

Reimbursement Guide:

CPT® 93050 - Arterial Pressure Waveform Analysis (PWA)

CPT® 9945x & 99091 - Remote Physiologic Monitoring (RPM)

CPT® 9947x - Self Measured Blood Pressure (SMBP)

CPT® 9378x & 93790 - Ambulatory Blood Pressure Monitoring (ABPM)

Executive Summary

CONNEQT's suite of devices represents an innovative approach to cardiovascular health monitoring and management. These devices offer clinicians a sophisticated platform for evaluating vascular health through the analysis of key vascular biomarkers and blood pressure parameters. By leveraging existing reimbursement codes associated with arterial pressure waveform analysis (PWA), remote physiologic monitoring (RPM), self measured blood pressure (SMBP), and ambulatory blood pressure monitoring (ABPM), CONNEQT's devices provide clinicians with invaluable insights into vascular function and cardiovascular risk. These insights enable healthcare professionals to make informed decisions regarding diagnosis, treatment strategies, and risk management for their patients. By integrating seamlessly into clinical practice and offering precise measurements of vascular biomarkers and blood pressure, CONNEQT's devices empower clinicians to deliver personalized care aimed at optimizing cardiovascular health outcomes. Moreover, by aligning with existing reimbursement codes, healthcare providers can effectively incorporate these innovative technologies into their practices while maximizing reimbursement opportunities and improving overall patient care.

For questions, please contact us at:

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CPT® is a registered trademark of the American Medical Association (AMA)

Coverage At-A-Glance¹⁻³

CPT	SphygmoCor XCEL	CONNEQT Pulse	Suntech Oscar 2
PWA - 93050	X	X	
RPM - 9945x & 99091		X	
SMBP - 9947x		X	
ABPM - 9378x & 93790			X

PWA, RPM, SMBP, and ABPM may be covered by Public and Commercial Payers.

Medicare does not have any National Coverage Determinations (NCDs) or Local Coverage Determinations (LCDs) pertaining to RPM or PWA. However, it does allow coverage and payment for services considered medically reasonable and necessary which are determined on a case-by-case basis.

Commercial payers have medical policies that differ from payer to payer. For coverage details, contact the patient's insurance plan directly.

What should I do if I have a denial?

If you have a denial, check the reason code on the Explanation of Benefits (EOB) from the payer. It will indicate where the issue is. It may be that an incorrect code was listed, prior authorization was required, or that it was not a covered patient benefit. Once you have identified the issue, correct it and resubmit the claim. If the service was not covered by the patient's plan, you can submit an appeal to the payer. It is best practice to conduct a benefit verification check prior to initiating RPM to ensure it is a covered benefit under the patient's plan. Be sure to inquire about prior authorization, payer-specific documentation, and/or coding requirements.



Pulse Wave Analysis (PWA): 93050

CONNEQT's pioneering SphygmoCor® technology enables noninvasive measurement of the central aortic pressure waveform. The incorporation of PWA was developed as complementary to brachial pressure measurements to help guide treatment decisions designed to prevent or reduce long-term target organ damage and cardiovascular events resulting from increased pressure.

PWA in Clinical Literature

End-organ damage associated with hypertension is related to central pressures as such pressures are directly transmitted to vital organs.⁴

Multiple clinical studies including several meta-analyses have evaluated central BP variables:

- These studies suggest that central BP generally has a higher predictive value for CV events and end-organ damage relative to peripheral blood pressure.⁴⁻¹⁵
- A recent meta-analysis of 24 prospective studies with 146,986 individuals¹¹ concluded that central hemodynamic variables are independent predictors of cardiovascular disease and all-cause mortality.

The substantial data in multiple peer-reviewed publications demonstrate an increased risk for CV events with elevated central pressures, particularly central systolic blood pressure (cSBP) and it is therefore reasonable to infer that reductions in hypertension based on cSBP will likely be associated with reduced CV events, as has been proven with brachial blood pressure.

Use of PWA in Treatment of Hypertension

Treatment with combined medications are often the mainstay of hypertension treatment. Issues related to medications include undertreatment, overtreatment, compliance, drug cost, adverse events, and interactions with concomitant medications, all of which impact a patient's compliance.

Optimizing prescription medication and the self-administration of therapy is critical to controlling hypertension.

Incorporation of PWA into the treatment paradigm for hypertension may be considered based on clinical judgement. Examples where PWA may have a role in management include:

1. Confirmation of hypertension so that initiation of medication is more likely to be the correct decision for a patient, and to determine the appropriate class of hypertensive medication.
Scenario: Concurrent elevation in brachial and central pressures.
2. Avoiding initiation of medication when white coat hypertension is suspected.
Scenario: Elevated brachial pressures and normal central pressures, provided that an elevated heart rate does not confound the results.
3. Confirmation that increased treatment may not be needed.
Scenario: Borderline high peripheral pressures and normal central pressures.
4. Targeting when to consider reduction of medication.
Scenario: Normal peripheral and low central pressures, or extended period of normal peripheral and normal central pressures (particularly in the setting of medication tolerance issues).

Coverage for PWA

Pulse Wave Analysis may be covered by Public and Commercial Payers.

Medicare does not have any National Coverage Determinations (NCDs) or Local Coverage Determinations (LCDs) pertaining to PWA. However, it does allow coverage and payment for services considered medically reasonable and necessary which are determined on a case-by-case basis.

Commercial payers have medical policies that differ from payer to payer. For coverage details, contact the patient's insurance plan directly.

Procedure Coding for PWA

Pulse Wave Analysis is reported using the following CPT® Code, which was established by the AMA in 2016.

2024 Medicare National Average Payment

CPT® CODE	Description	Non-Facility Payment	Facility Payment
93050	Arterial pressure waveform analysis for assessment of central arterial pressures, includes obtaining waveform(s), digitization and application of nonlinear mathematical transformations to determine central arterial pressures and augmentation index, with interpretation and report, upper extremity artery, non-invasive	\$15.98	\$7.99
93050-26	Arterial pressure waveform analysis for assessment of central arterial pressures, includes obtaining waveform(s), digitization and application of nonlinear mathematical transformations to determine central arterial pressures and augmentation index, with interpretation and report, upper extremity artery, non-invasive	\$7.99	\$7.99
93050-TC	Arterial pressure waveform analysis for assessment of central arterial pressures, includes obtaining waveform(s), digitization and application of nonlinear mathematical transformations to determine central arterial pressures and augmentation index, with interpretation and report, upper extremity artery, non-invasive	\$7.99	NA

Diagnostic Coding for PWA

The following ICD-10-CM codes are commonly used when reporting PWA:

ICD-10-CM	Description
I10	Essential (primary) hypertension
I11	Hypertensive heart disease
N18	Chronic kidney disease (CKD)
I25	Chronic ischemic heart disease
I12	Hypertensive chronic kidney disease

Billing Notes

When submitting a claim for CPT 93050, attach a copy of the SphygmoCor report displaying the blood pressure pulse waveform and associated parameters in addition to any other documentation supporting medical necessity.

Do not report 93050 in conjunction with diagnostic or interventional intra-arterial procedures.

Use of Modifiers When Billing 93050

Pulse Wave Analysis reported with CPT 93050 is often billed on the same date as an office evaluation and management (E/M) service. If it is for a separate E/M or procedure, append the code with Modifier—25 (a significant, separately identifiable evaluation and management service by the same physician on the same day as the procedure or other service). Documentation in the patient record is required to support the medical necessity for both services.

Modifiers

Modifiers play a critical role in medical billing and coding, as they provide additional information about the medical procedure performed without altering the procedure code itself. They are essential for precise claims processing and are used to inform payers of circumstances that may affect reimbursement.

Commonly used Modifiers for Billing Physician Services

CODE	DESCRIPTION
22	Increased procedural services, indicates that the work performed was substantially greater than typically required.
25	Significant, separately identifiable evaluation and management service by the same physician on the same day of the procedure or other service.
24	Unrelated evaluation and management service by the same physician during a postoperative period.
26	Professional component, indicates that the physician is billing only for their professional services, not the use of equipment or facilities.
51	Multiple procedures, used when multiple procedures are performed during the same session by the same provider.
52	Reduced services, indicates that a service or procedure was partially reduced or eliminated at the physician's discretion.
53	Discontinued procedure. Used when a surgical or diagnostic procedure is terminated after its initiation due to circumstances that may threaten the patient's health.
59	Distinct procedural service, indicates that procedures that are not usually reported together are distinct and independent from one another.

Remote Physiologic Monitoring (RPM): 9945x & 99091

RPM involves the collection and analysis of patient physiologic data such as weight, blood pressure, pulse oximetry, or glucose that are used to develop and manage a treatment plan related to a chronic and/or acute health illness or condition. It is sometimes referred to as Remote Patient Monitoring. It allows patients to be monitored remotely while in their homes, while healthcare providers (HCPs) track physiologic parameters such as blood pressure and implement changes to treatment as appropriate.

2024 Medicare National Average Payment

CPT® CODE	Description	Non-Facility Payment	Facility Payment
99453	Remote monitoring of physiologic parameter(s) (eg, weight, blood pressure, pulse oximetry, respiratory flow rate), initial; set-up and patient education on use of equipment	\$19.97	NA
99454	Remote monitoring of physiologic parameter(s) (eg, weight, blood pressure, pulse oximetry, respiratory flow rate), initial; device(s) supply with daily recording(s) or programmed alert(s) transmission, each 30 days	\$47.27	NA
99457	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; first 20 minutes	\$48.93	\$29.63
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; each additional 20 minutes (List separately in addition to code for primary procedure)	\$39.28	\$29.63
99091	Collection and interpretation of physiologic data (eg, ECG, blood pressure, glucose monitoring) digitally stored and/or transmitted by the patient and/or caregiver to the physician or other qualified health care professional, qualified by education, training, licensure/regulation (when applicable) requiring a minimum of 30 minutes of time, each 30 days	\$53.59	\$53.59

Coding Notes:

Do not report 99453 more than once per episode of care

Do not report 99453 for monitoring of less than 16 days

Use 99458 in conjunction with 99457

For remote therapeutic monitoring treatment management services, see 98980, 98981

Self Measured Blood Pressure (SMBP): 9947x

Self-measured blood pressure requires use of device validated for clinical accuracy; patient education/training and device calibration. Separate self-measurements of two readings one minute apart, twice daily over a 30-day period with a minimum of 12 readings are required.

2024 Medicare National Average Payment

CPT® CODE	Description	Non-Facility Payment	Facility Payment
99473	Self-measured blood pressure using a device validated for clinical accuracy; patient education/training and device calibration	\$14.31	NA
99474	Self-measured blood pressure using a device validated for clinical accuracy; 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	\$16.64	\$8.65

Coding Notes:

Do not report 99473, 99474 in the same calendar month as 93784, 93786, 93788, 93790, 99091, 99424, 99425, 99426, 99427, 99437, 99439, 99453, 99454, 99457, 99487, 99489, 99490, 99491.

Do not report 99474 more than once per calendar month.

Ambulatory Blood Pressure Monitoring (ABPM): 9378x & 93790

ABPM devices are small, portable, fully automated oscillometric devices that are typically worn by a patient over the upper arm brachial artery that record BP at regular intervals over 24 to 48 hours, most commonly at 15- to 30-minute intervals.

The USPSTF updated its high BP screening recommendations in 2015. BP measurement errors can occur in clinical settings due to "white-coat" hypertension and lower measurements. Although ABPM is the standard, SMBP devices are also effective. Prior to 2020, all BP monitoring codes were ABPM codes. With the introduction of SBPM into the code set, ABPM codes were revised to include report-generating software.

2024 Medicare National Average Payment

CPT® CODE	Description	Non-Facility Payment	Facility Payment
93784	Ambulatory blood pressure monitoring, utilizing report-generating software, automated, worn continuously for 24 hours or longer; including recording, scanning analysis, interpretation and report	\$45.94	NA
93786	Ambulatory blood pressure monitoring, utilizing report-generating software, automated, worn continuously for 24 hours or longer; recording only	\$22.64	NA
93788	Ambulatory blood pressure monitoring, utilizing report-generating software, automated, worn continuously for 24 hours or longer; scanning analysis with report	\$5.66	NA
93790	Ambulatory blood pressure monitoring, utilizing report-generating software, automated, worn continuously for 24 hours or longer; review with interpretation and report	\$17.64	\$17.64

Coding Notes:

For arterial cannulization and recording of direct arterial pressure, use 36620

For radiographic injection procedures, see 36000-36299

About CONNEQT

CONNEQT pioneered a biosensing technology that has been clinically validated and FDA-cleared to noninvasively measure vascular biomarkers representing key indicators of vascular health. The indicators include, but not limited to, central BP, vascular stiffness, vascular age, and heart stress. Named SphygmoCor®, the technology has been deployed in healthcare systems and clinical trials to measure arterial health.

The SphygmoCor technology enables a new paradigm in the diagnosis and management of hypertension and cardiovascular diseases that is increasingly decentralized and personalized. Incorporation of non-invasive measurements of vascular biomarkers can improve hypertension management in the following areas:

- Refine monitoring requirements;
- Reduce over-treatment;
- Improve under-treatment; and
- Reduce costs of management (e.g. medication costs, monitoring such as ambulatory blood pressure monitoring (ABPM))

When combined with cloud-based data analytics, our suite of FDA-cleared medical devices enables key stakeholders throughout the healthcare ecosystem to obtain valuable health information not accessible from standard brachial blood pressure monitors.

Learn more at [CONNEQT.com](https://conneqt.com).

References

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2. CPT® Assistant and CPT® Changes- An Insider's View, published January 2022 by the American Medical Association (AMA), Newsletter April 2020.
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