Policy Number	**MED202.070**
Policy Effective Date	**01/01/2026**

Non-Invasive Measurement of Central Blood Pressure (cBP)

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Related Policies (if applicable)
None

Disclaimer

Carefully check state regulations and/or the member contract.
Each benefit plan, summary plan description or contract defines which services are covered, which services are excluded, and which services are subject to dollar caps or other limitations, conditions or exclusions. Members and their providers have the responsibility for consulting the member's benefit plan, summary plan description or contract to determine if there are any exclusions or other benefit limitations applicable to this service or supply. **If there is a discrepancy between a Medical Policy and a member's benefit plan, summary plan description or contract, the benefit plan, summary plan description or contract will govern.**

Coverage

Non-invasive measurement of central blood pressure (cBP) **is considered experimental, investigational and/or unproven.**

Policy Guidelines

None.

Description

Pressure measured with a cuff and sphygmomanometer in the brachial artery is accepted as an important predictor of future cardiovascular risk. However, systolic pressure varies throughout the arterial tree, such that central aortic blood pressure (cBP), is actually lower than corresponding brachial values, although this difference is highly variable between individuals. Some evidence suggests that central pressure is better related to future cardiovascular events than is brachial pressure. Moreover, anti-hypertensive drugs can exert differential effects on brachial and central pressure. (1)

Several devices and techniques, each purporting to estimate cBP, have entered commercial use. These devices may allow the noninvasive recording of the arterial waveform and the generation of a proximal aorta pressure profile. The devices when clinically validated in catheterization laboratories and when accurately calibrated, have been shown to be within 1 mm Hg to 2 mm Hg of the actual pressure in the proximal aorta. Pulse waveforms can be obtained either using a tonometer (handheld or stationary), which captures the radial artery waveform, or by oscillometric methods, which use a cuff encircling the limb. Both methods produce a waveform, either from the brachial (oscillometric) or radial (tonometric) arteries, which is usually subjected to a general transfer algorithm to produce a central pressure profile. A typical duration of waveform capture is on the order of 10 seconds. (2)

How is central BP different from conventional BP?

Conventional BP is measured in the upper arm, which is a 'peripheral' artery. Peripheral BP is usually higher than central BP as it includes the increased pressure associated with more and smaller arteries in the arm. The degree to which the peripheral BP is higher than central BP is determined by the stiffness of the arteries.

Central aortic blood pressure (cBP) is the pressure that the heart has to pump against to get blood to flow to the rest of the body. This can eventually lead to heart failure. Central blood pressure also determines the pressure in the blood vessels feeding the brain. If central pressure is too high, it may cause aneurysms and strokes. (3)

It is believed that cBP is more precise than blood pressure obtained from the arm with a traditional blood pressure cuff. These findings, including measurement of arterial pulse wave velocity are purported to predict the risk of heart disease or stroke more accurately. Additionally, cBP has been shown to strongly relate to vascular disease and outcomes than that of the traditional upper arm blood pressure. It also can distinguish between the effects of different hypertension medications when upper arm blood pressure and pulse wave velocity do not (1, 4).

Regulatory Status

- In August 2007, the SphygmoCor® CvMS (cardiovascular management system), was cleared by the U.S. Food and Drug Administration (FDA; K070795). (5)
- In November 2012, the SphygmoCor® XCEL System (K122129; AtCor Medical) was cleared by the FDA. (6)
- In March 2018, the PhysioWave Cardiovascular Analyzer (K172431) was FDA approved under the 510(k) pathway. (7) The PhysioWave is intended to obtain pulse wave velocity (PWV) and pulse rate through a combination of impedance plethysmography and weight measurements in adults 18 years of age and older. The PhysioWave also measures body weight and calculates BMI.

Refer to <https://www.accessdata.fda.gov> for additional FDA approved devices.

Rationale

This policy is based on a review of relevant professional association recommendations.

American Heart Association (AHA)/American College of Cardiology (ACC)/American Association of Nurse Practitioners (AANP) et al.

In 2025, the AHA/ACC/AANP et al. released a guideline on the prevention, detection, evaluation, and management of high blood pressure in adults. (8) Traditionally, blood pressure measurement includes an upper arm cuff-based device for clinical, home, and 24-hour ambulatory blood pressure measurement. Specific recommendations for accurate measurement of blood pressure using auscultatory and oscillometric devices, both in-office and at home were included. A number of newer methods were also discussed. Cuffless technology options, often embedded in wearable, nonwearable, or smartphone devices, estimate BP through various approaches (e.g., pulse wave velocity, pulse transit time, pulse wave analysis, volume clamping, and applanation tonometry). Many of these approaches require user calibration with periodic cuff BP measurement or by demographic data input. Studies comparing cuffless BP measurement to oscillometric or auscultatory cuff-based methods have revealed mixed results in regard to acceptable agreement. Limitations of current models include substantial variation in sensor technologies and validation approaches used for cuffless devices, comparator measures, measurement conditions, and the populations studied.

Table 1. Recommendation for Cuffless BP Devices

COR	LOE	Recommendation
3: No Benefit	C-LD	In adults, the use of cuffless BP devices is not recommended for the diagnosis or management of high BP.

BP: Blood pressure; COR: Class (Strength) of Recommendation; LOE: Level (Quality) of Evidence; C-LD: Limited data.

Coding

Procedure codes on Medical Policy documents are included **only** as a general reference tool for each policy. **They may not be all-inclusive.**

The presence or absence of procedure, service, supply, or device codes in a Medical Policy document has no relevance for determination of benefit coverage for members or reimbursement for providers. **Only the written coverage position in a Medical Policy should be used for such determinations.**

Benefit coverage determinations based on written Medical Policy coverage positions must include review of the member's benefit contract or Summary Plan Description (SPD) for defined coverage vs. non-coverage, benefit exclusions, and benefit limitations such as dollar or duration caps.

CPT Codes	93050
HCPCS Codes	None

*Current Procedural Terminology (CPT®) ©2024 American Medical Association: Chicago, IL.

References

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3. Central blood pressure. 2021. Available at <https://www.medi-stats.com> (accessed December 12, 2025).
4. Boutouyrie P, Achouba A, Trunet P, et al. EXPLOR Trialist Group. Amlodipine-valsartan combination decreases central systolic blood pressure more effectively than the amlodipine-atenolol combination: the EXPLOR study. Hypertension. Jun 2010; 55(6):1314-1322. PMID: 20404219
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8. Jones DW, Ferdinand KC, Taler SJ, et al. 2025 AHA/ACC/AANP/AAPA/ABC/ACCP/ACPM/ AGS/AMA/ASPC/NMA/PCNA/SGIM 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 Joint Committee on Clinical Practice Guidelines. Hypertension. Oct 2025; 82(10):e212-e316. PMID 40811516

Centers for Medicare and Medicaid Services (CMS)

The information contained in this section is for informational purposes only. HCSC makes no representation as to the accuracy of this information. It is not to be used for claims adjudication for HCSC Plans.

The Centers for Medicare and Medicaid Services (CMS) does not have a national Medicare coverage position. Coverage may be subject to local carrier discretion.

A national coverage position for Medicare may have been developed since this medical policy document was written. See Medicare's National Coverage at <https://www.cms.hhs.gov>.

Policy History/Revision

Date	Description of Change
01/01/2026	Document updated. Coverage unchanged. Added reference 8; some removed.
02/15/2025	Reviewed. No changes.
03/15/2024	Document updated with literature review. No change in Coverage. Added reference 1-3, 5-9, 17-19. Others updated, some removed.
03/15/2023	Reviewed. No changes.
05/15/2022	Document updated with literature review. Coverage unchanged. Reference 1 added.
02/15/2021	Reviewed. No changes.
05/15/2020	Document updated with literature review. Coverage unchanged. Reference 8 added.
07/15/2018	Reviewed. No changes.
10/15/2017	Document updated with literature review. Coverage unchanged.
12/01/2016	Reviewed. No changes.
05/01/2016	New medical document. Non-invasive measurement of central blood pressure is considered experimental, investigational and/or unproven.