only provides a snapshot of a person’s BP and does not always represent their true BP over time¹.
- There are 27 factors that can make a difference in the result of an office BP measurement².

In AMA MAP™ Hypertension, **Measure Accurately** focuses on getting the best possible BP measurements by implementing three action steps.

ACTION STEP:

Use automated devices that are validated for clinical accuracy and calibrated regularly

Why do validation and calibration matter?

Device validation and calibration help make sure that blood pressure measurement devices are as accurate as possible.

Validation means a model of a device is clinically accurate for use on people. Validation is done by testing a device model against a mercury sphygmomanometer on a number of people using an established protocol.

Calibration means that an individual measurement device is working properly. Calibration is done on a schedule that is recommended by guidelines.

An engineering, bio-med department, or third-party vendor can help make sure all the BP devices in use are calibrated regularly.

Why are automated devices preferred?

The use of automated devices has increased over the past few decades. Many recent BP measurement guidelines and articles discuss the benefits of automated devices, which include less frequent need for calibration¹.

Another benefit of automated devices is that the person taking the BP measurement can focus on preparing and positioning the patient.



MAP HTN HIGHLIGHT

In the US, a Validated Blood Pressure Device Listing (<https://www.validatebp.org/>) is available to help find devices that are clinically validated. Both in-office and home BP measurement devices are included.

How often should devices be calibrated ¹ ?	
Device Type	Calibration Frequency
Portable manual devices	Every 2-4 weeks
Mounted manual devices	Every 6 months
Automated devices	Every 1-2 years

Automated Office Blood Pressure (AOBP) refers to the use of fully automated devices that can be programmed to take multiple BP measurements and average the results. AOBP measurements equate well with daytime mean BP during ambulatory BP monitoring.

An advantage of AOBP is that a patient's measurements can be taken unattended, without anyone else in the room³.

When using AOBP to get the average of 3 unattended measurements, a result of 135/85 is considered equivalent to 140/90¹.

ACTION STEP: Use proper preparation, positioning, and technique

How can patients be properly prepared and positioned?

Before appointments:

- Have patients take their BP medications as scheduled on the day of the measurement¹
- Counsel patients to avoid caffeine, exercise and tobacco for at least 30 minutes before measurement¹
- Have patients rest for 3-5 minutes before taking the first measurement¹

When patients are ready for BP measurement, use the steps shown below^{4,5}:



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Did you know that using the incorrect cuff size is the most common error when it comes to measuring BP?

Always place the cuff on a bare upper arm and use the cuff markers to select the correct size. If sizing markers aren't visible, measure a patient's arm circumference at the mid-upper arm¹.

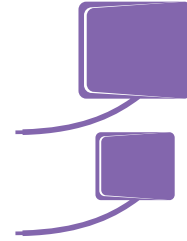
ROOM SET-UP TIPS TO SUPPORT PROPER POSITIONING⁶



Have chairs with arm rests available



Have a step stool to support patients' feet if needed



Make sure all cuff sizes are available everywhere BP is measured

ACTION STEP: Use a standard measurement protocol; take repeat measurements

Why use a measurement protocol?

A protocol helps make sure all patients have their blood pressure measured in a consistent way, no matter who takes their blood pressure.

Why take repeat measurements?

When the initial office BP measurement is high, repeat measurements are needed to confirm the patient has high blood pressure. Many times, the repeat measurements may be different than the initial result. Physicians and other providers need multiple measurements to make clinical decisions⁷.

What is a practical approach to taking repeat measurements?

A practical approach to repeat measurements in a busy clinical setting is to take additional measurements only when the initial BP is high⁹. Research has shown that when an initial BP result is < 140/90 (and the BP was taken using accurate devices and proper preparation, positioning and technique), there is a very low chance (< 5%) that additional measurements would be higher¹⁰.

What should be included in a measurement protocol?

A detailed and customized protocol depends on which BP measurement devices and methods are available for use.

A protocol should include:

- Who should take the initial and repeat BP measurements
- When to take repeat measurements
- What device and process to use for initial and repeat BP measurements
- Where to document initial and repeat BP measurements in the electronic health record
- When and how to notify physicians and other providers of high BP measurements
 - Visual cues, like door flags and magnets, can be used



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Performing BP measurement is a skill that requires regular training and competency checks. Training/re-training should occur every 6-12 months for all health care team members¹.



MAP HTN HIGHLIGHT

Did you know that patients experience less of an alerting response when care team members measure their blood pressure compared to physicians and other providers?

This is a reason why it's suggested to have care team members take all BP measurements in clinical settings⁸.

References

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For questions or concerns, please contact an AMA MAP HTN team member.



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