The Blue Cross and Blue Shield Federal Employee Program® (FEP) and the American Medical Association (AMA) have come together in a collaborative effort to provide physicians with resources designed to improve health outcomes for patients with hypertension and suspected hypertension. This effort supports the goals of the Million Hearts® initiative.

The attached information covering self-measured blood pressure monitoring, a component of the Improving Health Outcomes: Blood Pressure Program developed by the AMA, is designed to help you and your office staff engage your patients in the self-measurement of their own blood pressure. The Community Preventive Services Task Force found “there is strong evidence of effectiveness for these interventions when combined with additional support (i.e., patient counseling, education, or web-based support). The economic evidence indicates that self-measured blood pressure monitoring interventions are cost-effective when they are used with additional support or within team-based care.”
(http://www.thecommunityguide.org/cvd/RRSMBP.html)

In support of this effort, FEP initiated a program to provide free blood pressure monitors* to FEP enrollees over age 18 who have a diagnosis of hypertension or have high blood pressure without a diagnosis of hypertension. If your patient completes the Blue Health Assessment (BHA) and reports they have high blood pressure and you and your patient discuss home monitoring, your patient is eligible to receive a free blood pressure monitor. The BHA is a health-risk assessment and the first step in the FEP Wellness Incentive Program. In addition to the free blood pressure monitor, members can earn financial incentives for completing the BHA and for achieving goals related to a healthy lifestyle (www.fepblue.org/bha).

Please do not hesitate to contact our dedicated service unit for more details regarding this program at 1-800-234-6008.
As a component of the American Medical Association’s Improving Health Outcomes: Blood Pressure program, the following guidance is for use by physician office practices and health centers. The goal is threefold: (1) to help increase clinician understanding of the importance and opportunities associated with self-measured blood pressure monitoring (SMBP); (2) to increase patient participation in the management of their own blood pressure (BP), including reporting their BP measurements back to their physician; and (3) to reinforce the need to achieve accurate BP measurements in all settings—both at the point of care as well as off site as part of a coordinated SMBP effort.

Supplementary resources entitled “How to check a home blood pressure monitor for accuracy” and “Clinical competency: Self-monitoring blood pressure at home” are available on your local Blue Cross Blue Shield plan’s provider website.

**The availability of insurance benefits for home blood pressure monitoring devices**

While many public and private health insurance plans do not cover the cost of self-monitoring devices, a few programs exist to provide patients with self-monitoring devices at little to no cost, including the Hypertension Management Program for enrollees in the Blue Cross and Blue Shield Federal Employee Program®. There may also be community programs available to particular populations of patients. Some insurance companies offer care management programs, such as case management and disease management, to assist members in managing their condition. The clinicians in these programs may also be resources for assistance in locating community-based programs providing blood pressure monitors at little to no cost to the patient.

**Measuring blood pressure accurately—every time and in all settings**

The importance of accurate blood pressure measurement cannot be overstated with regard to diagnosing or treating hypertension.

Accurate measurement technique requires training and skill building, but a few common problems related to patient preparation and positioning often account for unreliable readings. Accurate blood pressure measurement in any setting:

<table>
<thead>
<tr>
<th>When the patient has ...</th>
<th>Blood pressure can change by an estimated* ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crossed legs</td>
<td>2–8 mm Hg¹</td>
</tr>
<tr>
<td>Cuff over clothing</td>
<td>5–50 mm Hg²</td>
</tr>
<tr>
<td>Cuff too small</td>
<td>2–10 mm Hg²</td>
</tr>
<tr>
<td>Full bladder</td>
<td>10 mm Hg²</td>
</tr>
<tr>
<td>Talking or active listening</td>
<td>10 mm Hg¹</td>
</tr>
<tr>
<td>Unsupported arm</td>
<td>10 mm Hg¹⁴</td>
</tr>
<tr>
<td>Unsupported back/feet</td>
<td>6.5 mm Hg¹</td>
</tr>
</tbody>
</table>

* These values are not cumulative.

**Disclaimer**

This guidance to the patient should be individualized by the clinician and reinforced by clinical staff at the initiation of any self-measured blood pressure monitoring program. Always make sure patients know what to do should they have a blood pressure measurement that is outside the pre-determined acceptable range or if they experience any symptoms with a high or low blood pressure measurement, including seeking emergency treatment if appropriate.
Implement a standardized process: Ensure blood pressure is measured accurately for each patient

Steps to include are:
• Use a validated, automated device to measure BP.⁵
• Ask the patient “Do you need to use the bathroom?” and allow him/her to do so if needed prior to measurement.³
• Use the correct cuff size for the patient’s arm.³
• Ensure the patient is properly positioned⁶:
  • Seated in a chair with the back supported
  • Legs uncrossed
  • Feet flat on the ground or supported by a foot stool
  • The blood pressure cuff placed mid-arm, just above the elbow with the arm supported so that the arm and cuff are at the level of the patient’s heart
• Do not allow the patient to talk, use the phone, text or email during the procedure.
• Clinical staff and any family that may be present should also not talk in the room during the procedure.

For additional information about improving blood pressure control in your clinic, please review the AMA’s free CME module “Improving blood pressure control” on the AMA Steps Forward website. Learn how implementing three simple, evidence-based interventions can help improve blood pressure control for your patients.

What does self-measured blood pressure success look like?

For the practice or health care team looking to refine or add a SMBP component to care delivery, your objectives must include educating patients on how to obtain accurate BP measurements outside of the clinical setting, and empowering patients to report these to the physician or practice in an accurate, timely fashion.

To achieve these goals it is important to establish an office process for engaging patients in self-measurement that includes:
• Training staff to train patients to self-measure blood pressure
• Educating patients on hypertension
• Measuring blood pressure accurately in office and off site
• Mapping out protocols that guide patients to communicate blood pressures back to the care team

Home-based SMBP is useful in hypertension management for several reasons:
• Improves medication adherence and health outcomes for patients with hypertension⁶,⁷
• Improves BP control when a patient-to-clinician feedback loop is established and provides tailored support and advice based on the patient’s data⁶
  • Examples include telemonitoring with counseling, pharmacist counseling, remote counseling from a nurse or lifestyle counseling⁸
• Increases aggressiveness of use of pharmacotherapy⁶ and helps reduce therapeutic inertia
• Offers greater convenience than 24-hour ambulatory BP monitoring¹⁰

Important considerations to keep in mind: Diagnosing hypertension

When patients have elevated blood pressures in the office and the diagnosis of hypertension is suspected, SMBP can be extremely useful in differentiating between “white coat” hypertension and sustained hypertension. White coat hypertension occurs when a patient’s blood pressures are persistently elevated in the office setting and blood pressure measurements taken outside of the office are normal.

Masked hypertension occurs when office blood pressures are normal, but out-of-office blood pressures are elevated.

To increase the chance of diagnosing a patient suspected of having either white coat or masked hypertension, it is best to use multiple out-of-office readings over time. This is due to variability in blood pressure over time. There is one protocol for SMBP at home that is widely accepted and used in many national and international guidelines.¹¹
• Patients should take two blood pressure measurements with a validated automated upper arm device (one minute apart) each morning and each evening with a goal of collecting these measurements for seven days (with a minimum of three days being acceptable)
• Calculate the average of all of the measured systolic and diastolic blood pressures into a single systolic and single diastolic blood pressure
• If the average systolic blood pressure (SBP) ≥135 mm Hg or diastolic blood pressure (DBP) > 85 mm Hg, then the patient meets the criteria for hypertension
• If the diagnosis of hypertension, white coat hypertension or masked hypertension remains uncertain, use of 24-hour ambulatory blood pressure monitoring (ABPM) is recommended

**Data analysis:** Communication of self-measured blood pressures from home back to clinician’s office for interpretation found most effective

There are several ways for patients to communicate home blood pressure measurements back to the clinical team:
• Phone measurements to office to an assigned staff member
• Fax measurements via secure number
• Send measurements online through the facility’s secure patient portal
• Send the measurements online through a secure telemedicine site
• If blood pressure device has memory capability, the patient can bring the device to the office for staff to review or download
• Patient can return for a scheduled follow-up visit after SMBP is completed

Each clinician’s office should analyze the process it uses to have patients communicate SMBP readings. Inform patients how and when you will respond to their communications and what the patient should do in the event of a concerning blood pressure reading, particularly if the office is not able or does not intend to respond immediately.

**Documentation:** The average SMBP measurement from home should be entered in patient’s health record

All of the individual blood pressure measurements performed by the patient should be averaged weekly into a single systolic and diastolic blood pressure that will be used to determine the diagnosis and/or guide treatment.
• Document the average systolic and diastolic BP values in the patient’s electronic health record.

**References**

The first step in choosing an accurate monitor is to select one that has been approved under a formal validation protocol; all self-measured blood pressure devices sold in the United States are required to meet Food and Drug Administration standards. However, even a device that has passed an accepted validation test will not provide accurate readings in all patients; the error may be consistently ± 5 mm Hg in many individuals, especially elderly patients or patients with diabetes. For this reason clinicians should encourage patients to bring any home blood pressure monitor they use to their physician’s office to measure its accuracy against a mercury sphygmomanometer or comparable device before the readings are accepted. A simple version of the European Society of Hypertension International Protocol has been developed for this purpose and can be done quickly by the physician or other health care clinician and the patient.

The following steps to ensure accuracy take approximately 10 minutes.

1. Have the patient sit down with his or her arm at heart level. The arm should be completely relaxed.
2. Allow the patient to rest for five minutes.
3. Avoid any conversation during the measurements to prevent an increase in blood pressure.
4. Take a total of five sequential same-arm blood pressure readings, no more than 30 seconds apart.
5. Have the patient take the first two readings with his or her own device.
6. Take the third reading, preferably with a mercury sphygmomanometer or comparable device.
7. Have the patient take the fourth reading.
8. The fifth and final reading is taken by the health care clinician.
9. Compare the difference between the readings from the two cuffs.
   a. BP readings will usually decline over the five measurements. The final systolic blood pressure reading may be as much as 10 mm Hg lower than the first.
   b. If the difference is 5 mm Hg or less, the comparison is acceptable.
   c. Do the calibration again if the difference is greater than 5 mm Hg but less than 10 mm Hg.
   d. The device may not be accurate if the difference is greater than 10 mm Hg.
10. Repeat this procedure annually.

Though there is no established target for how close the readings from the patient’s cuff should be to those from the clinician’s cuff, the above exercise can provide a general sense of the device’s accuracy, which can be taken into consideration for future measurements recorded at home. To further ensure accuracy consider calibrating the clinic and home devices following the National Health and Nutrition Examination Survey (NHANES) Health Tech/Blood Pressure Procedures Manual (the manual can be found at cdc.gov/nchs/data/nhanes/nhanes_09_10/bp.pdf).

CLINICAL COMPETENCY: SELF-MEASURED BLOOD PRESSURE AT HOME

In addition to being trained and tested on measuring blood pressure accurately, clinical staff should, if appropriate to their clinical role, demonstrate the ability to train a patient on how to follow SMBP protocols. This will help demonstrate that staff can effectively teach patients to perform accurate blood pressure measurement independently at home.

This clinical competency is not intended to be comprehensive. Additions and modifications to fit the local practice or health center are encouraged.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Meets competency (Check if “Yes”)</th>
<th>More training needed (Check if “Yes”)</th>
<th>Method of validation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain the purpose of SMBP to the patient</td>
<td></td>
<td></td>
<td>RD: Return demonstration (simulation)</td>
</tr>
<tr>
<td>Tell the patient to use the bathroom if they need to prior to measuring their blood pressure (BP)</td>
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<td></td>
<td>PC: Direct patient care observation</td>
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<tr>
<td>Tell the patient to rest sitting in a chair for several minutes prior to measuring their blood pressure</td>
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<tr>
<td>Ensure the patient’s device has the correct cuff size</td>
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<tr>
<td>(You may need to guide the patient to purchase a different size cuff from the manufacturer.)</td>
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<tr>
<td>Show the patient how to position the cuff correctly on the arm against bare skin</td>
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<tr>
<td>(NOTE: Refer to the manufacturer’s user manual for instruction on placement of the tubing.)</td>
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<tr>
<td>Teach the patient proper positioning:</td>
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<tr>
<td>• Seated in a chair with back supported</td>
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<td>• Legs should be uncrossed</td>
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<tr>
<td>• Feet flat on the ground or supported by a foot stool</td>
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<tr>
<td>• Arm supported at heart level, with the BP cuff in place and positioned at mid-arm just above the elbow, so that the BP cuff is at the level of the patient’s heart</td>
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<tr>
<td>Direct the patient not to talk, use the phone, text, email or watch television during the procedure (Also explain that no one else should be talking during blood pressure measurement, and the room should be quiet.)</td>
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<tr>
<td>Instruct the patient to take two readings one minute apart, once in the morning and once in the evening</td>
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<tr>
<td>Show the patient how to turn on the device and press the start button</td>
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</table>

(Continued on page 2)
<table>
<thead>
<tr>
<th>Procedure</th>
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<th>More training needed (Check if “Yes”)</th>
<th>Method of validation</th>
</tr>
</thead>
<tbody>
<tr>
<td>If an error reading occurs, direct the patient to start over</td>
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<tr>
<td>When the cuff completes the deflating process and a reading is displayed, explain to the patient which numbers represent the systolic and diastolic blood pressure</td>
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<tr>
<td>Show the patient how to document their blood pressure on the flow sheet or wallet card</td>
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<tr>
<td>If the device has memory capability, show the patient how to retrieve the readings</td>
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<tr>
<td>Provide the patient with instructions on what to do if readings show an abnormal blood pressure measurement</td>
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</tbody>
</table>

Comments: _______________________________________________________________________

Employee signature: ___________________________ Date: ______________

Trainer’s signature: ___________________________ Date: ______________