

Provider Self-Monitoring Blood Pressure Guide



This guide directs clinics and providers in the implementation of a Self-Monitoring Blood Pressure (SMBP) program.

Printable patient education packets for hypertension can be found on Comagine Health's website. The patient guides are also available in Spanish. Providers may elect to only print portions of the guides based on the needs of the patient.

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Provider Introduction to SMBP

Introduction Video

The following video includes:

- A brief overview of SMBP
- Considerations for SMBP
- Tools and Resources to begin SMBP monitoring in your own clinic
- Methods to improve medication adherence



https://targetbp.org/tools_downloads/a-look-at-self-measured-blood-pressure/

Importance of Accurate Measurement

Clinics must ensure their staff and patients are aware of proper BP measuring techniques. Only 10 to 17% of clinicians provide SMBP training that is even minimally adherent to guidelines for accurate measurement, and fewer than 20% of patients may be sufficiently adherent to recommended self-monitoring technique (Shimbo et al., 2020).

To avoid this, all staff members must be trained to accurately measure blood pressure and educate patients to do the same.

The American Heart Association's 7-Steps Quick Guide can direct staff members and patients on correct blood pressure measurement. An outline of the correct steps is provided on page 2 of the Quick Guide.



<https://www.ama-assn.org/system/files/2020-06/7-step-smbp-quick-guide.pdf>

Benefits of SMBP Programs

Benefits of implementing an SMBP program in your clinic include:

- More accurate titration of medications and treatment.
- Increased involvement of the patient in their healthcare plan
- Improved blood pressure control.
- An effective method to prevent chronic disease caused by hypertension.
- Healthcare cost-benefit with a return on investment.
- Medicare reimbursement in cases when insurance does not cover cost of equipment and other needs (Shimbo et al., 2020).

Workflow Resources

Sample SMBP Workflow

Note: The staff members used in your clinic's workflow may differ based on staff availability. The tasks designated could be performed by the same MA/CNA/RN or by a staff member who focuses specifically on hypertension education, monitoring, and follow-up.

HIGH BLOOD PRESSURE SCREENING AND DIAGNOSIS

Staff member

1. Upon the patient's admission to the clinic, take an accurate blood pressure reading. Note the BP in the patient's chart.
2. If the BP reading is high, add a note in the EHR (or other note system used by your clinic) and/or notify the provider directly.
3. Print a copy of the Hypertension Education Packet and Blood Pressure Self-Monitoring Guide to have available for the patient and provider.

Provider

1. Educate the patient regarding their BP values.
2. Discuss treatment options, create a treatment plan for the patient, and discuss the possibility of self-monitoring from home.
3. The provider will direct the staff member to instruct the patient on SMBP implementation.

Staff Member

1. If the patient is willing to self-monitor, measure the patient's arm to determine the correct cuff size (see page 9). Ensure the patient knows how to purchase a blood pressure cuff (or how to receive a loaner cuff if your clinic chooses to implement a BP loaner program).
2. Instruct the patient on self-measurement by providing a correct demonstration. Have the patient practice once themselves to ensure they have a correct understanding of the procedure.
3. Provide the patient with the packets Hypertension Education Packet and Blood Pressure Self-Monitoring Guide. Answer any questions they may have.
4. Instruct the patient on how to report their BP results. (Your clinic may choose to have results sent directly through the BP cuff to the EHR, through a patient portal, via over-the-phone or text reporting, or by having the patient bring a paper copy of their BP log regularly.

SELF-MONITORING FOLLOW-UP

Staff member or provider

1. If the patient has initiated a new BP treatment, set up a follow-up visit in 2-4 weeks to evaluate if the patient's adherence and whether additional treatments may be required.
2. Follow up at least weekly through a patient portal, phone call, or review of BP values transmitted to the EHR to encourage adherence, obtain BP values, and answer patient questions. Continue weekly follow-up until the patient's BP is well-controlled.
3. Once the patient's BP values are consistently normal, set follow-up visits to every 3-6 months.

Flow for Follow-Up Phone Calls

Telephone Management of Home Blood Pressure Monitoring

Patients should be referred to HBPM for initial diagnosis, to follow up after a medication adjustment, or to monitor controlled hypertension at intervals. Patients should be taught proper measurement technique and asked to measure their BP twice daily for three to seven days.

Before calling patient:

- Determine patient's individual home BP goal
- Review BP measurements entered into patient portal and determine mean BP from twice daily readings done over a 3-7 day time period
- Review patient's current anti-hypertensive medication regimen
- Assess medication adherence if refill record is available

Call the patient:

- Confirm recent adherence to anti-hypertensive medications
- Confirm appropriate preparation and technique for BP measurements
- If BP at goal, confirm to patient and transmit report to supervising clinician and medical record

If BP above goal:

- Non-adherent to medication: Restore adherence, repeat home BP protocol in 2-4 weeks, transmit report to clinician and medical record
- Inadequate preparation/technique: Ask patient to repeat home BP protocol now
- Adherent to medication and home BP protocol: Discuss with clinician

Source: Provided by Dr. Barry Stults, University of Utah

Tips for Follow-up Calls

- During the patient's first visit, verify if the patient can have a phone conversation independently or if they require additional assistance from a family member or friend. It can also be helpful to note if the patient is hard of hearing or has other challenges that may make calls more difficult.
- In addition to discussing the patient's medication adherence and self-monitoring, address the patient's goals for exercise, diet, stress reduction, and substance use.
- Make the call encouraging and motivating. Focus on the patient's strengths. (See QR code below for more tips on this.)
- Build a personal connection with the patient. If possible, have the same staff member consistently make calls so this relationship can be strengthened.
- Take notes during each call on barriers, strengths, and future goals. This can be especially helpful if the same staff member is unable to make the call each time.
- Document family and friends who can support the patient's BP management plan and advocate for their needs.

The QR code below provides a link to information about motivational interviewing, which can help providers and staff develop skills for positive and effective patient communication.



<https://motivationalinterviewing.org/understanding-motivational-interviewing>

Recommendations from SMBP Clinics in Utah

Utah clinics that have implemented SMBP programs have shared the following recommendations for success:

- Hire a clinical pharmacist that can be consulted once a week. This pharmacist may be used to titrate BP medications for difficult-to-manage BP.
- Develop a health incentive program to promote compliance with SMBP treatment.
- Develop a blood pressure loaner program and allow patients to trail SMBP before they purchase their own cuff. (For information on how to implement your own loaner program, see page 11.)
- Use annual wellness visits to promote hypertension treatment and management.
- Assign one day a week in the clinic to follow up on patient blood pressure values, titrate treatments, and assess hypertensive patients.
- Involve providers, nurses, pharmacists, MAs, and other clinic staff in evaluation and follow-up.
- Use EMR reports and chart scrubbing to identify patients who are not currently receiving treatment for their blood pressure.
- Hold annual blood pressure training for your staff to ensure accurate blood pressure control and management.
- Use EMR sticky notes and other reminders to ensure follow-up on blood pressure values.
- Before giving patients the Hypertension Education Guide and/or the Blood Pressure Self-Monitoring Guide, assess the patient's computer and smartphone literacy, reading ability, and ability to use QR codes and adjust teaching as needed.

Blood Pressure Cuffs

Choosing a Blood Pressure Cuff for Patients

The QR code below will grant you access to the validated blood pressure cuff website, where patients can purchase a blood pressure cuff for at-home use. Your clinic may also choose to purchase cuffs from this site for clinic use or to implement a loaner program.



<https://www.validatebp.org>

Use the American Medical Association's Blood Pressure Cuff Selection handout on the next page (page 9) to help your patient determine the correct size.

Self-measured blood pressure cuff selection



Blood pressure (BP) measurement devices with upper arm cuffs provide the most accurate measurements.¹ Wrist cuffs are not recommended for clinical use unless patients cannot use upper arm cuffs due to arm size or other medical reasons.¹ Finger devices are also not recommended for clinical use because these are less accurate than upper arm BP measurement devices.¹

Below are steps to determine the appropriate upper arm cuff size. If possible, it may be easier for patients to have another person assist with the process.

Ask patients to gather the following items

- Tape measure
- BP measurement device, cuff and manual (if device is already purchased)

Locate mid-upper arm

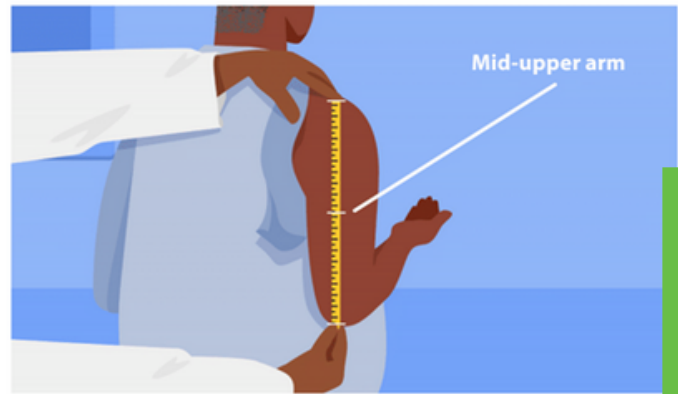
- Measure the length of the arm between the acromion process (bony protuberance on shoulder) and the olecranon process (bony protuberance at elbow).
- Divide the distance in half to locate the mid-upper arm.

Determine arm circumference

- Wrap a tape measure around the mid-upper arm to determine arm circumference (typically measured in centimeters).

Determine cuff size

- Based on arm circumference, determine the cuff size that is appropriate. Use this information to help with device selection. Many BP measurement devices have circumference ranges printed directly on the cuffs. This information can also often be found in the device manual or on the device box.



Arm circumference		Recommended cuff size
centimeters (cm)	inches (in)	
22-26	8.7-10.2	Small adult
27-34	10.6-13.4	Adult
35-44	13.8-17.3	Large adult
45-52	17.7-20.5	Extra-large adult

Modified from Table 3 in: Muntner P, Shimbo D, Carey RM, Charleston JB, et al. Measurement of blood pressure in humans: a scientific statement from the American Heart Association. *Hypertension*. 2019;73(5):e35–e66. doi: 10.1161/HYP.0000000000000087.

Disclaimer: This document is for informational purposes only. This document is not intended as a substitute for the medical advice of a physician; it offers no diagnoses or prescription. Furthermore, this information should not be interpreted as setting a standard of care, or be deemed inclusive of all proper methods of care, nor exclusive of other methods of care reasonably directed to obtaining the same results. This protocol reflects the best available evidence at the time that it was prepared. The results of future studies may require revisions to the recommendations in this protocol to reflect new evidence, and it is the clinician's responsibility to be aware of such changes.

1. Muntner P, Shimbo D, Carey RM, et al. Measurement of blood pressure in humans: a scientific statement from the American Heart Association. *Hypertension*. 2019;73(5):e35–e66. doi: 10.1161/HYP.0000000000000087.

Calibrating SMBP Cuffs



MAPBP™

Device calibration test¹

Self-measured blood pressure



Use the process below to calibrate a patient's self-measured blood pressure (SMBP) device whenever self-measurement results appear to have an unreasonable discrepancy compared to in-office results. Ensure proper preparation, positioning and technique prior to taking blood pressure (BP) measurements. The office BP measurement device and the patient's SMBP device should be validated for clinical accuracy.

Step 1

Complete the table below.

Using the same arm, take five blood pressure measurements using a combination of the patient's SMBP device and the office's method of blood pressure measurement. There is no rest period required between measurements.

Measurement	Device	Systolic blood pressure (SBP)	SBP Example
A	Patient's		133
B	Patient's		132
C	Office's		141
D	Patient's		134
E	Office's		139

BP cuffs

Step 2

Part 1: Average measurements B and D

Part 2: Compare average of B and D to measurement C

Part 3: If the *difference* is ...

- **Less than 5 mm Hg**, this device can be used for SMBP
- **Between 6 and 10 mm Hg**, proceed to Step 3
- **Greater than 10 mm Hg**, *replace* the device before proceeding with SMBP

Example

Part 1: $(132 + 134) / 2 = 133$

Part 2: $133 - 141 = 8$ (note: if the difference is a negative number, ignore the negative sign)

Part 3: Difference is 8, which is between 6 and 10 mm Hg, so proceed to Step 3

Step 3

Part 1: Average measurements C and E

Part 2: Compare average of C and E to measurement D

Part 3: If the *difference* is ...

- **Less than or equal to 10 mm Hg**, this device can be used for SMBP
- **Greater than 10 mm Hg**, *replace* the device before proceeding with SMBP

Example

Part 1: $(141 + 139) / 2 = 140$

Part 2: $140 - 134 = 6$ (note: if the difference is a negative number, ignore the negative sign)

Part 3: Difference is 6, which is less than or equal to 10 mm Hg, so proceed with SMBP

1. Eguchi et al. A Novel and Simple Protocol for the Validation of Home Blood Pressure Monitors in Clinical Practice. *Blood Press Monit.* 2012;17(5):210-213.

BP Cuff Loaner Programs

The QR code below provides information to start your own SMBP loaner program, including:

- Accessing validated devices
- Measuring recommended sizes
- Printable loaner device agreement form
- Loaner device inventory record



<https://targetbp.org/patient-measured-bp/implementing/smbp-device-loaner-program/>

This QR code provides a workflow and steps that might be beneficial when loaning BP cuffs to patients.



<https://www.ama-assn.org/system/files/smbp-patient-training-checklist-loaner-device.pdf>

Financial Resources

An Economic Case for Self-Measured Blood Pressure (SMBP) Monitoring



SMBP, or home blood pressure monitoring, with clinical support can help people with hypertension reduce their blood pressure. Inconsistent insurance coverage for devices and provider reimbursement is a barrier to SMBP use. This document outlines a way to estimate a business return on investment, based solely on current Medicare reimbursement for SMBP support services. SMBP, which evidence shows is clinically important, can be a financially viable service even in times of not being fully reimbursable.



Hypertension Burden

Nearly **1 in 2** U.S. adults have hypertension, yet only about 1 in 4 have it under control.¹



Type of Health Insurance

Nearly **1 in 5** adults with hypertension are covered by **Medicare**.²



Medicare Reimbursement for SMBP Support Services

Current Procedural Terminology (CPT®) codes for SMBP:³

99473: Initial education for SMBP

- Can be submitted once per device
- Billed service for non-providers = **\$11.19 for patient education**

99474: Review of SMBP measurements connected to clinical decision making

- Can be submitted monthly
- Billed clinician service = **\$15.16 for data review and treatment plan**



Do the Math!

- Assuming an adult patient panel of 2,000 patients/clinician
- Assuming 1/2 have hypertension = **1,000 patients**
- Assuming 1/5 are Medicare beneficiaries = **200 patients**

200 patients × **\$11.19** for initial education = **\$2,238**

If half of patients submit data 6 months out of the next 12: **100 × \$15.16 × 6 months = \$9,096**

Reimbursement per clinician could total \$11,334 (\$2,238 + \$9,096)/year.

If there are 20 clinicians in a practice, that could add up to **an additional \$226,680/year.**

With the above as potential income, a case could be made for reinvesting the additional resources into infrastructure, such as additional FTEs, purchase of devices for patients who cannot afford them, development of a device loaner program, or investment in health IT upgrades.

1 Ritchey MD, Gillespie C, Wozniak G, Shay CM, Thompson-Paul AM, Loustalot F, Hong Y. Potential need for expanded pharmacologic treatment and lifestyle modification services under the 2017 ACC/AHA Hypertension Guideline. *J Clin Hypertens (Greenwich)*. 2018 Oct;20(10):1377–91.

2 Muntner P, Hardy ST, Fine LJ, Jaeger BC, Wozniak G, Levitan EB, Colantonio LD. Trends in blood pressure control among U.S. adults with hypertension, 1999–2000 to 2017–2018. *JAMA*. 2020 Sep 22;324(12):1190–200.

3 American Medical Association. SMBP CPT® coding. <https://www.ama-assn.org/system/files/2020-06/smbp-cpt-coding.pdf>. Accessed May 11, 2021.



SMBP CPT® coding



Self-measured blood pressure (SMBP) refers to blood pressure (BP) measurements obtained outside of a physician's practice, usually at home. When combined with clinical support (e.g., one-on-one counseling, web-based or telephonic support tools, education), SMBP can enhance the quality and accessibility of care for people with high blood pressure and improve blood pressure control.¹ SMBP can be used to assess BP control and to make a diagnosis of hypertension. SMBP allows patients to actively participate in the management of their BP and has been shown to improve adherence to antihypertensive medications.²

SMBP codes and descriptions

As of January 1, 2020, physicians can submit claims for SMBP services using Current Procedural Terminology (CPT®) codes **99473** and **99474**.

CPT code	Description
99473	SMBP using a device validated for clinical accuracy; patient education/training and device calibration
99474	separate self-measurements of two readings one minute apart, twice daily over a 30-day period (minimum of 12 readings), collection of data reported by the patient and/or caregiver to the physician or other qualified health care professional, with report of average systolic and diastolic pressures and subsequent communication of a treatment plan to the patient

The codes address both initial and ongoing SMBP clinical services:

CPT code 99473 can be used when a patient receives education and training (facilitated by clinical staff) on the set-up and use of a SMBP measurement device validated for clinical accuracy, including device calibration.

99473 can only be reported once per device. It would most commonly be used prior to initiating SMBP in patients suspected of having hypertension or for those patients with an existing diagnosis of hypertension who have a new BP measurement device or are receiving training for the first time.

CPT code 99474 can be used for SMBP data collection and interpretation when patients use a BP measurement device validated for clinical accuracy to measure their BP twice daily (two measurements, one minute apart in the morning and evening), with a minimum of 12 readings required each billing period.

The SMBP measurements must be communicated back to the practice and can be manually recorded (e.g. phone, fax or in-person) or electronically captured and transmitted (e.g. secure e-mail, patient portal, or directly from device).

The physician or other qualified health care professional must then create or modify the treatment plan based on the documented average of these readings. The treatment plan must be documented in the medical record and communicated back to the patient, either directly or through clinical staff.

Coding limitations

- **99474** can be submitted once per calendar month; it cannot be used in the same calendar month as codes for ambulatory blood pressure monitoring (**93784, 93786, 93788, 93790**), remote physiologic monitoring (**99453-8, 99091**) or chronic care management (**99487, 99489-91**).
- **99473** can be submitted once per device. **99473** and **99474** should not be reported if performed as part of an E/M service. A separately reportable E/M service should be provided with Modifier 25.

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Remote physiologic monitoring codes and descriptions

Other CPT codes that can be used for SMBP are found in the digitally stored data/remote physiologic monitoring section of the CPT code set. Remote physiologic monitoring (RPM) codes are for collecting and interpreting physiologic data that is digitally stored and/or transmitted by the patient and/or caregiver to the physician or qualified health care professional.

CPT code	Description
99453	Remote monitoring of physiologic parameter(s) (e.g., weight, blood pressure, pulse oximetry, respiratory flow rate), initial; set-up and patient education on use of equipment
99454	Device(s) supply with daily recording(s) or programmed alert(s) transmission, each 30 days
99457	Remote physiologic monitoring treatment management services, 20 minutes or more of clinical staff/physician/other qualified healthcare professional time in a calendar month requiring interactive communication with the patient/caregiver during the month
99458	Remote physiologic monitoring treatment management services, clinical staff/physician/other qualified health care professional time in a calendar month requiring interactive communication with the patient/caregiver during the month; additional 20 minutes
99091	Collection and interpretation of physiologic data (e.g. ECG, blood pressure, glucose monitoring) digitally stored and/or transmitted by the patient and/or caregiver to the physician or other qualified healthcare professional, qualified by education, training, licensure/regulation (when applicable) requiring a minimum of 30 minutes of time, each 30 days

Further information regarding parameters for these RPM codes and current CMS waivers are listed on the following two pages of this resource.

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Parameters for CPT codes 99453-99458*

Requirement:

- A physician or qualified health care professional must prescribe RPM and a medical device (as defined by the FDA) to be used for conducting RPM.
- Patients must consent to enroll in RPM (patients may incur a co-pay for services, typically 20% of RPM charges per month for Medicare) and consent must be documented.
CMS waiver 3/1/20-the Public Health Emergency (PHE): Consent may be collected at time of service. Cost sharing may be reduced or waived by physician/practitioner, sanctions are suspended.
- If a patient has not been seen in the practice for one year or is a new patient, Medicare may require a face-to-face encounter before billing for RPM.
CMS waiver (3/1/20-PHE): RPM services may be furnished to new patients in addition to established patients during the COVID-19 public health emergency.
- Monitoring must occur for at least 16 days within a month.
CMS waiver (3/1/20-PHE): Monitoring can last for fewer than 16 days, but no less than 2 days, for purposes of treating suspected or confirmed COVID-19.
- Data must be digitally stored and/or transmitted back to the physician or other qualified health professional.
- Interactive communication between the physician/other qualified health professional and patient and/or caregiver is required, although an interactive video connection is not needed.

Coding limitation:

- **99457** may not be billed together with **99091** for same billing period and beneficiary.

*Note

Current exceptions to codes as a result of COVID-19 may be in place by CMS and other payers. Patients may not be required to give consent to be enrolled in RPM and co-pays may be waived. In addition, RPM may be utilized for new and established patients without requiring a face-to-face E/M visit.

Waivers and exceptions described in this document are temporary and effective March 1, 2020 through the end of the public health emergency (PHE), unless additional guidance is provided by CMS in the future.

Current CMS waivers can be found [here](#).

Current CMS telehealth codes can be found [here](#).

Parameters for CPT code 99091*

Requirement:

- Requires a minimum of 30 minutes of care team time spent toward services in each 30-day period.
- Patients must consent to enroll in RPM and consent must be documented.
CMS waiver (3/1/20–PHE): RPM services may be furnished to new patients in addition to established patients during the COVID-19 public health emergency.
- The number of monitoring days required per month is not specified.
- Data must be digitally stored and electronically transferred back to the practice.

Coding limitations:

- If an E/M service occurs on the same day, **99091** should not be reported separately.
- **99091** may not be billed together with **99457** for the same billing period and beneficiary.
- The code cannot be reported if it occurs within 30 days of codes **99339**, **99340**, **99374-9** or **99457**.

*Note

Current exceptions to codes as a result of COVID-19 may be in place by CMS and other payers. Patients may not be required to give consent to be enrolled in RPM and co-pays may be waived. In addition, RPM may be utilized for new and established patients without requiring a face-to-face E/M visit.

Waivers and exceptions described in this document are temporary and effective March 1, 2020 through the end of the public health emergency (PHE), unless additional guidance is provided by CMS in the future.

Current CMS waivers can be found [here](#).

Current CMS telehealth codes can be found [here](#).

RPM and chronic care management (CCM)

RPM services can overlap with chronic care management (CCM) services and both codes can be used within a calendar month. RPM may also be billed in the same calendar month as transitional care management services and behavioral health integration services. However, the time spent performing RPM must be separate from the time spent on CCM, transitional care management or behavioral health integration services.

References

1. Centers for Disease Control and Prevention. Self-Measured Blood Pressure Monitoring: Actions Steps for Clinicians. Atlanta, GA: Centers for Disease Control and Prevention, US Dept of Health and Human Services; 2014.
2. Muntner P, Shimbo D, Carey RM, et al. Measurement of blood pressure in humans: a scientific statement from the American Heart Association. *Hypertension*. 2019;73(5):e35–e66. doi: 10.1161/HYP.0000000000000087.

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Resources for Hypertension Treatment Treatment Guidelines

Intermountain Treatment Guide



https://resources.chronicdisease.org/dir/wp-content/uploads/2020/04/HCCP_tools_Intermountain-Mgmt-HBP.pdf

2020 International Society of Hypertension Global Hypertension Practice Guidelines



<https://www.ahajournals.org/doi/10.1161/HYPERTENSIONAHA.120.15026>

**2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA
Guideline for the Prevention, Detection, Evaluation, and Management
of High Blood Pressure in Adults: A Report of the American College of
Cardiology/American Heart Association Task Force on Clinical Practice
Guidelines**



<https://www.ahajournals.org/doi/10.1161/hyp.0000000000000065#T18>

**Guideline for the Pharmacological Treatment of
Hypertension in Adults**



<https://apps.who.int/iris/bitstream/handle/10665/344424/9789240033986-eng.pdf>

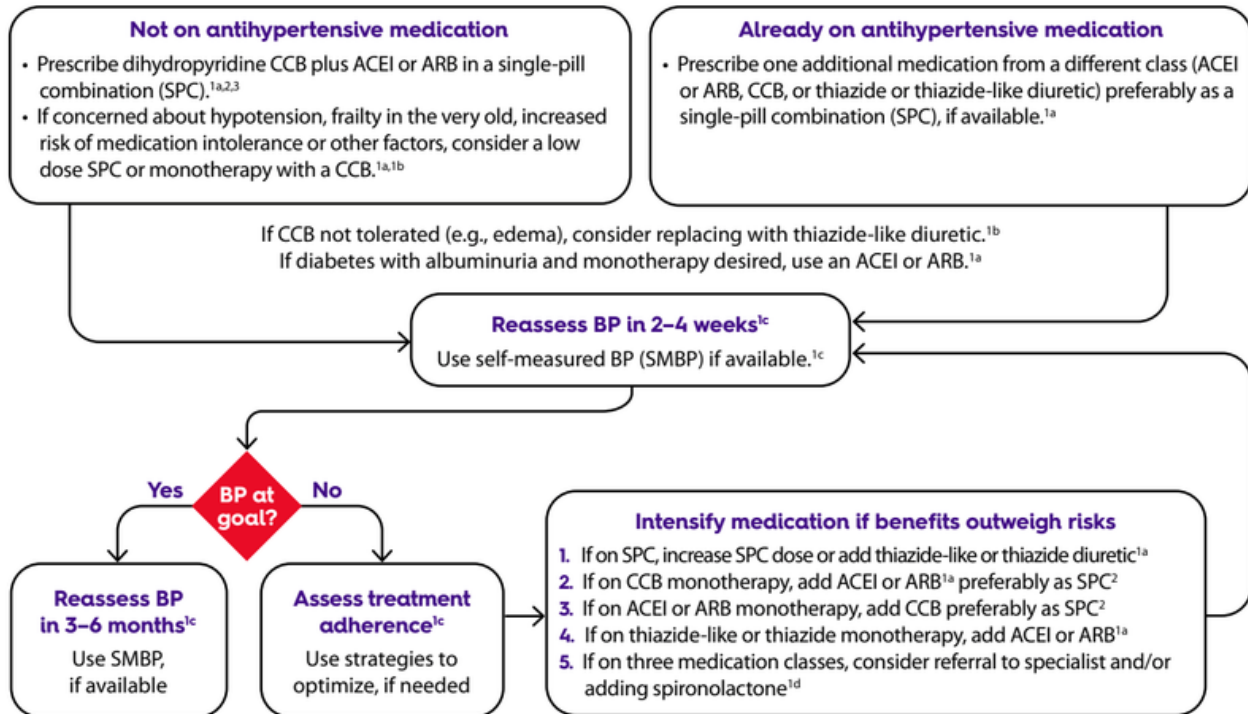
Hypertension medication treatment protocol¹

For adults without CHF, CAD, pregnancy, CKD stage 3 or albuminuria ≥ 300 mg/d or ≥ 300 mg/g albumin-to-creatinine ratio*



This document is not intended as a substitute for the medical advice of a physician; it offers no diagnoses or prescription. No endorsement is implied or intended by the American Medical Association of any third-party organization, product, drug or service.

Check labs at clinician's discretion.



Generic medication summary

Antihypertensive medication	Sample generic options	Dose once daily (initial) ⁴	Dose once daily (intensified) ⁴	Estimated Cost (30-day supply) ⁵
CCB and ACEI (SPC) (if ACEI not tolerated due to cough, go to next row)	amlodipine/benazepril	(a) 2.5/10 mg (b) 5/10 mg (c) 5/20 mg	(a) 5/10 mg or 5/20 mg (b) 5/20 mg or 10/20 mg (c) 10/20 mg or 10/40 mg	\$15–20
CCB and ARB (SPC) (if cost an issue, use CCB monotherapy (amlodipine) and go to next row)	(a) amlodipine/olmesartan (b) amlodipine/telmisartan	(a) 5/20 mg (b) 5/40 mg or 5/80 mg	(a) 5/40 mg or 10/20 mg or 10/40 mg (b) 5/80 mg or 10/80 mg	(a) \$29–40 (b) \$50–60
Add thiazide-like or thiazide diuretic	(a) indapamide (preferred) (b) chlorthalidone (preferred) (c) hydrochlorothiazide	(a) 1.25 mg (b) 12.5 mg = ½ 25 mg tab (c) 12.5 mg	(a) 2.5 mg (b) 25 mg (c) 25 mg	(a) \$4 (b) \$8–16 (c) \$4
Add spironolactone (optional)	spironolactone	12.5 mg = ½ 25 mg tab	25 mg	\$3–\$12

*This protocol should not be used in patients with CHF, CAD, pregnancy, CKD stage 3 or albuminuria or ≥ 300 mg/g albumin-to-creatinine ratio or the equivalent in first morning void. Simultaneous use of an ACEI, ARB, and/or renin inhibitor is not recommended.^{1e}

Disclaimer

Adherence to this protocol may not achieve goal blood pressure in every situation. Furthermore, this information should not be interpreted as setting a standard of care, or be deemed inclusive of all proper methods of care, nor exclusive of other methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding the appropriateness of any specific therapy must be made by the physician and the patient in light of all the clinical factors, including labs, presented by the individual patient. This protocol reflects the best available evidence at the time that it was prepared. The results of future studies may require revisions to the recommendations in this protocol to reflect new evidence, and it is the clinician's responsibility to be aware of such changes.

References

1. Whelton PK, Carey RM, Aronow WS, Casey DE Jr, Collins KJ, Dennison Himmelfarb C, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol.* 2018;71(19).
 - 1a. See page e168, evidence statement, and e189, evidence statement plus supporting text.
 - 1b. See page e210, "In the very old..." and page e169, "However, caution is advised in initiating antihypertensive pharmacotherapy with 2 drugs in older patients because hypotension or orthostatic hypotension may develop in some patients ..."
 - 1c. See page e162, Figure 4, including text within figure.
 - 1d. See page e194, "Treatment of resistant hypertension ..."
 - 1e. See page e164, for evidence statement.
2. Jamerson K, Weber MA, Bakris GL, et al. Benazepril plus amlodipine or hydrochlorothiazide for hypertension in high-risk patients. *N Engl J Med.* 2008;359(23):2417-28.
3. Feldman RD, Zou GY, Vandervoort MK, Wong CJ, Nelson SA, Feagan BG. A simplified approach to the treatment of uncomplicated hypertension: a cluster randomized, controlled trial. *Hypertension.* 2009;53:646-653. doi:10.1161/HYPERTENSIONAHA.108.123455.
4. Online.epocrates.com (2019). Epocrates Online Drugs. Available at: <https://online.epocrates.com/drugs> (accessed March 25, 2019).
5. Cost is approximation only for patients without insurance coverage based on available U.S. retail pharmacy information and GoodRx as of March 28, 2019.

This resource is part of AMA MAP BP™, a quality improvement program. Using a single or subset of AMA MAP BP tools or resources does not constitute implementing this program. AMA MAP BP includes guidance from AMA hypertension experts and has been shown to improve BP control rates by 10 percentage points and sustain results.

Improving Medication Adherence Among Patients with Hypertension

A Tip Sheet for Health Care Professionals



Medication adherence is critical to successful hypertension control for many patients. However, only 51% of Americans treated for hypertension follow their health care professional's advice when it comes to their long-term medication therapy.¹

Adherence matters. High adherence to antihypertensive medication is associated with higher odds of blood pressure control, but non-adherence to cardioprotective medications increases a patient's risk of death from 50% to 80%.¹

As a health care professional, you can empower patients to take their medications as prescribed. Effective two-way communication is critical; in fact, it doubles the odds of your patients taking their medications properly. Try to understand your patients' barriers and address them honestly to build trust.

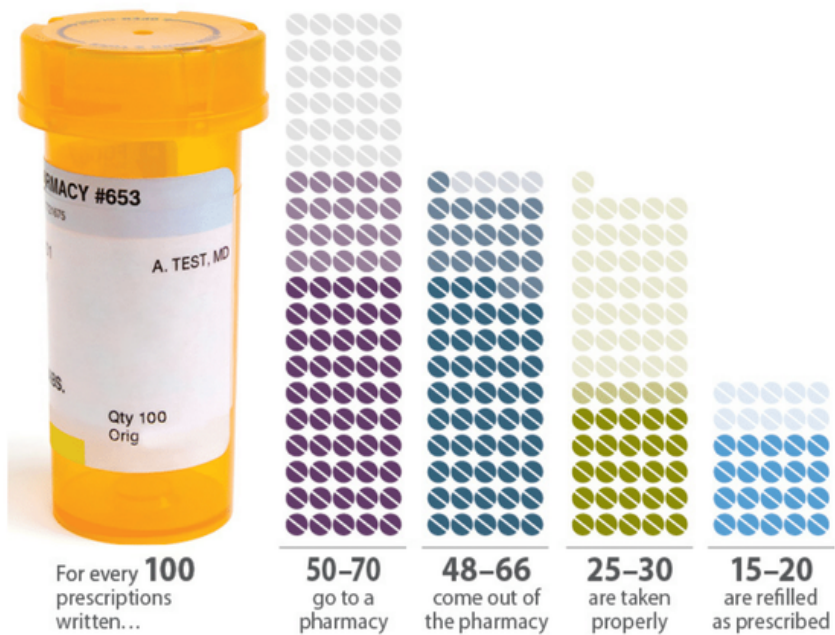
Predictors of Non-Adherence

When discussing medications, be aware if your patient:

- ▶ Demonstrates limited English language proficiency or low literacy.
- ▶ Has a history of mental health issues like depression, anxiety, or addiction.
- ▶ Doesn't believe in the benefits of treatment.
- ▶ Believes medications are unnecessary or harmful.
- ▶ Has a concern about medication side effects.
- ▶ Expresses concern over the cost of medications.
- ▶ Says he or she is tired of taking medications.

These can all be predictors of a patient who may struggle with adherence to medication.

Medication Adherence by the Numbers*



*This data applies to all medication types, not only hypertension medication.

¹Ho PM, Bryson CL, Rumsfeld JS. Medication adherence: its importance in cardiovascular outcomes. *Circulation*. 2009;119:3028-3035.



As a health care professional, you can empower patients to take their medications as prescribed. Effective two-way communication is critical; in fact, it doubles the odds of your patients taking their medications properly.

Use the SIMPLE method to help improve medication adherence among your patients

Simplify the regimen

- ▶ Encourage patients to use adherence tools, like day-of-the-week pill boxes or mobile apps.
- ▶ Work to match the action of taking medication with a patient's daily routine (e.g., meal time or bed time, with other medications they already take properly).

Impart knowledge

- ▶ Write down prescription instructions clearly, and reinforce them verbally.
- ▶ Provide websites for additional reading and information—find suggestions at the **Million Hearts®** website.

Modify patients' beliefs and behavior

- ▶ Provide positive reinforcement when patients take their medication successfully, and offer incentives if possible.
- ▶ Talk to patients to understand and address their concerns or fears.

Provide communication and trust

- ▶ Allow patients to speak freely. Time is of the essence, but research shows that most patients will talk no longer than 2 minutes when given the opportunity.
- ▶ Use plain language when speaking with patients. Say, "Did you take all of your pills?" instead of using the word "adherence."
- ▶ Ask for patients' input when discussing recommendations and making decisions.
- ▶ Remind patients to contact your office with any questions.

Leave the bias

- ▶ Understand the predictors of non-adherence and address them as needed with patients.
- ▶ Ask patients specific questions about attitudes, beliefs, and cultural norms related to taking medications.

Evaluate adherence

- ▶ Ask patients simply and directly whether they are sticking to their drug regimen.
- ▶ Use a medication adherence scale—most are available online:
 - ▷ Morisky-8 (MMAS-8)
 - ▷ Morisky-4 (MMAS-4 or Medication Adherence Questionnaire)
 - ▷ Medication Possession Ratio (MPR)
 - ▷ Proportion of Days Covered (PDC)

Source: <http://www.acpm.org/?MedAdhereTTProviders>

Find and download additional materials to help your patients control hypertension at the **Million Hearts®** website.

Additional Resources

Other Toolkits and Resources

ENGAGING PATIENTS IN SELF-MEASUREMENT

https://www.ama-assn.org/sites/ama-assn.org/files/corp/media-browser/public/about-ama/iho-bp-engaging-patients-in-self-measurment_0.pdf

AUCH Blood Pressure Tool-kit

https://comagine.org/sites/default/files/resources/SMBP_Toolkit_final_6.28.21.pdf

Hypertension Guidelines ToolKit American Heart

<https://aha-clinical-review.ascendeventmedia.com/books/aha-high-blood-pressure-toolkit/>

Hypertension Control Change Package

https://millionhearts.hhs.gov/files/HTN_Change_Package.pdf#page=16
(Improving Medication Adherence)

Intermountain Pharmacological Treatment Guidelines

http://resources.chronicdisease.org/dir/wp-content/uploads/2020/04/HCCP_tools_Intermountain-Mgmt-HBP.pdf

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