



CLINICAL MEDICAL POLICY	
Policy Name:	Automated Ambulatory Blood Pressure Monitoring (ABPM)
Policy Number:	MP-090-MD-PA
Responsible Department(s):	Medical Management
Provider Notice/Issue Date:	08/01/2023; 09/01/2022; 08/20/2021; 08/10/2020; 09/16/2019; 07/15/2018
Effective Date:	09/01/2023; 10/01/2022; 09/20/2021; 09/07/2020; 09/16/2019; 07/15/2018
Next Annual Review:	07/2024
Revision Date:	07/19/2023; 07/20/2022; 07/21/2021; 07/15/2020; 07/17/2019
Products:	Highmark Wholecare SM Medicaid
Application:	All participating hospitals and providers
Page Number(s):	1 of 11

Policy History

Date	Activity
09/01/2023	Provider Effective date
07/19/2023	QI/UM Committee review
07/19/2023	Annual Review: No changes to clinical criteria. Updated CMS guidance. Updated pediatric patients BP table. Updated 'Reference Sources' section.
10/01/2022	Provider Effective date
07/20/2022	QI/UM Committee review
07/20/2022	Annual Review: No changes to clinical criteria. Updated Summary of Literature and Reference Sources sections. Internal version only: Added the following statement to Operational Guidelines: Any requests submitted with a primary diagnosis code other than R03.0 will require a Medical Director's approval on a case-by-case basis.
09/20/2021	Provider Effective date
07/19/2021	QI/UM Committee Review
07/19/2021	Annual Review: Added 'white coat hypertension' to Definitions section. Updated Summary of Literature, Informational, and Reference Sources sections. Added the following CPT codes: 93786, 93788, & 93790.
09/07/2020	Provider Effective date
07/15/2020	QI/UM Committee review

07/15/2020	Annual Review: No clinical criteria changes; removed hyperlinks; revised CPT code description for 93784 and deleted code 93786, 93788, & 93790; updated Governing Bodies section with CMS coverage
09/16/2019	Provider Effective date
07/17/2019	QI/UM Committee review
07/17/2019	Annual Review: Revised blood pressure requirement for white coat hypertension; added additional coverage criteria for masked hypertension; updated literature summary, added ICD-10 DX code I10; removed the following criteria-absence of hypertensive end organ damage on physical exam and laboratory testing ; revised format; Removed hyperlinks from all reference in the Reference section
07/15/2018	Provider effective date
05/09/2018	Updated Operational Guidelines patients must be 3 years of age and older, all services not meeting the requirements in the policy should deny as not medically necessary. Attachment D is informational.
04/18/2018	QI/UM Committee review
04/18/2018	Revision: Removed the word 'Covered' from the procedure and diagnosis code tables in Attachments B & C
03/27/2018	Initial policy developed

Disclaimer

Highmark WholecareSM medical policy is intended to serve only as a general reference resource regarding coverage for the services described. This policy does not constitute medical advice and is not intended to govern or otherwise influence medical decisions.

Policy Statement

Highmark WholecareSM may provide coverage under the medical-surgical benefits of the Company's Medicaid products for medically necessary adult and pediatric ambulatory blood pressure monitoring (ABPM) for suspected white coat hypertension.

This policy is designed to address medical necessity guidelines that are appropriate for the majority of individuals with a particular disease, illness or condition. Each person's unique clinical circumstances warrant individual consideration, based upon review of applicable medical records.

(Current applicable Pennsylvania HealthChoices Agreement Section V. Program Requirements, B. Prior Authorization of Services, 1. General Prior Authorization Requirements.)

Definitions

Hypertension - Also known as high blood pressure (B/P), is a long term medical condition in which the blood pressure in the arteries is persistently elevated.

Ambulatory Blood Pressure Monitoring (ABPM) - A portable device that takes and records blood pressure intermittently in 24-hour cycles, during normal daily activities. These devices may be fully automated, thereby they inflate at preprogrammed intervals. The devices can be semi-automated and are patient-activated.

Nocturnal Dip - A significant day-night difference in blood pressure of more than 10% or more than 10/5 mm Hg.

Masked Hypertension (MHT) - A nonelevated blood pressure in the clinical setting with elevated blood pressure assessed by ambulatory monitoring.

White Coat Hypertension – Patients experience a spike in their blood pressure specifically when it is measured at the doctor’s office but not in other settings, such as the home.

Procedure

1. ABPM is considered medically necessary when the ANY ONE of the following criteria are met:

A. Adult Criteria

- 1) For patients with suspected “white coat hypertension”: defined as an average office blood pressure of systolic blood pressure greater than 130 mm Hg but less than 160 mm Hg, or diastolic blood pressure greater than 80 mm Hg but less than 100 mm Hg on two separate clinic/office visits with at least two separate measurements made at each visit with at least two blood pressure measurements taken outside the office which are less than 130/80 mm Hg.; OR
- 2) For patients with suspected “masked hypertension”: defined as an average office blood pressure between 120 mm Hg and 129 mm Hg for systolic blood pressure or between 75 mm Hg and 79 mm Hg for diastolic blood pressure on two separate clinic/office visits with at least two separate measurements made at each visit and with at least two blood pressure taken outside the office which are greater than or equal to 130/80 mm Hg.

B. Pediatric/Adolescents Criteria

- 1) In confirming the diagnosis of hypertension, including differentiating between true hypertension and white coat hypertension:
 - a. The physician has performed at least three blood pressure measurements at least one (1) week apart in the office; AND
 - b. Blood pressure measurements by non-physicians (e.g., nurse, technician) have been done (initial measurement, 2nd measurement in 1-2 weeks, and 3rd measurement in 3 months), and stage one hypertension readings have been obtained; AND
 - c. Threshold levels for the diagnosis of hypertension should be based on pediatric normative data, which includes gender and height specific values derived from large pediatric populations.

Note: ABPM in children and adolescents should be used by experts in the field of pediatric nephrology and pediatric cardiology who are experienced in its use and interpretation.

C. In addition, **automated ABPM testing must include ALL of the following:**

- 1) Must be used for a duration of at least 24 hours but no more than 48 hours; AND
- 2) The automated device must be performed using an FDA-approved machine that has been validated; AND
- 3) The device must be capable of producing standardized plots of blood pressure measurements for 24 hours with daytime and nighttime windows and normal blood pressure bands demarcated; AND
- 4) The findings must be provided to patients with oral and written instructions and a test run in the physician's office must be performed; AND
- 5) The findings must be read by the treating physician or treating non-physician practitioner.

2. Contraindications

ABPM devices should not be used on ANY of the following:

- On neonates and children under the age of 3 years
- On patients with severe clotting disorders
- On patients with severe cardiac rhythm abnormalities (e.g., atrial fibrillation)
- On patients with latex allergy

3. When the automated ABPM services are not considered medically necessary

- ABPM is limited to one (1) monitoring session per patient, per calendar year
- The use of automated ABPM for any condition not listed above will be considered NOT medically necessary. Examples of noncovered conditions include, but are not limited to:
 - Blood pressure monitoring in patients with heart failure
 - Blood pressure monitoring of pregnant women who do not meet the criteria above
 - The diagnosing of malignant hypertension
 - In patients with irregular cardiac arrhythmias
 - To evaluate the effectiveness of blood pressure treatment
 - For the evaluation of patients with uncomplicated hypertension or to screen for hypertension

4. Post-payment Audit Statement

The medical record must include documentation that reflects the medical necessity criteria and is subject to audit by Highmark WholecareSM at any time pursuant to the terms of your provider agreement.

5. Place of Service

The proper place of service for ABPM is outpatient.

Governing Bodies Approval

Examples of FDA-approved ABPM, not all inclusive:

- Pressure Trak Ambulatory Blood Pressure Measurement System
FDA-approved indication: A non-invasive oscillometric ambulatory blood pressure monitor that is intended for use as an aid or adjunct to diagnosis and treatment when it is necessary to measure an adult patient's systolic and diastolic blood pressures over an extended period of time.
- ABP-2000 G-3
FDA-approved indication: A non-invasive oscillometric ambulatory blood pressure monitor that is intended for use as an aid or adjunct to diagnosis and treatment when it is necessary to measure a patient's systolic and diastolic blood pressures over an extended period of time.
- Welch Allyn ABPM 6100
FDA-approved indication: A non-invasive oscillometric ambulatory blood pressure monitor that is intended for use as an aid or adjunct to diagnosis and treatment when it is necessary to measure adult or pediatric patients' systolic and diastolic blood pressures over an extended period of time.

The use of the ABPM device outside of listed FDA guidelines will require approval from a Medical Director on a case-by-case basis.

CMS

The Centers for Medicare & Medicaid Services (CMS) has published the following guidance:

- National Coverage Determination (NCD) Ambulatory Blood Pressure Monitoring (20.19)

Summary of Literature

Hypertension

Nearly half of adults in the United States (108 million, or 45%) have hypertension defined as a systolic blood pressure ≥ 130 mm Hg or a diastolic blood pressure ≥ 80 mm Hg or are taking medication for hypertension. In 2018, nearly half a million deaths in the United States included hypertension as a primary or contributing cause. Only about 1 in 4 adults (24%) with hypertension have their condition under control. A greater percent of men (47%) have high blood pressure than women (43%). High blood pressure is more common in non-Hispanic black adults (54%) than in non-Hispanic white adults (46%), non-Hispanic Asian adults (39%), or Hispanic adults (36%) (CDC, 2020).

Blood pressure monitoring can be obtained with the use of an ambulatory blood pressure monitor (ABPM), home blood pressure monitor (HBPM), and/or in-office reading. ABPM is often used to supplement BP readings obtained in office settings. The monitors are usually programmed to obtain readings every 15 to 30 minutes throughout the day and every 15 minutes to 1 hour during the night. ABPM is conducted while individuals go about their normal daily activities. ABPM can:

- provide estimates of mean blood pressure over the entire monitoring period and separately during nighttime and daytime
- determine the daytime-to-nighttime BP ratio to identify the extent of nocturnal "dipping,"
- identify the early-morning BP surge pattern, d) estimate BP variability, and allow for recognition of symptomatic hypotension

(ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA, 2017).

The advantages of using ABPM are that it is fully automated and noninvasive, BP is recorded over an extended period of time, and the ABPM has the ability to identify BP patterns that cannot be identified with office BP readings. The ABPM has been used in situations to confirm white coat hypertension, resistant hypertension, masked hypertension, nocturnal hypertension, in pregnancy, to monitor drug therapy, ambulatory hypotension, and autonomic dysfunction, underlying systemic abnormalities.

In 2021, the United States Preventive Services Task Force (USPSTF) published the 'A' recommendation that individuals 18 years of age and older are to be screened for hypertension. The recommendation states that screening for high blood pressure in adults aged 18 years or older and that obtaining measurements *outside* of the clinical setting for diagnostic confirmation should be done before starting treatment. The USPSTF found adequate evidence that an initial positive screening result can be confirmed by home-based blood pressure measurement or ambulatory blood pressure monitoring.

The American College of Cardiology (2017) has stressed the importance of accurate measurement of blood pressure in order to categorize the level of BP, ascertain BP-related CVD risk, and to guide the management of elevated BP. The authors recommended the use of either ABPM or HBPM (home based blood pressure monitoring) for diagnosing and monitoring white coat hypertension, to detect transition from white coat hypertension to sustained hypertension.

The National Institute for Health and Care Excellence (NICE) guidelines recommends that ABPM should be considered, in addition to clinic blood pressure measurements, for people with hypertension identified as having a white-coat effect or masked hypertension (in which clinic and non-clinic blood pressure results are conflicting). However, NICE notes that the corresponding measurements for ABPM are 5 mmHg lower than for clinic measurements. If clinic blood pressure is between 140/90 mmHg and 180/120 mmHg, ABPM should be offered to confirm the diagnosis of hypertension. Hypertension can be confirmed in patients with an ABPM daytime average of 135/85 mmHg or higher (NICE, 2019).

According to Wang and colleagues (2017), the estimated prevalence of masked hypertension (MH) in the U.S. is approximately 139.3 million adults. Men are affected more frequently than women, it is higher in persons aged 45 years or older, and more common in non-Hispanics and persons with diabetes mellitus.

The American College of Cardiology (ACC) has stated that the high prevalence of MH observed in untreated and treated individuals with normal blood pressure in the office supports a wider use of ABPM in routine clinical practice (ACC, 2018).

The European Heart Journal (2018) has recommended screening for masked hypertension. Indications for ABPM include assessment for the presence of white coat hypertension or masked hypertension; monitoring of antihypertensive medication efficacy in treated patient; assessment for the presence of nocturnal hypertension; evaluation of postural, postprandial, and drug-induced hypotension; and assessing hypotension from autonomic dysfunction, which typically requires monitoring during sleep for supine hypertension.

In 2015, a study reported on strategies for classifying patients based on office, home, and ambulatory blood pressure measurement. According to the authors, using home instead of ambulatory monitoring misses the high-risk diagnoses of masked or sustained hypertension in over 25% of patients (Zhang et al.). Anstey and colleagues (2017) analyzed data from 333 community-dwelling adults not taking antihypertensive medication with clinic BP >140/90 in the Improving the Detection of Hypertension (IDH) study. Blood pressure was measured with ABPM and home blood pressure monitoring (HBPM), and

comparisons of results indicated that ABPM detects many more individuals with MH with an increased cardiovascular disease risk compared to HBPM.

Pediatric Hypertension

According to the Centers for Disease Prevention and Control (CDC), the prevalence of hypertension in youths is on the rise. ABPM has become an invaluable tool in evaluating blood pressure (BP) in children. It is increasingly used to assess patients with variable BP readings in the office, wide discrepancies between the BP readings at home and in the clinician's office. ABPM is feasible for clinical use in children old enough to cooperate with the procedure. ABPM needs to be performed in a standardized, reliable fashion to provide accurate recordings, especially in small children and infants (UpToDate, 2021).

Nurses and other healthcare personnel involved in ABPM should follow a standardized approach to ABPM to maintain the functionality of the equipment, minimize measurement errors, and obtain valid, reliable, and reproducible BP data. Care should be taken in selection of the appropriate size cuff according to published guidelines. Although casual BP is usually taken in the dominant arm, ABPM should be applied to the child's nondominant arm to avoid interference with school work, unless the child has arterial surgery on that side, such as repair of coarctation of the aorta or creation of an arteriovenous fistula.101a After application, the ambulatory BP should be measured and compared with resting, clinic BP by use of the same technique as the ABPM (auscultatory or oscillometric). If the average of 3 values is >5 mm Hg higher or lower, cuff placement should be adjusted or the device checked for calibration. Devices should be programmed to record BP every 15 to 20 minutes during waking hours and every 20 to 30 minutes during sleep. Data should be inspected visually for gross inconsistencies that fall considerably outside the normal ranges for awake or asleep BP and heart rate for the patient's age (AHA, 2014).

Coding Requirements

Procedure Codes

CPT Code	Description
93784	Ambulatory blood pressure monitoring, utilizing report-generating software, automated, worn continuously for 24 hours or longer; including recording, scanning analysis, interpretation and report
93786	Ambulatory blood pressure monitoring, utilizing report-generating software, automated, worn continuously for 24 hours or longer; recording only
93788	Ambulatory blood pressure monitoring, utilizing report-generating software, automated, worn continuously for 24 hours or longer; scanning analysis with report
93790	Ambulatory blood pressure monitoring, utilizing report-generating software, automated, worn continuously for 24 hours or longer; review with interpretation and report

Diagnosis Code

Any other primary diagnosis code(s) submitted will require a Medical Director's approval on a case-by-case basis.

ICD-10 Code	Description
R03.0	Elevated blood-high pressure reading, without diagnosis of hypertension

Informational

Categories of BP in Adults*			
BP Category	SBP		DBP
Normal	<120 mm Hg	and	<80 mm Hg
Elevated	120–129 mm Hg	and	<80 mm Hg
Hypertension			
Stage 1	130–139 mm Hg	or	80–89 mm Hg
Stage 2	≥140 mm Hg	or	≥90 mm Hg

* Individuals with SBP and DBP in 2 categories should be designated to the higher BP category.

ABPM Consensus Conference Task Force IV: Adult ABPM Thresholds

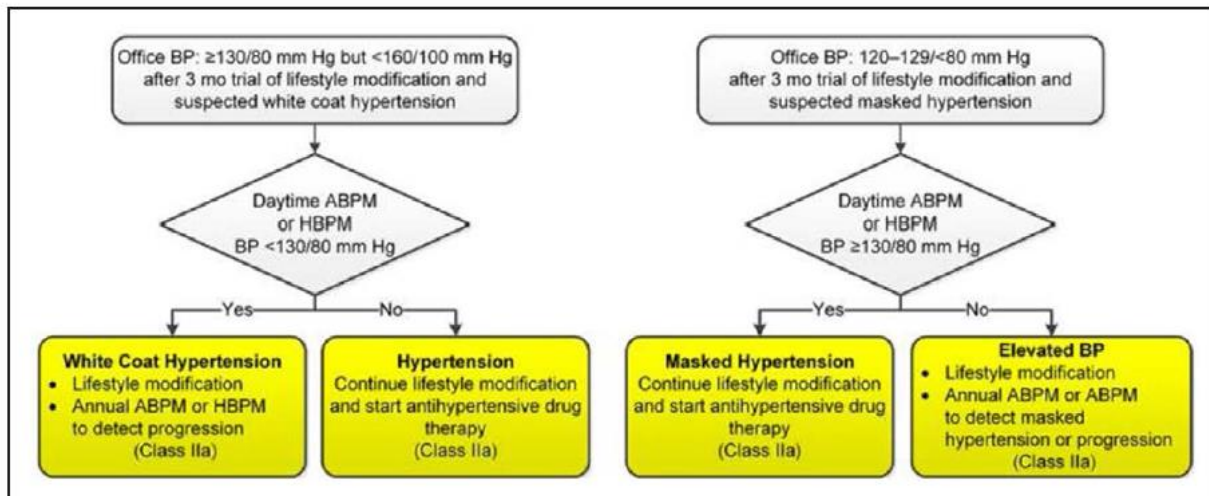
ABPM Measure	95th Percentile	Normotension, mm Hg	Hypertension, mm Hg
24-hour average, mm Hg	132/82	≤ 130/80	> 135/85
Daytime average, mm Hg	138/87	≤ 135/85	> 140/90
Nighttime average, mm Hg	123/74	≤ 120/70	> 125/75

Revised Classification for Ambulatory Blood Pressure Studies in Pediatric Patients

Category	Clinic systolic or diastolic blood pressure*		Mean ambulatory systolic or diastolic blood pressure	
	<13 y of age	≥ 13 y of age	<13 y of age	≥ 13 y of age
Normal BP	<95 th percentile	<130/80	<95 th percentile OR adolescent cut points*	<125/75mm Hg 24-h AND <130/80 mm Hg wake AND <110/65 mm Hg sleep
WCH	≥ 95 th percentile	≥ 130/80		
Masked hypertension	< 95 th percentile	<130/80	≥ 95 th percentile OR adolescent cut points*	≥ 125/75 mm Hg 24-h OR ≥ 130/80 mm Hg wake OR ≥ 110/65 mm Hg sleep

* Including 24 h, wake, and sleep blood pressure. WCH indicates white coat hypertension.

AHA, 2022



Algorithm to screen for white coat hypertension and masked hypertension in adults not on drug therapy. Copyright ©2017 by the American College of Cardiology Foundation and the American Heart Association.

Reimbursement

Participating facilities will be reimbursed per their Highmark WholecareSM contract.

Reference Sources

Centers for Disease Control (CDC). High blood pressure. Last reviewed on September 8, 2020. Accessed on June 14, 2021.

United States Preventive Services Task Force (USPTF). High Blood Pressure in Adults: Screening. April 27, 2021. Accessed on June 14, 2021.

National Institute for Health and Care Excellence (NICE). Hypertension in adults: diagnosis and management [NG136]. Published on August 28, 2019. Accessed on June 14, 2022.

Franklin SS, Thijs L, Asayama K, et al. The Cardiovascular Risk of White-Coat Hypertension. *J Am Coll Cardiol*. November 8, 2016. Accessed on March 26, 2018.

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. Vol. 71, No. 6. November 13, 2017. Accessed on June 14, 2021.

Drawz PE, Pajewski NM, Bates JT, et al. Effect of Intensive versus Standard Clinic-Based Hypertension Management on Ambulatory Blood Pressure: Results from the SPRINT (Systolic Blood Pressure Intervention Trial) Ambulatory Blood Pressure Study. *Hypertension*. January 2017. Accessed on March 26, 2018.

Staessen JA, Beilin L, Parati G, et al. Task force IV: Clinical use of ambulatory blood pressure monitoring. Participants of the 1999 Consensus Conference on Ambulatory Blood Pressure Monitoring. *Blood Press Monit.* December 1999. Accessed on March 27, 2018.

Urbina E, Alpert B, Flynn J, et al. Ambulatory blood pressure monitoring in children and adolescents: recommendations for standard assessment: a scientific statement from the American Heart Association Atherosclerosis, Hypertension, and Obesity in Youth Committee of the Council on Cardiovascular Disease in the Young and the Council for High Blood Pressure Research. *Hypertension.* September 2008. Accessed on March 23, 2018.

Townsend RT. Ambulatory and home blood pressure monitoring and white coat hypertension in adults. *UpToDate.* March 12, 2018.

O'Brien E, Dolan E. Ambulatory blood pressure monitoring for the effective management of antihypertensive drug treatment. *Clin Ther.* September 8, 2016. Abstract accessed on March 27, 2018.

U.S. Preventive Services Task Force (USPTF). Screening for high blood pressure in adults: Recommendation statement. *Ann Intern Med.* 2015. Accessed on March 27, 2018.

De la Sierra A, Banegas JR, Divison JA, et al. Ambulatory blood pressure in hypertensive patients with inclusion criteria for the SPRINT trial. December 2016. Accessed on March 27, 2018.

Flynn JT, Kaelber DC, Baker-Smith CM, et al. Clinical practice guideline for screening and management of high blood pressure in children and adults. *The American Academy of Pediatrics Clinical Practice Guideline.* August 2017. Accessed on April 5, 2018

American College of Cardiology (ACC). Masked hypertension in patients with office BP <130/80mm Hg. May 8, 2018. Accessed on June 14, 2022.

Wang YC, Shimbo D, Munter P, Moran AE, Krakoff LR, Schwartz JE. Prevalence of masked hypertension among US adults with nonelevated clinic blood pressure. *American Journal of Epidemiology.* February 2017. Accessed on June 18, 2019.

Zhang L, Wei FF, Thijs L, Kang YY, Wang S, Xu TY, Wang JG, Staessen JA. Strategies for classifying patients based on office, home, and ambulatory blood pressure measurement. *Hypertension.* 2015. Accessed on June 19, 2019.

Antsey DE, Munter P, Bello NA, Pugliese DN, Yano Y, Kronish IM, Reynolds K, Schwartz JE, Shimbo D. Diagnosing masked hypertension using ambulatory blood pressure monitoring, home blood pressure monitoring, or both? *Hypertension.* 2018. Accessed on June 20, 2019.

Dadlani A, Madan K, Sawhney JPS. Ambulatory blood pressure monitoring in clinical practice. *Indian Heart Journal.* February e2019. Accessed on June 20, 2019.

European Heart Journal. 2018 ESC/ESH Guidelines for the management of arterial hypertension. 2018. Accessed on June 20, 2019.

Centers for Medicare and Medicaid Services (CMS). Decision Memo for Ambulatory Blood Pressure Monitoring (ABPM) (CAG-00067R2). July 2, 2019. Accessed on June 14, 2021.

Centers for Medicare and Medicaid Services (CMS). National Coverage Determination (NCD) Ambulatory Blood Pressure Monitoring (20.19). Effective date July 2, 2019. Implementation date June 16, 2020. Accessed on June 14, 2022.

UpToDate. Ambulatory blood pressure monitoring in children. July 23, 2021. Accessed on June 14, 2022.

American Heart Association (AHA). Ambulatory Blood Pressure Monitoring in Children and Adolescents: 2022 Update: A Scientific Statement From the American Heart Association. May 23, 2022. Accessed on June 27, 2023.