

Working together to improve health care quality, outcomes, and affordability in Washington State.

**Blood Pressure Screening and Control**

**2025**

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# Glossary

ABPM: Ambulatory Blood Pressure Monitoring

BMI: Body Mass Index

BP: Blood Pressure

CDC: Centers for Disease Control and Prevention

CVD: Cardiovascular Disease

DASH: Dietary Approaches to Stop Hypertension

EMR/EHR: Electronic Medical Record/Electronic Health Record

HBPM: Home Blood Pressure Monitoring

HTN: Hypertension

LHJ: Local Health Jurisdiction

QALY: Quality-Adjusted Life Year

SDOH: Social Determinants of Health

USPSTF: United States Preventive Services Task Force

# Executive Summary

Hypertension impacts about half of American adults, while only around 16% of those with hypertension have their high blood pressure under control. Prevalence and control varies between racial and ethnic populations, those with nonmedical drivers of health concerns such as food insecurity or housing, and other factors. Medication and nonpharmacological interventions can reduce blood pressure and reduce risk for severe outcomes such as heart attack, stroke and kidney disease. Many communities carry a disproportionate burden of hypertension with disparities in race, ethnicity, education, income, geographic location, and nonmedical drivers of health. Many also do not receive the same standard of care across Washington state (e.g., guidelines-directed medication therapy, accurate dose titration, insurance coverage) with variation in therapy and care delivery models. Utilizing blood pressure control quality metrics stratified by different relevant demographic, geographic and nonmedical barriers has promise to reduce inequities in morbidity and mortality related to hypertension.

By focusing on these key areas, this report provides a roadmap for reducing the burden of hypertension and improving health outcomes for all Washingtonians.

|  |  |
| --- | --- |
| Focus Area | Components |
| Blood Pressure Screening | * Accurate, guideline-aligned blood pressure screening and diagnosis * Universal approach to blood pressure screening * Appropriate follow up |
| Individualized Blood Pressure Management | * Whole-person, culturally safe and congruent care that addresses medical and nonmedical drivers of health * Guideline-aligned initiation of treatment and follow-up * Reduced financial barriers to care |
| Integrated Team-based Care | * Non-physician led, integrated team-based care * Expanded points of access to care * Reimbursement infrastructure that facilitates team-based care across the care continuum, from clinical to community settings |
| Quality Improvement for Population Health | * Internal data collection/registries maintained for quality improvement * Quality improvement focused on reducing variation between populations * Improving provider responsiveness to uncontrolled blood pressure |

# Stakeholder-Specific Guidelines

## Healthcare Professionals

* **Screening & Diagnosis**
  + Screen all adults in medical office settings annually per USPSTF guidelines.
  + Take blood pressure accurately, according to most updated guidelines.
    - Remind patients to abstain from exercise, caffeine and smoking/vaping within 30 minutes of their appointment
    - Remind patients to empty their bladder
    - Position patient sitting in a chair with feet flat and back supported for 3-5 minutes resting without talking or moving
    - Pick correct cuff size (bladder encircles 75-100% of the arm)
    - Make sure patient’s arm is supported
    - At first visit, record BP in both arms and use arm that gives the higher reading; repeat measurement after 1-2 minutes
    - Average 2+ readings obtained on 2+ occasions to estimate individual’s BP
  + Use out of office BP measurements as part of care for patients with hypertension, including in confirming diagnosis of hypertension, titrating medication, and setting goals through shared decision-making.
    - Use either ABPM or HBPM to confirm diagnosis of hypertension, including exclusion of white-coat hypertension. See [AHA/ACC 2025 guidelines](#_Appendix_A._Guidelines) for details.
    - Teach patient how to take accurate blood pressure at home
  + **Providers**: Consider and evaluate for secondary causes of hypertension (e.g., renal disease, thyroid disorders, obstructive sleep apnea) for those who experience severe or resistant hypertension, accelerated onset, acute rise in blood pressure or for those younger than 30 years old.
  + Use national guidelines to direct stage of hypertension diagnosis. Below table is from the 2025 AHA/ACC Guidelines

|  |  |  |  |
| --- | --- | --- | --- |
| Blood Pressure Category | Systolic (mmHg) |  | Diastolic (mmHg) |
| Normal | Less than 120 | AND | Less than 80 |
| Elevated | 120 – 129 | AND | Less than 80 |
| Hypertension | | | |
| Stage 1 | 130 – 139 | OR | 80 – 89 |
| Stage 2 | 140 or higher | OR | 90 or Higher |
| Severe Hypertension/Hypertensive Emergency | >180 | OR | >120 |

* + For patients with BP >SBP 180 OR DBP > 120, assess for acute target organ damage to determine if in severe hypertension or hypertensive emergency. See **AHA 2025 Diagnosis and Treatment of Severe Hypertension and Hypertensive Emergency** workflow
* **Individualized Blood Pressure Management**
  + Once a diagnosis of hypertension is confirmed
    - Calculate cardiovascular risk using a standardized calculator (**PREVENT**)
    - Order comprehensive lab tests and 12-lead ECG to inform guideline directed medication therapy and to evaluate for secondary causes of hypertension. See [**Appendix**](#_Appendix_D._Hypertension) for further details.
      * Screen for primary aldosteronism in those with resistant hypertension
      * Refer to specialists for confirmation of secondary causes as needed
    - Engage in a care planning conversation with the patient and their support system, including about:
      * appropriate blood pressure goals based on CVD risk and comorbidities
        + Those with and without elevated CVD risk:

SBP: at least <130mmHg, ideally <120mmHg

DBP: target <80mmHg

* + - * available evidence-based options
      * risks and benefits alignment with preferences
    - Document detailed plan of care including timely follow up with healthcare team to escalate care as needed
    - Tailor lifestyle change supports to meet individual needs, circumstances, cultural context, language and preferences.
    - Involve trained interpreters whenever appropriate.
    - Consider specific recommendations for patients with comorbidities per most updated guidelines (2025 AHA/ACC)
  + Screen for health-related social needs and integrate into care plan. Follow Foundation for Health Care Quality’s guidelines on Social Need and Health Equity.
  + Offer guideline-directed treatment based on stage of hypertension and other risk factors. Below table is based on the **2025 AHA/ACC hypertension** **guidelines.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | CVD Risk |  |  |
| BP/Stage HTN | **10 year CVD risk <7.5%** | **10 year CVD risk >/= 7.5%** | **Living with CVD** |
| Stage 1 (130-139 SBP OR 80-89 DBP) | 3-6 month trial of lifestyle intervention, initiate medication if sustained hypertension; single first-line reasonable with dose titration and sequential addition of other agents as needed | Initiate medications; single first-line reasonable with dose titration and sequential addition of other agents as needed | Initiate medications; single first-line reasonable with dose titration and sequential addition of other agents as needed |
| Stage 2 (140+ SBP OR 90+ DBP) | Initiate medications; single-pill combination recommended | Initiate medications; single-pill combination recommended | Initiate medications; single-pill combination recommended |

* + Nonpharmacological therapy
    - Weight management: reduction of 5% body weight minimum recommended for those with overweight/obesity to prevent/treat elevated BP/HTN
    - Diet & Nutrition: encourage heart healthy eating pattern (e.g., DASH), reduced sodium intake, potassium salt substitutes as appropriate and moderate potassium dietary supplementation
    - Alcohol: those who consume alcohol should aim to reduce intake, or abstain if possible
    - Physical activity: increase physical activity through structured exercise program
    - Stress reduction: techniques like meditation, breathing exercises, and yoga may be useful and reasonable
  + Medication
    - Recommended first line therapy includes thiazide-type diuretics, long-acting dihydropyridines, CCBs and ACEi or ARB
    - **To support patients in taking their medication**:
      * Use single-pill combination medication when able for people living with stage 2 hypertension
      * Consider once-daily dosing when possible
      * Discuss reasoning for medication and provide education/coaching
      * Encourage use of medication reminders and other self-management interventions
    - **Adults with uncontrolled BP should be placed on new or titrated medication until control achieved**
    - Do NOT prescribe medications differently base on race-based guidelines
  + **Schedule monthly follow up for people with new medications or changes in dose/regimen until blood pressure control achieved**.
* **Integrated Team-based Care**
  + Delegate task such as medication titration, patient education and follow-up to non-provider team members
  + Implement standing orders for medication titration and other aspects of care
  + As available, refer to self-management blood pressure monitoring program (either in house or through a community based organization e.g**.,** YMCA)
  + Refer patients with uncontrolled hypertension and nonmedical drivers of health to team members that can support addressing social needs (e.g., community health workers)
* **Quality Improvement**
  + Take continuing education courses on hypertension guidelines and management

## Delivery Systems – Primary Care

* **Screening & Diagnosis**
  + Promote accurate blood pressure screening
    - Train relevant staff on how to measure blood pressure accurately, and for all appropriate patients
    - Provide environment to support accurate BP screening (e.g., chair in quiet environment, dark environment)
  + Identify patients with undiagnosed hypertension
    - Establish clinical criteria for potentially undiagnosed hypertension (AHA/ACC Practice Guidelines) (e.g., 2 separate BP office readings of >140/90)
    - Search electronic medical records or other registries for those who meet established criteria
    - Reach out to patient for additional screening as needed to confirm diagnosis of hypertension
    - At a population level, calculate prevalence of hypertension, and stratify by known risk factors to identify disparities
  + Identify populations with disparities in hypertension, and expand access
    - Identify patient populations with disparities in hypertension annual screening and control
    - Build partnerships with community-based organizations, community pharmacies and others to provide screening in the community.
      * **ensure an opportunity for connection to care is provided as part of screening events** (e.g., referral list, follow up call from delivery system coordinator, immediate appointment scheduling available, etc.)
    - Explore development of **mobile units** hosting screening at nontraditional healthcare access locations (e.g., faith-based organizations, community centers, etc.)
* **Individualized BP Management**
  + Establish protocols for screening all patients for social needs, and pathways to address needs (e.g., in-house coordinator support, referral to local services) and incorporate into care plans
  + Provide patient-facing educational materials about hypertension management that meet cultural and linguistic needs of community
  + Proactively track and manage patients with hypertension
    - Implement a registry (ideally EHR-based)
    - Define outreach processes to patients with uncontrolled hypertension, those needing medication adjustments and further lifestyle support based on documented blood pressure readings, and those otherwise needing follow up
  + Protocolize hypertension treatment through adopting or adapting existing evidence-based algorithms
    - Create point-of-care triggers for uncontrolled hypertension to be addressed in appointments
    - Embed clinical decision support into practice workflow
    - Provide performance feedback specific to hypertension control for providers
  + Train and provide resources for teams to support patient self-management (e.g., medications, self-measured blood pressure, etc.)
  + Establish a self-measured blood pressure monitoring program, or referral pathway to existing community based program (e.g., YMCA)
    - Assign care team roles
    - Establish access to [validated blood pressure monitors](https://urldefense.com/v3/__https:/click.heartemail.org/?qs=3ff1746905b8395cd8d0bb6f130ae07c73785e16ec0236ffca5f55db17fdf9015bec9ded06d74af2ffd2f85d0b3858514a01de942807ed8f__;!!IQSCTYBSse9odmP7!KfELjsXwpe-ji4v9DouYEzTStw4O-uH4QsJRqqaKckzEfYfS1CcgisnZI8TRSCWc4kegN5-oGzBZdByCAQ$) and cuffs with inclusive sizing that can be given same day to patients. (loaner program, take home) If possible, provide cuffs that can transmit readings to the EHR
    - Develop a process for handling patient-generated BP readings and inputting readings as structured data in the EHR.
* **Integrated Team-based Care**
  + Establish a team to care for patients with hypertension that meets the minimal functions outlined below:
    - Team-based care strategies (e.g., huddles, care management meetings, high-risk patient panel review) are consistently used through co-located or integrated models.
    - Teams screen blood pressure according to USPSTF evidence-based guidelines
    - Triage of positive screening results for blood pressure in, including protocols ranging from elevated blood pressure to hypertensive emergency and follow up plans for previously undiagnosed individuals
    - Accurate, guideline driven diagnosis of hypertension, based on an average of 2+ careful readings on 2+ occasions.
    - Screening for comorbid health conditions for people with elevated blood pressure (e.g., kidney disease, atherosclerosis)
    - Annual screening for non-medical drivers of health (e.g., food insecurity, transportation difficulties), clear documentation of results and connection to resources as available to address nonmedical drivers of health
    - Guideline-directed services for people at risk for and with hypertension that address the whole person are regularly offered, including:
      * Behavioral health visits for people with hypertension
      * Guideline directed medication management, reconciliation and titration
      * Self-measured blood pressure monitoring program (in-house or referred) and self-management counseling
      * Patient education and management support for hypertension including lifestyle interventions, medication and behavioral health interventions
      * Active management of co-occurring conditions (e.g, kidney disease, diabetes, etc.)
      * Additional supports for patients with uncontrolled hypertension (e.g., intensive case management, home visits with community health workers)
    - Treatment goals are developed through a shared decision-making process to determine patient-directed goals taking into consideration nonmedical drivers of health
    - Convenient and flexible care options to allow easy access to the care in the right setting
      * Alternative to traditional physical and behavioral health office visits (e.g., e-visits, phone visits, group visits, home visits, alternate locations)
      * As able, offer expanded hours for visits (e.g., early morning, evening, weekend)
    - Language accessibility resources (translation, interpretation, patient materials such as pamphlets) that meet the needs of the populations served
    - Health information technology that supports management at the population level, including the following capabilities:
      * Identification of people with undiagnosed hypertension
      * Identification of variation between populations in hypertension control rates
      * Monitoring of patients at risk for or with hypertension, including if able ability to communicate through blue-tooth or other methods of directly uploading blood pressure readings from home blood pressure monitors
      * Interoperability with the broader healthcare ecosystem, such as through health information exchanges to support longitudinal patient-centric records
  + Expand the medical team through community-based pharmacists, community health workers, nurses, etc.
  + Broaden and streamline options for flexible team-based scheduling
    - Pharmacist-, nurse-, and/or MA-led visits
    - Early morning, evening and weekend availability
    - Telemedicine, virtual visits, asynchronous communication (e.g., portal, text)
  + Provide dedicated time for care teams to discuss patients with uncontrolled hypertension in team huddles
* **Quality Improvement**
  + Prioritize stratification and decreasing variation between population groups in all quality improvement efforts
  + Identify populations for which screening rates are lower
  + Engage in targeted screening initiatives. This includes stratifying by various demographic variables (sex, race and ethnicity, disability status, geographic) and health-related social needs
    - In designing targeted initiatives, start by collaborating with relevant community-based organizations (e.g., faith-based institutions, community centers, nonprofit organizations, etc.)
    - As able, disaggregate further racial and ethnic subgroups to tailor approach (e.g., Asian American disaggregated to Chinese American, Japanese American, Korean American, Native Hawaiian and Pacific Islander, etc.)
  + Determine hypertension control and related process metrics for practice improvement See Evaluation Framework.
  + Provide provider-specific dashboards with blood pressure related performance measures

## Delivery Systems – Hospital Systems

* **Screening & Diagnosis**
  + Train relevant staff on how to measure blood pressure accurately at regular intervals, and entering into EHR proper structured data fields
    - Consider reinforcing this by placing evidence-based educational material (flyers) as reminders
  + Purchase and use validated blood pressure devices ([U.S. Blood Pressure Validated Device Listing](https://urldefense.com/v3/__https:/click.heartemail.org/?qs=3ff1746905b8395cd8d0bb6f130ae07c73785e16ec0236ffca5f55db17fdf9015bec9ded06d74af2ffd2f85d0b3858514a01de942807ed8f__;!!IQSCTYBSse9odmP7!KfELjsXwpe-ji4v9DouYEzTStw4O-uH4QsJRqqaKckzEfYfS1CcgisnZI8TRSCWc4kegN5-oGzBZdByCAQ$)); maintain equipment per manufacturer guidance.
  + Provide environment to support accurate BP screening (e.g., chair in quiet environment, dark environment)
  + Communicate new elevated blood pressure to patient’s primary care provider with permission

## Health Plans

* **Screening & Diagnosis**
  + Identify groups with blood pressure screening not meeting USPSTF guidelines, stratifying by demographic and geographic factors (e.g., racial and ethnic groups, socioeconomic status, nonmedical drivers of health, disability status)
  + Target outreach and/or to member groups with disparities in screening rates that are tailored to meet individual barriers to screening for blood pressure
    - As able, partner with community based organizations to identify trusted spaces and design interventions to improve hypertension screening
  + Encourage contracted providers to utilize AHA/ACC endorsed quality process measures for screening for high blood pressure
  + Offer and publicize rewards for annual biometrics screening.
* **Individualized Blood Pressure Management**
  + Cover the following services to improve hypertension management and care, with minimal cost sharing/co-pay and prior authorization:
    - First line combination antihypertensive medications per most updated AHA hypertension guidelines
    - Pharmacist-led medication management visits (at least quarterly first year after diagnosis, and ongoing as clinically needed)
    - Medical nutrition therapy per guidelines (at least monthly in the first year after diagnosis, and ongoing as clinically needed)
    - Behavioral counseling interventions for hypertension in both individual and group formats
    - Routine hypertension control visits and behavioral health visits, including over telehealth
    - Self-measured blood pressure (SMBP) services, including provision of validated home BP devices, time for patient training and clinical staff time to review SMBP data
    - Screening for common comorbidities
    - Screening for and addressing health-related social needs
  + Adapt member-facing material to meet cultural and linguistic needs, and make them easy to read and access
  + Adjust medication policy to reduce barriers (e.g., extend medication refills, mail order pharmacy)
  + Provide increased support for members identified with hypertension, including:
    - **home blood pressure monitors to members with hypertension** that are validated and ideally digitally communicate blood pressure readings to the HER with no cost-sharing
    - access to internal care management team that can provide targeted outreach and assistance to members with hypertension care gaps (e.g., gaps in prescription coverage)
* **Integrated Team-based Care**
  + Provide coverage for multidisciplinary, team-based hypertension care along the spectrum of fee-for-service to population based payments, including advance models that incorporate risk adjustment
    - Incorporate population based payments that rewards teams for reaching blood pressure control targets in population subgroups with greatest disparities (e.g., race/ethnicity, health-related social needs, disability status, income, language, etc.)
    - Incorporate opportunities for collaborative practice agreements between providers and pharmacists to expand pharmacist-led medication management
  + Use information systems that allow for shared care planning across providers and delivery organizations
  + Increase transparency of member information across providers from different
  + Engage in initiatives to improve health information exchange between different plans and provider systems using interoperability standards (e.g., FHIR, HLE7)
* **Quality Improvement**
  + Incentivize a decrease in variation of hypertension control between population subgroups across the spectrum of fee-for-service to value-based payment models, including advanced primary care payment models that include risk-adjustment
    - Explicitly tie incentives to narrowing disparities in blood pressure control rates
    - As able, disaggregate racial and ethnic subgroups further to better target improvement interventions (e.g., Korean Americans, Japanese Americans, Chinese Americans, etc.)
  + Pursue and maintain certifications that center nonmedical drivers of health (e.g., NCQA)

## Employer Purchasers

* **Screening & Diagnosis**
  + Host on-site preventive health screenings including hypertension screening. **Any event screening for hypertension should have a clearly defined protocol for those needing emergency medical attention and for connecting employees with hypertension to continuing healthcare.** 
    - Offer screening at different times and days and in accessible locations
    - Consider incentives and/or other support (e.g., childcare) to facilitate screening
    - Cover screening at no cost-sharing to employees
  + Implement multicomponent workplace wellness programs inclusive of biometric screening (e.g. blood pressure) and other interventions targeted at improving blood pressure control
    - Include components such as physical activity and nutrition programs, care management for those with diagnosed chronic conditions, and behavioral health visits
  + Raise awareness about annual preventive screenings, including blood pressure, through employee facing campaigns, time off to complete screenings and rewards for screening
* **Individualized Blood Pressure Management**
  + Offer opportunities (e.g., roundtables, focus groups) for employee feedback on benefit design. Use employee feedback to co-design health benefits, programs and policies
  + Adopt policies and resources that reduce employee risk of hypertension (e.g., smoke-free campus, smoking cessation programs, space for physical activity, healthy food options, etc.)
  + Create an advisory group to encourage and support population health initiatives focused on reducing variation in quality of care between employee groups~~.~~
  + Require health benefit vendors cover and provide home blood pressure monitors, ideally with ability to transmit blood pressure readings digitally
  + Identify social needs affecting employee base without compromising personal data or privacy and provide confidential assistance for identified social needs.
  + Communicate available resources (health plan benefits, wellness programs, etc.) through means that meet cultural and linguistic needs of employee base (e.g., materials translated to Spanish, Korean, etc. and culturally adapted), and in ways that are easy to understand and access
  + Ensure benefit vendor includes policies that reduce barriers to hypertension medication access (e.g., 90 day supply, mail order available, minimized prior authorization, etc.)
  + Offer or include in benefit design medication therapy management with individual pharmacist-led medication counseling
  + Consider offering employee roundtable or focus groups to discuss and provide feedback on benefit design. Use employee feedback to identify areas for further evolving needs to adjust benefits, policies, programs and systems.
* **Integrated Team-based Care**
  + As able, engage pharmacists in reviewing formulary offered, overall medication management strategy and tier placement for anti-hypertensive medications to reduce patient financial barriers
  + Provide access to mental health and substance use care through vendors at parity to physical health care
  + Require health benefit vendors to incorporate coverage for community health workers, mobile billable services, and other components that promote team-based care
  + Require health benefit coverage of telemedicine/virtual appointments at parity to physical visits
* **Quality Improvement**
  + Identify key metrics for evaluation from contracted carriers. Require vendors to collect and share hypertension prevalence and control rates by subgroups including but not limited to race and ethnicity, language, disability status, geography, etc.
    - Hypertension prevalence and incidence
    - Hypertension control
    - Overweight and obesity prevalence
    - Incidence rates and costs for cerebrovascular and cardiovascular events
    - Overall trends in direct costs for general population and population with hypertension
  + Tie vendor performance guarantees to closing documented gaps in blood pressure control across population subgroups
  + Target interventions to support employee groups with greatest disparities in hypertension control
  + Set performance guarantees with contracted vendors that specifically require improvement in controlling blood pressure using HEDIS quality measure, including stratified by relevant factors (e.g., race/ethnicity, language, disability status, income)

## State Agencies

### Washington Health Care Authority

* **Screening & Diagnosis**
  + Encourage accountable communities of health (ACHs) to establish blood pressure screening programs and connection to care pathway for people screened for high blood pressure.
  + Incorporate coverage for validated automatic BP devices for home use for adults with hypertension
    - Validated automated devices (A4670) and appropriately sized cuff (A4663) in Medicaid DME schedule
* **Quality Improvement**
  + Identify populations with lower screening and blood pressure control rates based on claims data and other relevant information and create publicly available data visualizations (e.g., GIS maps)
  + **Consider aggregating HEDIS CBP measure by geographic location (e.g., RURA)** to identify disparities in rural and urban populations

### Washington Department of Health/Local Health Jurisdictions

* **Screening & Diagnosis**
  + Coordinate and/or host community-based hypertension screening and education (e.g., faith-based organizations, community centers, barbershops, etc.)
    - Ensure all screening events have established protocols for follow up and connection to care
  + ~~Consider establishing a central database to record blood pressure screenings accessible to delivery systems, health plans and community based organizations (similar to vaccine registry)~~
  + Develop and promote widespread campaign to Washington state residents targeted at increasing screening for blood pressure. Develop and promote widespread educational campaign for blood pressure screening
  + Support local public health jurisdictions in community-based screenings through reinforcing American Heart Association guidelines
    - Utilize Washington Tracking Network data to identify groups with lower blood pressure control rates. Partner with organizations serving those groups to support blood pressure control initiatives.
* **Integrated Team-Based Care**
  + Support continued integration of community health workers into clinical settings
  + Promote interdisciplinary health teams in community settings
* **Quality Improvement**
  + Develop a statewide population health hypertension control strategy aligned with national frameworks (Million Hearts, Healthy People 2030)
  + Set and communicate public health goals for blood pressure control rates, disaggregated by race/ethnicity, geography and insurance status
  + Maintain and publish hypertension prevalence, control and mortality dashboards disaggregated by race, ethnicity, age, gender, income, insurance and geography
    - Use data to identify priority populations and zip codes experiencing most significant disparities
    - Share local data with health systems, payors and community partners to drive joint action
  + Fund and support QI collaborative among clinics and health systems inclusive of hypertension equity
  + Incorporate community member voice into design and implementation of any community-based work

## Community Pharmacies

* **Screening & Diagnosis**
  + Pharmacy employees
    - Train relevant staff on how to measure blood pressure accurately at regular intervals
    - Establish standardize protocol for referral for hypertensive emergencies and follow up with primary care
  + Purchase and use validated blood pressure devices, including kiosks ([U.S. Blood Pressure Validated Device Listing](https://urldefense.com/v3/__https:/click.heartemail.org/?qs=3ff1746905b8395cd8d0bb6f130ae07c73785e16ec0236ffca5f55db17fdf9015bec9ded06d74af2ffd2f85d0b3858514a01de942807ed8f__;!!IQSCTYBSse9odmP7!KfELjsXwpe-ji4v9DouYEzTStw4O-uH4QsJRqqaKckzEfYfS1CcgisnZI8TRSCWc4kegN5-oGzBZdByCAQ$))
  + Provide environment to support accurate BP screening (e.g., chair in quiet environment, dark environment)
  + Communicate new elevated blood pressure to patient’s primary care provider with permission
* **Individualized Blood Pressure Management**
  + Consider establishing blood pressure self-monitoring program with collaborative practice agreements with delivery systems

## Dental Clinics/Dentists

* Screening
  + Screen every patient’s blood pressure at intake, at least annually, and before any treatment, especially requiring certain medications (e.g., epinephrine) using validated blood pressure measuring device. Document in the dental record.
  + Establish and maintain a protocol for dangerously elevated blood pressure that prioritizes immediate connection to emergency care (e.g., calling 911, referring patient to the emergency department) for those with signs of target organ damange
  + Train all dental clinic employees that participate in measuring patient blood pressure on how to take an accurate blood pressure reading. Review American Heart Association’s **Target BP** initiative or other evidence-based guidelines for accurate measurement.
* Individualized Blood Pressure Management
  + Take a complete history including medications at intake, and for patients with hypertension. Review [Appendix D.](#_Appendix_D._Hypertension) for detailed information on medications
  + Update electronic dental record with most current lab values, medications and vital signs
    - Monitor for adverse effects of anti-hypertensive medications, like dry mouth (xerostomia), oral lichenoid reaction, dysgeusia, gingival hyperplasia
  + For patients with hypertension undergoing more complicated stress-inducing dental procedures such as long-duration restorative procedures, oral/periodontal treatments and the placement of dental implants, intermittent monitoring of blood pressure is warranted
  + Follow American Dental Association’s recommendations on providing dental care to patients with hypertension
* Integrated team-based care
  + Establish referral capabilities to primary care clinics in your area. Refer patients with elevated blood pressure to their PCP and/or recommend establishing care with a PCP.
  + Consult with patient’s prescribing provider (e.g., PCP, cardiologist) for any adverse effects that might warrant adjustment in treatment plan

# Evidence Review

High blood pressure or hypertension (HTN), which can lead to heart disease and/or stroke, impacts about half of American adults.[[1]](#endnote-1) However, only 16.1% of those adults have their high blood pressure under control through medication and lifestyle changes, with disparities based on race, ethnicity, education, income, living in an urban or rural setting, and other social drivers of health.[[2]](#endnote-2),[[3]](#endnote-3),[[4]](#endnote-4) Blood pressure control rates are lower for non-Hispanic (NH) Black persons, Asian American persons, and Hispanic person when compared to NH White persons, and NH Black and Hispanic individuals.[[5]](#endnote-5) Native communities in Washington state also experience significant disparities in hypertension and cardiovascular health.[[6]](#endnote-6) Nonmedical drivers of health significantly influence disparities in blood pressure control; for example, food insecurity has been associated with 14-77% increase in hypertension risk.[[7]](#endnote-7) Healthcare access including insurance coverage, influences attendance at appointments and acquiring and taking medication. Insurance coverage is associated with access to healthcare, and variation in coverage influences and worsens disparities in access and outcomes. Out-of-pocket costs, or the perception of out-of-pocket costs, may cause delays or forgoing of care.[[8]](#endnote-8) Washingtonians do not receive the same standard of care across the state (e.g., multiple medications, accurate dose titration) with variation in therapy selection and care delivery models. Improving blood pressure control quality metrics stratified by nonmedical drivers of health has promise to reduce inequities in morbidity and mortality related to hypertension.

## Secondary Causes of Hypertension.

Approximately 5-10% of patients with hypertension have an underlying or potentially reversible cause.[[9]](#endnote-9) Prevalence of secondary hypertension varies by age, with the highest prevalence in young adults at 30% among those 18-40 years old. Among older adults, renal conditions such as renal failure or renal atherosclerotic renal artery stenosis, and thyroid disease are common secondary causes. Secondary causes should be considered and thoroughly evaluated only in some scenarios – resistant or severe hypertension, malignant or accelerated hypertension, acute rise after stable hypertension, or in younger ages (under 30 years old).

While this report and set of guidelines does not delineate appropriate steps for further evaluation of secondary causes of hypertension, the workgroup endorses that clinicians should recognize when evaluation for these causes is necessary and take appropriate diagnostic tests to identify and treat underlying conditions.

## Drivers of Variation in Hypertension and Hypertension Control

Based on national survey data, blood pressure control rates are lower for Black Americans (~40%), Asian Americans (~38%) , and Hispanic Americans (~40%) as compared to non-Hispanic White individuals (~50%).[[10]](#endnote-10) Further heterogeneity exists within these racial/ethnic groups that can further refine high-risk populations – for example, when desegrated, Asian American subgroups (e.g., Chinese, Filipino, Asian Indian, etc) experience differences in hypertension prevalence and other cardiovascular risk factors.i

## Social (Non-Medical) Drivers of Health

Healthy People 2030 determines social drivers of health as “the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.” These are divided into 5 domains:

* Economic stability
* Education Access & Quality
* Healthcare Access & Quality
* Neighborhood and Built Environment
* Social and Community Context

Many if not all influence prevalence of hypertension, awareness of hypertension, access to care and hypertension control.

**Non-exhaustive list of non-medical drivers for which there is evidence of inequities in cardiovascular care/outcomes, besides of race and ethnicity:**

|  |  |
| --- | --- |
| **Social Driver** | **Blood Pressure Control Outcomes** |
| Language | Reduced cardiovascular risk when providers speak the same language as their patients[[11]](#endnote-11) |
| Socioeconomic Status | Lower income independently associated with cardiovascular disease morbidity[[12]](#endnote-12) |
| Geographic Locations (rural vs urban) | Hypertension prevalence higher in rural areas, with magnitude of disparity greatest among younger adults.[[13]](#endnote-13) |
| Education Level | Adults with a college education have lower prevalence of hypertension than those with high school education or less.[[14]](#endnote-14) |
| Disability Status | Americans with disabilities are more likely to have hypertension when controlling for sociodemographic and health access indicators[[15]](#endnote-15) |

The workgroup endorses that many factors contribute to and compound existing inequities, and

## Towards Universal Blood Pressure Screening

About 2 in every 5 people with hypertension in the United States are undiagnosed. Certain groups are less likely to know they have hypertension, including those 18-39 years old, men, certain Hispanic American and Asian American populations.

To increase reach to communities with higher rates of undiagnosed hypertension, strategies have to include a multi-level approach. The workgroup endorses the following priorities to identify people with undiagnosed hypertension:

* **Opportunities for screening must be abundant including in places where members of the community already gather** (e.g., work, faith-based organizations, community centers, barbershops, community pharmacies) or at existing touch-points within the healthcare ecosystem (emergency rooms, dental clinics[[16]](#endnote-16), urgent care).
* **Always accompanied by a set protocol with clear responsibility for making connection to care** (e.g., follow up phone call, scheduling a new appointment, etc.) that is based on standardized criteria for referral (e.g., refer to emergency room for hypertensive crisis (SBP>180 with target organ damage), refer to primary care for SBP >/=130))
* **Wherever possible, provide care in community-based setting** (e.g., pharmacy visits in community organization or business)
* Confirmation of hypertension should be done through follow up primary care and use of out of office monitoring techniques (HBPM, ABPM)

**Health care delivery systems should use the data they already collect on patients to identify those with undiagnosed hypertension already in their systems**. Clear criteria for potentially undiagnosed hypertension can indicate need for further confirmatory testing, using either HBPM or ABPM. One example of Clinics have used EHR data to identify those that might have undiagnosed hypertension. Those identified with potentially undiagnosed hypertension should be scheduled for follow-up and further evaluation by the care team.

**Example Undiagnosed Hypertension Stage 1 Criteria:** Patients 18-85 years old without a diagnosis of hypertension (documented as ICD-10 code) who have SBP or DBP measurements consistent with definition of stage 1 **hypertension at two separate medical visits, including most recent visit,** during the past 12 months. Exclusions: pregnancy, ESRD

**Example Undiagnosed Hypertension Stage 2 Criteria:** Patients 18-85 years old without a diagnosis of hypertension (documented as ICD-10 code) who SBP or DBP measurements consistent with stage 2 hypertension **at any visit** within past 12 months. Exclusions: pregnancy, ESRD

**Reducing variation in undiagnosed hypertension rates between populations is a top priority for the workgroup**. Studies show that adults from marginalized racial and ethnic groups are more likely than Non-hispanic White adults to have undiagnosed or uncontrolled hypertension, contributing to higher risks of stroke, heart failure, and kidney disease.[[17]](#endnote-17) Structural barriers—such as lack of health insurance, limited access to preventive services, and lack of culturally safe health system environments—contribute to these disparities. Additionally, language barriers, transportation challenges, and competing socioeconomic priorities often delay routine screening, leaving hypertension undetected until advanced complications arise.

**To adapt, health systems must meet patients where they are in the community**. Programs that bring blood pressure screening to trusted community venues—such as churches, barbershops, and cultural centers—have been shown to identify previously undiagnosed hypertension at much higher rates than traditional clinic-based approaches. For example, faith-based initiatives and barber-led interventions in Black communities not only improve screening reach but also facilitate linkage to care and long-term blood pressure control.[[18]](#endnote-18) By bringing team members that are able to directly link patients to care into the community, systems can avoid breakdown in communication and additional barriers for patients to overcome in scheduling appointments and starting their journey to better blood pressure management. Similarly, community health worker (CHW)-led programs in Hispanic populations and others have demonstrated success in both identifying undiagnosed hypertension and supporting behavior change, medication adherence, and follow-up with primary care providers.

**Wayne Mobile Medical Unit:** mobile van units staffed by registered nurses, medical/research assistants, community health workers and patient/family advocates, with physician supervision, to provide free health screenings and preventive services to patients. Services include:

* Vaccinations
* COVID-PCR testing
* Blood work screening and Blood pressure screening
* HIV screening
* PC referrals, specialty referrals, and patient education

See more [here](https://www.waynehealthcares.org/mobile-health-unit/).

Mobile care delivery units are also an effective strategy for expanding preventive care access in hard-to-reach areas. Units bring essential services including blood pressure screening directly to neighborhoods, organizations and businesses to meet people where they are. One example of a successful mobile unit model partnership between delivery systems and employers is the **Wayne Mobile Medical Unit** in Detroit, where a mobile van will visit employers on site and other areas in neighborhoods with high burden of chronic disease.

Community-based screening events naturally complement education to empower individuals to be aware of and act to improve their own health. The ”**Know Your Numbers**” campaign by the American Heart Association encourages individuals to take an active role in their health by regularly checking their blood pressure, becoming familiar with their personal readings, and checking and understanding other relevant biometrics. People are taught what their blood pressure numbers mean, how to interpret results, and when to seek further evaluation or care. In addition to screenings, the campaign emphasizes the importance of tracking blood pressure over time, utilizing tools like home blood pressure monitors (HBPM) and ambulatory blood pressure monitoring (ABPM) to provide more accurate and comprehensive assessments.

The workgroup endorses an approach framed by the socioecological model the encourages all actors in the system to incent, prioritize and act to achieve universal hypertension screening for all adult Washingtonians. See the following diagram:

A diagram of a diagram

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## Team-Based Care

Team-based care is critical to improving care for patients with hypertension, especially among populations with higher burden of hypertension. When team members identify with the groups they are serving, team-based care is likely to decrease variation in quality of care between groups; It is also cost-effective, costing less than $50,000 per quality-adjusted life year. Team-based care improves blood pressure control by providing more patient follow-up through regular communication through technology, and facilitating use of self-management plan, medication management through nonphysician care team members such as pharmacists engaging monitoring and recommendations to the prescribing provider or through direct titration through a collaborative practice agreement.

There is strong evidence behind team-based care for improving outcomes. When comparing implementation strategies for blood pressure control in patients with hypertension, team-based care with medication titration from a nonphysician is more effective at reducing systolic blood pressure than physician titration or multilevel strategies without team-based care.[[19]](#endnote-19) When looking specifically at team-based care as a strategy to improve blood pressure control for people with many barriers to care, community health workers and pharmacists are effective when integrated in care workflows.[[20]](#endnote-20)

The American Heart Association and other national guidelines endorse the use of team-based care to support patients with hypertension. The following is a description of Responsibilities and Roles of the team drawn from the AHA/ACA 2025 guidelines.

|  |  |
| --- | --- |
| This table was adapted from the AHA/ACA 2025 High Blood Pressure Guidelines Supplemental Material on team-based care. The team members indicated by an \* are from the guidelines. | |
| **Hypertension Team Responsibilities[[21]](#endnote-21)** | |
| * Communication, shared decision-making, and care coordination among various clinical team members, the patient, and patient caregivers * Effective use of evidence-based diagnosis and management guidelines * Regular, structured follow-up mechanisms and reminder systems to monitor patient progress * Medication adherence support and patient education about hypertension medication * Medication initiation, addition, and titration using evidence-based treatment algorithms * Use of evidence-based tools and resources designed to maximize self-management (including health behavior change, lifestyle modification, etc.) | |
| **Individual Hypertension Team Members** | **Roles (examples)** |
| Patient & Caregivers | *Driver and decision-maker of care* |
| Medical Assistants | *Accurate screening, prepare patients for appointments and follow-up, and facilitate coordinated management* |
| Primary Care Physician, Physician Assistant, Advanced Practice Nurse\* | Routine and complex hypertension care, managing primary care issues |
| Cardiologist\* | Routine and complex hypertension care, especially for patients with  cardiac disease or high risk for major cardiovascular events. |
| Nephrologist, Endocrinologist, Hypertension Specialist\* | Management of complex hypertension care, especially due to secondary causes, and/or resistant hypertension. |
| Nurse (including in-office, home care, internal and external population health personnel)\* | Accurate assessment of BP, medication reconciliation, patient education, self-management, lifestyle modification and adherence. |
| Clinical Pharmacist\* | Comprehensive medication management, which involves identification and documentation of medication-related problems, initiating, modifying, and discontinuing medication to address identified problems, and educating patients on their medication regimen. |
| Dietitian\* | Ongoing patient-centered counseling to assess dietary habits and preferences, set and monitor goals for healthy lifestyle |
| Social Worker\* | Assess for psychosocial, cultural and financial barriers, find solutions to overcome these barriers. |
| Community Health Providers\* | Assess and address social determinants of health and identify and promote acceptable community-based resources to overcome these barriers. Provide health education and advocacy |
| Behavioral Health Providers | *Address mental health, stress, and lifestyle factors; support adoption of sustainable habits.* |

In addition to the responsibilities outlined by the 2025 AHA report,

### Minimal Team Functions

* Team-based care strategies (e.g., huddles, care management meetings, high-risk patient panel review) are consistently used through co-located or integrated models.
* Teams screen blood pressure according to USPSTF evidence-based guidelines
* Triage of positive screening results for blood pressure in, including protocols ranging from elevated blood pressure to hypertensive emergency and follow up plans for previously undiagnosed individuals
* Accurate, guideline driven diagnosis of hypertension, based on an average of 2+ careful readings on 2+ occasions.
* Screening for comorbid health conditions for people with elevated blood pressure (e.g., kidney disease, atherosclerosis)
* Annual screening for non-medical drivers of health (e.g., food insecurity, transportation difficulties), clear documentation of results and connection to resources as available to address nonmedical drivers of health
* Guideline-directed services for people at risk for and with hypertension that address the whole person are regularly offered, including:
  + Behavioral health support for people with hypertension
  + Guideline directed medication management, reconciliation and titration
  + Self-measured blood pressure monitoring program (in-house or referred) and self-management counseling
  + Patient education and management support for hypertension including lifestyle interventions, medication and behavioral health interventions
  + Active management of co-occurring conditions (e.g, kidney disease, diabetes, etc.)
  + Additional supports for patients with uncontrolled hypertension (e.g., intensive case management, home visits with community health workers)
* Treatment goals are developed through a shared decision-making process to determine patient-directed goals taking into consideration nonmedical drivers of health
* Convenient and flexible care options to allow easy access to the care in the right setting
  + Alternative to traditional physical and behavioral health office visits (e.g., e-visits, phone visits, group visits, home visits, alternate locations)
  + As able, offer expanded hours for visits (e.g., early morning, evening, weekend)
* Language accessibility resources (translation, interpretation, patient materials such as pamphlets) that meet the needs of the populations served
* Health information technology that supports management of patients with hypertension at the population level, including the following capabilities:
  + Identification of variation between populations in hypertension control rates
  + Monitoring of patients at risk for or with hypertension, including if able ability to communicate through blue-tooth or other methods of directly uploading blood pressure readings from home blood pressure monitors
  + Interoperability with the broader healthcare ecosystem, such as through health information exchanges to support longitudinal patient-centric records

These team functions can be tailored based on particular needs of patients and their support system, but all should be available as needed.

A piece of effective management for blood pressure is helping individuals control and manage their own blood pressure. Several organizations run **self-monitoring blood pressure programs** to enhance services for existing chronic disease programs or populations at the same time as improving self-management skills, or strengthen capabilities to leverage patient-generated data. While a self-monitoring program can exist in the community setting, such as the YMCA, health delivery systems can leverage the data generated to improve their monitoring. The following diagram is from the National Association of Community Health Centers [**Self-measured Blood Pressure Monitoring Implementation Guide**](https://www.nachc.org/wp-content/uploads/2023/02/NACHC-Health-Care-Delivery-SMBP-Implementation-Guide-08222018.pdf) to support the community health centers in starting their own SMBP.

A diagram of a patient engagement

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## Payment for Team-based Care

A variety of reimbursement models are used in primary care, mostly moving towards alternative, value-based models of care. Some services are billable to the team from fee-for-service models, such as RN billing for chronic care management, or licensed social workers or psychologists billing for some of their visits. However, alternative models offer ways to incent team-based care as a quality improvement intervention. Pay for performance models link payment incentives to metrics, such as the HEDIS Controlling Blood Pressure (CBP). Capitated alternative payment models incent practices through a per member per month payment to deliver care that will keep the patient well, paying less attention to whether a service is billable or not. Teams can extend the empanelment size which can increase payment with more members per month when spreading responsibilities including titration and monitoring across team members.

Regardless of the payment model being used, reducing variation in blood pressure control between groups based on demographic variables, geographic location and health related social needs is critical to incentivizing high quality blood pressure control team-based care.

# Washington State Initiatives

### Washington State Department of Health – Heart Disease, Stroke & Diabetes Prevention Unit

This state-level public health program promotes evidence-based strategies to reduce hypertension and cardiovascular disease. Their initiatives include increasing access to active living, improving care coordination, promoting healthy foods, and supporting systems-level interventions—including community health worker engagement and provider training.

Meanwhile, the Healthier Washington / Washington State Cardiovascular Connection collaboration portal offers tools and guidance for implementing team-based care, self-measured blood pressure monitoring, and recognition programs for high-performing clinics.

### Washington State Cardiovascular Connection / Healthier Washington Collaboration

This initiative—run by the WA Department of Health in partnership with many health organizations—focuses specifically on hypertension and cholesterol control and cardiovascular risk reduction statewide. It provides:

* Team-based care resources (e.g., for hypertension in pregnancy such as the Blue Band Initiative)
* Tools to incorporate self-monitoring of blood pressure (SMBP) and patient education materials
* Recognition programs for clinics and systems meeting high BP‑control thresholds (e.g., Target: BP and Million Hearts awards)
* Community-based outreach such as mobile screening pilots like Mi Salud that serve Latine and underserved communities with BP checks, counseling, referrals, and follow-up.

### American Heart Association (AHA)[[22]](#endnote-22)

American Heart Association supports multiple partnerships in Washington state to improve heart health and cardiovascular disease. A few breakout examples of work in the community include:

#### Southwest Washington & Vancouver Clinic Partnership

The AHA partners with Vancouver Clinic to implement Target: BP protocols in southwest Washington. Since 2020, about 300,000 patients across nine clinic locations have received blood pressure cuffs and education for home monitoring, integrated into their MyChart system. Staff training on accurate BP measurement is standardized every 6–12 months, all to improve hypertension control rates.

#### Libraries with Heart – Timberland Regional Library System

In Southwest Washington, the AHA partnered with Timberland Regional Libraries to introduce the "Libraries with Heart" program. This initiative allows library patrons to check out blood pressure cuffs and educational materials, enabling individuals to monitor their blood pressure at home. The program aims to increase awareness and management of hypertension in rural areas.

#### City of Lynnwood, Optum Care Washington, and Sea Mar Community Health Centers

The AHA collaborated with the City of Lynnwood, Optum Care and SeaMar to host a series of blood pressure screening and referral events targeting Lynnwood Food Bank shoppers. Over 300 individuals were screened, with 65% identified as having high blood pressure. Participants received blood pressure cuffs, educational materials, and training on home monitoring, along with referrals to local health centers for further care.

#### Bellevue College – Student-Championed Self-Measured Blood Pressure Program

In partnership with Providence Health Plan, the AHA supported Bellevue College in launching a program where students and staff can borrow blood pressure cuffs and receive resources on hypertension management. The initiative aims to increase awareness and provide tools for self-monitoring, with materials available in multiple languages to accommodate the diverse campus community.

#### Hard Hats with Heart – Construction Industry Engagement

The AHA's "Hard Hats with Heart" campaign collaborates with construction companies like Mortenson, Skanska, and Swinerton to promote blood pressure awareness among workers. The program includes on-site screenings, educational sessions, and 30-day challenges to encourage lifestyle changes. Participants reported improvements in blood pressure and overall health behaviors.

#### Mi Salud – Mobile Health Screenings for Latino Communities

The AHA supports the Mi Salud program, which partners with community-based organizations to provide mobile health screenings, including blood pressure checks, to Latino populations in Washington. The program offers personalized counseling and referrals to local clinics, aiming to reduce health disparities and improve cardiovascular health in underserved communities.

#### Puget Sound Hypertension Summit

The AHA organizes the Puget Sound Hypertension Summit, bringing together healthcare leaders to share best practices and strategies for improving blood pressure control. The summit focuses on fostering collaboration and innovation to address hypertension management across the region.

### Comagine Health

#### Chronic Disease Prevention & Management Program

Comagine supports chronic disease management—including hypertension, diabetes, cardiac rehabilitation, and CKD—specifically among Medicare populations in Washington State and its QIN‑QIO region

Hypertension-specific efforts include:

* Promoting self-measured blood pressure monitoring (SMBP) via patient and provider guides.
* Helping provider groups redesign workflows, deliver quality improvement pilots, and engage providers in evidence-based hypertension strategies

#### Healthy Hearts Northwest Partnership

Comagine participated in the Healthy Hearts Northwest (EvidenceNOW) initiative, a study across small primary‑care clinics in Washington, Oregon, and Idaho.

In this program, Comagine provided practice facilitation (“coaches”), shared learning sessions, and quality‑improvement support targeting cardiovascular care.

Clinics receiving combined facilitation and peer‑learning support were more likely to reach high blood pressure control rates (≥ 70%) than those with facilitation alone

#### Cardiac Rehabilitation Access Initiative

Working alongside the Washington State Hospital Association (WSHA), Comagine supports state efforts to improve referrals to and enrollment in cardiac rehabilitation after coronary events.

This is important because better CR access supports blood pressure and cardiovascular recovery

#### Community-Driven Outreach in WA

Under its state-specific programs, Comagine collaborates with community-based groups in Clark, King, and Spokane counties to:

* Boost screening for hypertension and chronic disease
* Improve access to resources for underserved populations (e.g., Black/African American communities)
* Increase COVID‑19 and influenza vaccination rates (tied to broader chronic disease prevention goals)

### YMCA

The YMCA across the Seattle King County area run their own [Blood Pressure Self-Monitoring Programs](https://www.seattleymca.org/programs-for-health/weight-and-nutrition/blood-pressure-monitoring). Providers/Health Systems can refer to patients to the YMCA based program. The program itself is virtual, cohort-=based and open to all adults 18+ diagnosed with hypertension. The program meets weekly for 16 sessions with a trained Healthy Heart Ambassador.

# Measurement

The report overall aim is to increase blood pressure control, and reduce variation control based on race, ethnicity and language. The **Washington State Common Measure Set** includes the NCQA HEDIS measure **Controlling High Blood Pressure** **(CBP)** which is stratified by race and ethnicity. The current CBP measure is included in value-based contracting and is defined as:

* Percentage of patients 18-85 years of age who had a diagnosis of hypertension (HTN) and whose blood pressure (BP) was adequately controlled (<140/90) during he measurement year. Race/ethnicity stratification.

The updated 2025 AHA hypertension guidelines classify stages of hypertension as Stage 1 (>130/80) and Stage 2 (>140/90). The NCQA proposed a new electronic clinical data system measure - Blood Pressure Control for Patients with Hypertension measure (BPC-E). This proposed measure would include the following updates:

* Electronic reporting method (ECDS)
* Expand numerator to allow for two BP levels of control (<140/90) and (<130/80)
* Expanded denominator to allow for pharmacy diagnosis

Washington Health Care Authority should support electronic reporting when possible and consider aligning nonelectronic reported measures of blood pressure control with these expanded criteria. The workgroup also endorses process measures and evaluation of equity should be evaluated to understand progress toward blood pressure control. These include:

* **Blood Pressure Screening**: Percentage of patient visits for patients aged 18 years and older seen during the measurement period who were screened for high blood pressure AND recommended a follow up plan in documented as indicated if blood pressure was elevated or hypertensive according to most updated AHA Hypertension guidelines
* **Blood Pressure Control by Geographic Region**: Aggregated HEDIS CBP stratified by geographic location (e.g., Rural-Urban Commuting Area Codes) to identify areas of greatest hypertension burden

For detailed information on evaluation of the implementation of report and guidelines, visit our ***Blood Pressure Control* *Evaluation Framework.***

# Appendices

## Appendix A. Guidelines and Systematic Review Search Results

|  |  |
| --- | --- |
| **Source** | **Guidelines** |
| AHRQ | N/A |
| Cochrane Collection | [Dietary Approaches to Stop Hypertension (DASH) for the primary and secondary prevention of cardiovascular diseases](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD013729.pub2/full?highlightAbstract=control%7Cpressure%7Cblood%7Cpressur) (2025)  [Higher blood pressure targets for hypertension in older adults](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD011575.pub3/full?highlightAbstract=control%7Cpressure%7Cblood%7Cpressur) (2024)  [Blood pressure targets for the treatment of people with hypertension and cardiovascular disease](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD010315.pub5/full) (2022)  [Effect of periodontal treatments on blood pressure](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD009409.pub2/full?highlightAbstract=control%7Cpressure%7Cblood%7Cpressur) (2021)  [Walking for hypertension](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD008823.pub2/full#CD008823-abs-0002) (2021)  [Blood pressure targets in adults with hypertension](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD004349.pub3/full?highlightAbstract=control%7Cpressure%7Cblood%7Cpressur) (2020)  [Screening strategies for hypertension](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD013212.pub2/full?highlightAbstract=control%7Cpressure%7Cblood%7Cpressur) (2020)  [Interventions used to improve control of blood pressure in patients with hypertension](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD005182.pub4/full?highlightAbstract=control%7Cpressure%7Cblood%7Cpressur) (2010 |
| Specialty Society Guidelines | [International Society of Hypertension Global Hypertension Practice Guidelines](https://www.ahajournals.org/doi/pdf/10.1161/HYPERTENSIONAHA.120.15026) (2020)  [European Society of Cardiology Guidelines for the management of elevated blood pressure and hypertension](https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Elevated-Blood-Pressure-and-Hypertension) (2024)  American Heart Association/American College of Cardiology: Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults (2025)  American Diabetes Association: [Standards of Care: Cardiovascular Disease and Risk Management](https://diabetesjournals.org/care/article/48/Supplement_1/S207/157549/10-Cardiovascular-Disease-and-Risk-Management) (2025) |
| Health Technology Assessment Program | N/A |
| Center for Disease Control | [Prevalence of Self-reported Hypertension and Antihypertensive Medication Use Among Adults – United States 2017-2021](https://www.cdc.gov/mmwr/volumes/73/wr/mm7309a1.htm)  [Surgeon General’s Call to Action to Control Hypertension](https://www.cdc.gov/high-blood-pressure/media/pdfs/sg-cta-htn-control-report-508.pdf) (2024)  [Community Preventive Services Task Force (CPSTF): Heart Disease and Stroke Prevention Team: Team-based Care to Improve Blood Pressure Control](https://www.thecommunityguide.org/findings/heart-disease-stroke-prevention-team-based-care-improve-blood-pressure-control.html) (2020)  [High Blood Pressure Communications Toolkit](https://www.cdc.gov/high-blood-pressure/php/toolkit/) (2025) |
| Institute for Clinical and Economic Review | N/A |
| BMJ Clinical Evidence Systematic Overview | [Diagnosis and management of resistant hypertension](https://www.bmj.com/content/385/bmj-2023-079108) (2024)  [Clinical decision support in cardiovascular medicine](https://www.bmj.com/content/377/bmj-2020-059818) (2022)  [Medication adherence in cardiovascular medicine](https://www.bmj.com/content/374/bmj.n1493) (2021)  [Management of mild hypertension in adults](https://www.bmj.com/content/355/bmj.i5719) (2016) |
| Veterans Administration Evidence-based Synthesis Program | [Beyond Diabetes, Obesity and Cardiovascular Disease: An Evidence Map of Anti-inflammatory Diet and Related Dietary Interventions for the Prevention and Management of Chronic Health Conditions](https://www.hsrd.research.va.gov/publications/esp/anti-inflammatory-diet.cfm) (2024)  [Benefits and Harms of the Mediterranean Diet Compared to Other Diets](https://www.hsrd.research.va.gov/publications/esp/med-diet.cfm) (2015) |

|  |  |  |
| --- | --- | --- |
| **Citation** | **Level** | **Findings** |
| **Individualized Blood Pressure Management** | | |
| Turkson-Ocran RN, Ogungbe O, Botchway M, Baptiste DL, Owusu B, Ajibewa T, Chen Y, Gbaba S, Kwapong FL, Aidoo EL, Nmezi NA, Cluett JL, Commodore-Mensah Y, Juraschek SP. Hypertension Management to Reduce Racial/Ethnic Disparities: Clinical and Community-Based Interventions. Curr Cardiovasc Risk Rep. 2024 Dec;18(12):239-258. doi: 10.1007/s12170-024-00750-9. Epub 2024 Oct 25. PMID: 40271110; PMCID: PMC12014200. | **3** | Review of effective interventions to reduce racial and ethnic disparities in Hypertension – including evidence-based guidelines, treatment algorithms, promoting self-management, integrating digital health technologies, team-based care approaches, faith-based initiatives, trusted community spaces, culturally tailored health education, engaging community health workers, collaborative models, addressing SDOH, fostering community engagement, delivering culturally competent care, and leveraging technology and innovation, and addressing gaps in research for underrepresented groups |
| Singh H, Fulton J 4th, Mirzazada S, Saragosa M, Uleryk EM, Nelson MLA. Community-Based Culturally Tailored Education Programs for Black Communities with Cardiovascular Disease, Diabetes, Hypertension, and Stroke: Systematic Review Findings. J Racial Ethn Health Disparities. 2023 Dec;10(6):2986-3006. doi: 10.1007/s40615-022-01474-5. Epub 2022 Dec 12. PMID: 36508135; PMCID: PMC10645635. | **2** | Systematic review of 74 studies examining the characteristics and outcomes of community based culturally tailored education and which strategies for culturally appropriate interventions have been used in these programs and how they were implemented specifically for Black communities – many studies had small sample size but may have beneficial outcomes, and should be more explicit about involvement of community in development |
| Holt HK, Gildengorin G, Karliner L, Fontil V, Pramanik R, Potter MB. Differences in Hypertension Medication Prescribing for Black Americans and Their Association with Hypertension Outcomes. J Am Board Fam Med. 2022 Jan-Feb;35(1):26-34. doi: 10.3122/jabfm.2022.01.210276. PMID: 35039409. | **2** | Retrospective observational cohort analyzing HER data of patients 18-85 years old with hypertension to identify prescribing differences in HTN control in Black individuals with non Black individuals – providers were following race-based prescribing guidelines, but control was worse for Black individuals – race-based prescribing guidelines are not as effective |
| Ursua RA, Aguilar DE, Wyatt LC, Trinh-Shevrin C, Gamboa L, Valdellon P, Perrella EG, Dimaporo MZ, Nur PQ, Tandon SD, Islam NS. A community health worker intervention to improve blood pressure among Filipino Americans with hypertension: A randomized controlled trial. Prev Med Rep. 2018 May 9;11:42-48. doi: 10.1016/j.pmedr.2018.05.002. PMID: 29984137; PMCID: PMC6030569. | **2** | RCT assessing impact of a CHW led intervention on improving hypertension disparities in Filipino Americans with uncontrolled BP in NYC; intervention is 4 educational workshops, 4 1-1 visits compared with 1 educational workshop – significantly greater BP control at 8 months for intervention group, as well as appointment keeping |
| Acharya S, Neupane G, Seals A, Kc M, Giustini D, Sharma S, Taylor YJ, Palakshappa D, Williamson JD, Moore JB, Bosworth HB, Pokharel Y. Self-Measured Blood Pressure-Guided Pharmacotherapy: A Systematic Review and Meta-Analysis of United States-Based Telemedicine Trials. Hypertension. 2024 Mar;81(3):648-657. doi: 10.1161/HYPERTENSIONAHA.123.22109. Epub 2024 Jan 8. PMID: 38189139; PMCID: PMC11213974. | **1** | Systematic review of 13 articles examining optimal approach to telemedicine hypertension management; telemedicine was associated with significant reduction in blood pressure control – greater BP reduction with non physician led pharmacotherapy, and pharmacist led medication support; however, trials with predominantly White individuals had better outcomes |
| Tucker KL, Sheppard JP, Stevens R, Bosworth HB, Bove A, Bray EP, Earle K, George J, Godwin M, Green BB, Hebert P, Hobbs FDR, Kantola I, Kerry SM, Leiva A, Magid DJ, Mant J, Margolis KL, McKinstry B, McLaughlin MA, Omboni S, Ogedegbe O, Parati G, Qamar N, Tabaei BP, Varis J, Verberk WJ, Wakefield BJ, McManus RJ. Self-monitoring of blood pressure in hypertension: A systematic review and individual patient data meta-analysis. PLoS Med. 2017 Sep 19;14(9):e1002389. doi: 10.1371/journal.pmed.1002389. PMID: 28926573; PMCID: PMC5604965. | **1** | Systematic revie and meta-analysis of patients on self-monitoring of blood pressure interventions with goal of understanding effective implementation and which groups may benefit most – 36 eligible articles identified, overall associated with reducing SBP but varied based on intensity of co-intervention, and most effective for those on fewer antihypertension meds and with higher initial SBP – self-monitoring must be done in conjunction with co-interventions (titration, education, lifestyle counseling) |
| Shantharam SS, Mahalingam M, Rasool A, Reynolds JA, Bhuiya AR, Satchell TD, Chapel JM, Hawkins NA, Jones CD, Jacob V, Hopkins DP. Systematic Review of Self-Measured Blood Pressure Monitoring With Support: Intervention Effectiveness and Cost. Am J Prev Med. 2022 Feb;62(2):285-298. doi: 10.1016/j.amepre.2021.06.025. Epub 2021 Oct 20. PMID: 34686388; PMCID: PMC8748385. | **2** | Systematic review of studies to example effectiveness of SMBP interventions in reducing SBP, cost of those interventions, cost effectiveness unit, and patient and intervention characteristics associated with effectiveness, cost and cost per unit of effectiveness – 22 studies identified, CHW involvement was associated with lower cost, but type of support nor type of personnel providing support impacted cost effectiveness – accessible technologies that allowed interaction were associated with improved effectiveness but not cost – SMBP interventions at lower intensity is cost effective |
| Katz ME, Mszar R, Grimshaw AA, et al. Digital Health Interventions for Hypertension Management in US Populations Experiencing Health Disparities: A Systematic Review and Meta-Analysis. JAMA Netw Open. 2024;7(2):e2356070. doi:10.1001/jamanetworkopen.2023.56070 | **1** | Systematic review of 28 RCTs and cohort studies to assess association of digital health interventions and changes in BP to characterize tailored strategies for populations experiencing health disparities. Studies presented baseline and follow up SBP levels, included focus on marginalized populations; 28 studies most of which incorporated remote BP monitoring, CHW or skilled nurses, and/or cultural tailoring - statistically significant differences at 6 months in DBP were found, and tailored interventions to specific communities have potential to advance equity |
| **Team-based care** | | |
| **Citation** | **Level** | **Findings** |
| Jacob V, Reynolds JA, Chattopadhyay SK, Nowak K, Hopkins DP, Fulmer E, Bhatt AN, Therrien NL, Cuellar AE, Kottke TE, Clymer JM, Rask KJ; Community Preventive Services Task Force. Economics of Team-Based Care for Blood Pressure Control: Updated Community Guide Systematic Review. Am J Prev Med. 2023 Oct;65(4):735-754. doi: 10.1016/j.amepre.2023.04.013. Epub 2023 Apr 28. PMID: 37121447; PMCID: PMC10527860. | 2 | Aim: economic evaluations of team-based care for controlling high blood pressure; systematic review of 35 studies from 2011-2021 in US and other high income countries examining cost per patient of providing team-based care for high blood pressure. Median intervention cost per patient per year was $438 in the US. – team-based care met the benchmark for cost effectiveness (50k) |
| Abdalla M, Bolen SD, Brettler J, Egan BM, Ferdinand KC, Ford CD, Lackland DT, Wall HK, Shimbo D; American Heart Association and American Medical Association. Implementation Strategies to Improve Blood Pressure Control in the United States: A Scientific Statement From the American Heart Association and American Medical Association. Hypertension. 2023 Oct;80(10):e143-e157. doi: 10.1161/HYP.0000000000000232. Epub 2023 Aug 31. PMID: 37650292; PMCID: PMC10578150. | 2 | Scientific statement for implementation strategies to improve blood pressure control include strategies that improve health equity – team-based care is among effective strategies that also impacts health equity |
| Pasha M, Brewer LC, Sennhauser S, Alsawas M, Murad MH. Health Care Delivery Interventions for Hypertension Management in Underserved Populations in the United States: A Systematic Review. Hypertension. 2021 Sep;78(4):955-965. doi: 10.1161/HYPERTENSIONAHA.120.15946. Epub 2021 Aug 15. PMID: 34397275. | 1 | Systematic review of randomized controlled trials and comparative observational studies that examine effectiveness of contemporary systems change and quality improvement initiatives aimed at improving BP control from 2010 – 2020; identified 26 studies with over 46,000 patients and high proportion of racial/ethnic minorities – effective strategies included integrating CHWs, EHRs as a tool for population management, and one study showed effectiveness of incentivizing clinics with higher payments for uninsured and Medicaid patients |
| Mills KT, Obst KM, Shen W, Molina S, Zhang HJ, He H, Cooper LA, He J. Comparative Effectiveness of Implementation Strategies for Blood Pressure Control in Hypertensive Patients: A Systematic Review and Meta-analysis. Ann Intern Med. 2018 Jan 16;168(2):110-120. doi: 10.7326/M17-1805. Epub 2017 Dec 26. PMID: 29277852; PMCID: PMC5788021. | 1 | Systematic review of RCTs lasting at least 6 months comparing implementation strategies versus usual care on BP reduction in adults with hypertension – most effective strategies at reducing Systolic BP were multicomponent strategies (team based care with med titration by a nonphysician, med titration by a physician, and patient-level strategies |
| Mills, K. T., O’Connell, S. S., Pan, M., Obst, K. M., He, H., & He, J. (2024). Role of health care professionals in the success of blood pressure control interventions in patients with hypertension: A meta‑analysis. Circulation: Cardiovascular Quality and Outcomes, 17(8), e010396. https://doi.org/10.1161/CIRCOUTCOMES.123.010396 | 1 | Systematic review of RCTs (100) with over 90k patients included with goal of determining which HCPs are most effective at delivering BP reduction interventions – greatest systolic BP reductions were from pharmacist level, CHW level and health educator level interventions; interventions led by multiple HCPs (nurses, physicians) were also effective at reducing systolic BP |
| Cooper LA, Marsteller JA, Carson KA, Dietz KB, Boonyasai RT, Alvarez C, Crews DC, Dennison Himmelfarb CR, Ibe CA, Lubomski L, Miller ER 3rd, Wang NY, Avornu GD, Brown D, Hickman D, Simmons M, Apfel Stein A, Yeh HC; RICH LIFE Project Investigators. Equitable Care for Hypertension: Blood Pressure and Patient-Reported Outcomes of the RICH LIFE Cluster Randomized Trial. Circulation. 2024 Jul 16;150(3):230-242. doi: 10.1161/CIRCULATIONAHA.124.069622. Epub 2024 Jul 15. PMID: 39008556; PMCID: PMC11254328. | 1 | RCT comparing usual care with collaborative stepped up care intervention, mostly racial-ethnic minority patients – both groups achieved better BP control and both groups had leadership intervention/changing system structures as well as equity centered dashboards |
| Nguyen-Huynh MN, Young JD, Ovbiagele B, Alexander JG, Alexeeff S, Lee C, Blick N, Caan BJ, Go AS, Sidney S. Effect of Lifestyle Coaching or Enhanced Pharmacotherapy on Blood Pressure Control Among Black Adults With Persistent Uncontrolled Hypertension: A Cluster Randomized Clinical Trial. JAMA Netw Open. 2022 May 2;5(5):e2212397. doi: 10.1001/jamanetworkopen.2022.12397. PMID: 35583869; PMCID: PMC9118047. | 1 | Cluster RCT of lifestyle coaching versus enhanced pharmacotherapy on BP control among Black adults specifically with uncontrolled hypertension - culturally appropriate lifestyle interventions can be effective in reducing BP, but must be tailored |
| Haskell WL, Berra K, Arias E, Christopherson D, Clark A, George J, Hyde S, Klieman L, Myll J. Multifactor cardiovascular disease risk reduction in medically underserved, high-risk patients. Am J Cardiol. 2006 Dec 1;98(11):1472-9. doi: 10.1016/j.amjcard.2006.06.049. Epub 2006 Oct 12. PMID: 17126653. | 1 | RCT evaluating disease management approach to multifactor CVD risk reduction in patients with limited or no health insurance and low family income, primary outcomes were LDL and SBP; disease management program included physician, nurse and dietician, including lifestyle change and medication – team-based care and multicomponent interventions can reduce risk for patients even with various levels of SDOH concerns |
| **Blood Pressure Screening** | | |
| Yi SS, Wyatt LC, Patel S, Choy C, Dhar R, Zanowiak JM, Chuhan H, Taher MD, Garcia M, Kavathe R, Kim S, Kwon SC, Islam NS. A Faith-Based Intervention to Reduce Blood Pressure in Underserved Metropolitan New York Immigrant Communities. Prev Chronic Dis. 2019 Aug 8;16:E106. doi: 10.5888/pcd16.180618. PMID: 31400096; PMCID: PMC6716416. | 3 | Example of partnership with various faith-based organizations in the NY/NJ area to improve outreach and BP screening in various underserved groups – effective community partnership/planning of screening interventions using CBPR methodology, effectively engaged community in screening and follow up for hypertension |
| Michaud, T. L., Estabrooks, P. A., You, W., Ern, J., Scoggins, D., Gonzales, K., King, K. M., Dai, H., & Su, D. (2022). Effectiveness of incentives to improve the reach of health promotion programs: A systematic review and meta-analysis. Preventive Medicine, 161, 107141. https://doi.org/10.1016/j.ypmed.2022.107141 | 1 | Systematic review of incentives for health promotion programs from 2000 – 2020 examining increase in uptake of EBPs; 35 studies found, and incentives alone or combined with other strategies for multicomponent approach - effective at improving enrollment, engagement and retention but specifics were heterogenous so not consensus on optimal amount, frequency and target. |
| Song Z, Baicker K. Effect of a Workplace Wellness Program on Employee Health and Economic Outcomes: A Randomized Clinical Trial. JAMA. 2019 Apr 16;321(15):1491-1501. doi: 10.1001/jama.2019.3307. Erratum in: JAMA. 2019 May 14;321(18):1830. doi: 10.1001/jama.2019.5197. PMID: 30990549; PMCID: PMC6484807. | 1 | Large RCT of over 30,000 employees engaging in multicomponent workplace wellness program with goal of improving a range of self-reported health and behavioral and clinical measures of health via screenings - at 18 months, 2 self-reported outcomes were higher in intervention groups (engaging in regular exercise and actively managing weight) |
| Hulls PM, Richmond RC, Martin RM, Chavez-Ugalde Y, de Vocht F. Workplace interventions that aim to improve employee health and well-being in male-dominated industries: a systematic review. Occup Environ Med. 2022 Feb;79(2):77-87. doi: 10.1136/oemed-2020-107314. Epub 2021 May 25. PMID: 34035181; PMCID: PMC8785069. | 2 | Systematic review of 35 studies effectiveness of workplace health and wellbeing interventions in male-dominated industries compared to mixed gender environments. 32 studies delivered intervention face to face, while 2 delivered via internet and 1 through postal mail – meta-analysis of blood pressure and BMI impact of interventions had limited positive effect, so positive impact may be dependent on delivery, industry and outcome |
| Reif J, Chan D, Jones D, Payne L, Molitor D. Effects of a Workplace Wellness Program on Employee Health, Health Beliefs, and Medical Use: A Randomized Clinical Trial. JAMA Intern Med. 2020 Jul 1;180(7):952-960. doi: 10.1001/jamainternmed.2020.1321. PMID: 32453346; PMCID: PMC7251499. | 1 | RCT of workplace wellness program 23 years long including financial incentives and paid time off for annual on-site biometric screenings, annual health risk assessments and ongoing wellness activities (physical activity, smoking cessation, disease management); over 4000 participants participated, and measures taken at 12 and 24 months included biometrics, admin claims data, medical use and self-reported health behaviors and beliefs – workplace wellness program had impact on self-reported that they had a PCP and improved belief about their own health |
| **Quality Improvement** | | |
| Bardach NS, Wang JJ, De Leon SF, et al. Effect of Pay-for-Performance Incentives on Quality of Care in Small Practices With Electronic Health Records: A Randomized Trial. JAMA. 2013;310(10):1051–1059. doi:10.1001/jama.2013.277353 | 2 | RCT of pay for performance incentives to improve quality in EHR-enabled small private practices in established quality improvement initiative; primary care clinics were all small (<10 clinicians) in NYC from 2009-2010, incentivized clinics paid for each patient whose care met performance criteria but higher payments for patients with comorbidities/on Medicaid/uninsured; intervention clinics performed better on all measures for Medicaid and uninsured patients including BP, but not statistically significant – P4P incentives may be beneficial for small clinics including those with high proportion of patients without insurance, on Medicaid or with comorbidities |
| Milad, M. A., Murray, R. C., Navathe, A. S., & Ryan, A. M. (2022). Value‑based payment models in the commercial insurance sector: A systematic review. Health Affairs, 41(4), 540–548. https://doi.org/10.1377/hlthaff.2021.01020 | 1 | Systematic review of value-based payment models impact on quality outcomes across many different types of outcomes; 59 studies identified, 41 of which evaluated outcomes; more studies had positive outcomes for quality than spending and utilization, and less rigorous studies were more likely to have positive outcomes – some mixed nature of findings |
| Zhang D, Lee JS, Pollack LM, Dong X, Taliano JM, Rajan A, Therrien NL, Jackson SL, Popoola A, Luo F. Association of Economic Policies With Hypertension Management and Control: A Systematic Review. JAMA Health Forum. 2024 Feb 2;5(2):e235231. doi: 10.1001/jamahealthforum.2023.5231. PMID: 38334993; PMCID: PMC10858400. | 2 | Systematic review of 31 articles from 2000-2023 examining association between economic policies and hypertension management control among adults with hypertension in US; 16 assessed policies for insurance coverage, 8 evaluated policies related to patient cost sharing for prescription drugs, and 7 evaluated financial incentive programs for improving quality – strategies that were associated with improvement in adherence/control included insurance expansion, reduction of copayments and prior auth processes, and financial incentives aimed at improving quality in antihypertensive treatment and BP control |

## Appendix B. Bree Collaborative Members

|  |  |  |
| --- | --- | --- |
| Name | Title | Organization |
| June Altaras, MN, NEA-BC, RN | Executive Vice President, Chief Quality, Safety and Nursing Officer | MultiCare Health System |
| Colleen Daly, PhD | Director, Global Occupational Health, Safety and Research | Microsoft |
| Jake Berman, MD MPH | Medical Director for Population Health Integration | UW Medicine and UWM Primary Care and Population Health |
| Gary Franklin, MD, MPH | Medical Director | Washington State Department of Labor and Industries |
| Colin Fields, MD, AAHIVS | Medical Director, Government Relations & Public Policy | Kaiser Permanente |
| Darcy Jaffe, MN, ARNP, NE-BC, FACHE | Senior Vice President, Safety & Quality | Washington State Hospital Association |
| Norifumi Kamo, MD, MPP | Internal Medicine | Virginia Mason Franciscan Health |
| Kristina Petsas, MD MBA MLS | Market Chief Medical Officer, Employer & Individual | UnitedHealthcare |
| Greg Marchand | Director, Benefits & Policy and Strategy | The Boeing Company |
| Kimberly Moore, MD | Associate Chief Medical Officer | Franciscan Health System |
| Carl Olden, MD | Family Physician | Pacific Crest Family Medicine, Yakima |
| Nicole Saint Clair, MD | Executive Medical Director | Regence BlueShield |
| Mary Kay O’Neill, MD, MBA | Partner | Mercer |
| Susanne Quistgaard, MD | Medical Director, Provider Strategies | Premera Blue Cross |
| Emily Transue, MD, MHA (Chair) | Chief Clinical Officer | Comagine Health |
| Judy Zerzan-Thul, MD, MPH | Chief Medical Officer | Washington State Health Care Authority |

## Appendix C. Blood Pressure Control Charter and Roster

**The Bree Collaborative**

**Blood Pressure Control Charter and Roster**

**Problem Statement**

High blood pressure or hypertension (HTN), which can lead to heart disease and/or stroke, impacts about half of American adults.[[23]](#endnote-23) However, only 16.1% of those adults have their high blood pressure under control through medication and lifestyle changes, with disparities based on race, ethnicity, education, income, living in an urban or rural setting, and other social drivers of health.[[24]](#endnote-24),[[25]](#endnote-25),[[26]](#endnote-26) Black individuals have disproportionate rates of HTN prevalence and higher rates of complications.[[27]](#endnote-27) Washingtonians do not receive the same standard of care across the state (e.g., multiple medications, accurate dose titration) with variation in therapy selection and care delivery models.[[28]](#endnote-28),[[29]](#endnote-29),[[30]](#endnote-30),[[31]](#endnote-31) Improving blood pressure control quality metrics stratified by social drivers of health has promise to reduce inequities in morbidity and mortality related to HTN.

**Aim**

To decrease inequities and improve overall blood pressure control in Washington state.

**Purpose**

To propose evidence-informed guidelines to the full Bree Collaborative on practical methods to reduce inequities and the total burden of hypertension in Washington state, including:

* Identifying at risk populations and opportunities to improve screening and outreach.
* Reviewing and identifying current, actionable and relevant hypertension treatment guidelines.
* Identifying strategies to improve blood pressure control in communities that experience disproportionate burden of high blood pressure (e.g. integrated TEAM care).
* Addressing barriers leading to population-level gaps in care or inequities.
* Funding mechanisms to incent addressing inequities in blood pressure control and facilitate models of high-quality care.
* Strategies to integrate high-quality self-monitoring programs into delivery settings.
* Other areas, as indicated

**Out of Scope**

* Managing hypertensive crisis
* Managing gestational hypertension
* Managing complications related to hypertension
* Population under 18 years old

**Duties & Functions**

The workgroup will:

* Research evidence- and expert-opinion-informed guidelines and best practices (emerging and established).
* Identify care caps with a focus on SDOH leading to disparities in specific communities
* Identify incentives to improve care (e.g., HEDIS, CMS)
* Identify current barriers and future opportunities for implementing interventions.
* Consult relevant professional associations and other stakeholder organizations and subject matter experts for feedback, as appropriate.
* Meet for approximately nine months, as needed.
* Provide updates at Bree Collaborative meetings.
* Post draft report(s) on the Bree Collaborative website for public comment prior to sending report to the Bree Collaborative for approval and adoption.
* Present findings and guidelines in a report.
* Recommend data-driven and practical implementation strategies including metrics or a process for measurement. *(may be included in the evaluation framework)*
* Create and oversee subsequent subgroups to help carry out the work, as needed.
* Revise this charter as necessary based on scope of work.

**Meetings**

Less than the full workgroup may convene to: gather and discuss information; conduct research; analyze relevant issues and facts; or draft recommendations for the deliberation of the full workgroup. A quorum shall be a simple majority and shall be required to accept and approve recommendations to send to the Bree Collaborative.

The workgroup will hold meetings as necessary. Bree Collaborative staff will conduct meetings, arrange for the recording of each meeting, and distribute meeting agendas and other materials prior to each meeting. Additional workgroup members may be added at the discretion of the Bree Collaborative director.

**Workgroup Members**

|  |  |  |
| --- | --- | --- |
| **Name** | **Title** | **Organization** |
| Norris Kamo, MD, MPP (chair) | Section Head, Adult Primary Care | Virginia Mason Medical Center |
| Jake Berman, MD (vice chair) | Medical Director for Population Health | UW Medicine, UWM Primary Care and Population Health |
| Mia Wise, MD  Asher Strauss, PsyD | Chief Medical Officer  Director of Behavioral Health | Kinwell Health |
| Albert Tsai, MD | VP | AHA Puget Sound |
| Elhami Hannan, MD | Nephrologist | Kadlec Medical Center |
| Nicholas P Koenig, MD Elizabeth C Slye, RN | Internal Medicine Registered Nurse | KP |
| Kimberly Parrish | Director, Clinical Excellence | WSHA |
| Josephine Young, MD | Medical Director, Commercial Markets | Premera |
| Laura Hanson, PharmD  Nicole Treanor, RD | Pharmacist  Registered Dietician | Virginia Mason |
| Jordan Despain, MD | Family Medicine | Confluence |
| Kristina Petsas, MD | Market Chief Medical Officer, PNW, AK and HI | UnitedHealthcare |
| Theresa Kreiser, MS | Senior Improvement Advisor | Comagine |
| Kristina Gangsaas, (katerina?) | Community Health Supervisor | YMCA |
| Mary Beth McAteer | Librarian | Virginia Mason |
| Molly Parker, MD, MPH | Population Health | Jefferson Healthcare |
| Jessica Beach, MPH, MPA | Health Equity Director | Molina Healthcare |
| Leo Morales, MD | Assistant Dean for Healthcare Equity and Quality | Co-director Latino Center for Health | UW School of Medicine | University of Washington |
| Chris Longnecker, MD  Eugene Yang, MD | Cardiologist  Professor of Medicine, Division of Cardiology | University of Washington |

## Appendix X Routine Lab Testing for New Diagnosis of Hypertension & Secondary Causes of Hypertension

|  |  |
| --- | --- |
| Routine Lab Testing for New Diagnosis | |
| Lab Tests | Complete Blood Count  Serum Sodium, Potassium and Calcium  Serum Creatinine (with GFR)  Lipid Profile  Fasting Blood Glucose and/or Hemoglobin A1c  Thyroid Stimulating Hormone  Urinalysis  Urine albumin-to-creatinine ratio; urine protein-to-creatinine ratio |
| Diagnostic Tests | ECG |

|  |  |  |
| --- | --- | --- |
|  | Prevalence | Indications for Additional Testing |
| Common causes | | |
| OSA | 25%-50% | Snoring, choking, gasping during sleep; daytime sleepiness; resistant hypertension |
| CKD | 14% | Diabetes, obstruction, hematuria; urinary frequency and nocturia; urinary incontinence, analgesic abuse; family history of polycystic kidney disease; elevated serum creatinine; abnormal urinalysis |
| Primary aldosteronism | 5%-25% | Resistant hypertension; hypertension with hypokalemia (spontaneous or diuretic induced); hypertension and muscle cramps or weakness; hypertension and incidentally discovered adrenal mass; hypertension and obstructive sleep apnea; hypertension and family history of early-onset hypertension or stroke |
| Drug or alcohol induced | 2%-20% | Sodium-containing antacids; antidepressants; nicotine (smoking); alcohol; NSAIDs; oral contraceptives; cyclosporine or tacrolimus; sympathomimetics (decongestants, anorectics); cocaine, amphetamines and other illicit drugs; neuropsychiatric agents; erythropoiesis-stimulating agents; cancer treatment (VEGF inhibitors, Bruton tyrosine kinase inhibitors and others), clonidine withdrawal; herbal agents (Ma Huang, ephedra) |
| Renovascular hypertension | 0.1%-5% | Resistant hypertension; hypertension of abrupt onset or worsening or increasingly difficult to control; flash pulmonary edema (atherosclerotic); early-onset hypertension, especially in women (fibromuscular hyperplasia) |
| Uncommon causes | | |
| Hypothyroidism | <1% | Dry skin; cold intolerance; constipation; hoarseness; weight gain |
| Hyperthyroidism | <1% | Warm, moist skin; heat intolerance; nervousness; tremulousness; palpitations, insomnia; weight loss; diarrhea; proximal muscle weakness |
| Pheochromocytoma/paraganglioma | <0.6% | Resistant hypertension; paroxysmal hypertension or crisis superimposed on sustained hypertension; “spells,” BP lability, headache, sweating, palpitations, piloerection; positive family history of pheochromocytoma/paraganglioma; adrenal incidentaloma |
| Aortic coarctation (undiagnosed or repaired) | 0.1% | Young adult with hypertension (age <30 y) |
| Cushing syndrome | <0.1% | Rapid weight gain, especially with central distribution; proximal muscle weakness; depression; hyperglycemia |
| Primary hyperparathyroidism | Rare | Hypercalcemia |
| Congenital adrenal hyperplasia | Rare | Hypertension and hypokalemia; virilization (11-beta-hydroxylase deficiency [11-beta-OH]); incomplete masculinization in men and primary amenorrhea in women (17-alpha-hydroxylase deficiency [17-alpha-OH]) |
| Mineralocorticoid excess syndromes other than primary aldosteronism | Rare | Early-onset hypertension; resistant hypertension; hypokalemia or hyperkalemia |
| Acromegaly | Rare | Acral features, enlarging shoe, glove, or hat size; headache, visual disturbances; diabetes |

## Appendix X. Workflow Directing Threshold and Recommendations for Treatment and Follow Up

A diagram of a flowchart

AI-generated content may be incorrect.

## Appendix. X Implementation Resources

#### Providers

#### Pharmacists

* [Using the Pharmacists’ Patient Care Process to Manage High Blood Pressure: A Resource Guide for Pharmacists](https://www.cdc.gov/cardiovascular-resources/media/Pharmacist-Resource-Guide.pdf#:~:text=CDC%20developed%20this%20publication%2C%20Using%20the%20Pharmacists%E2%80%99%20Patient,heart%20disease%20and%20stroke%20in%20the%20United%20States.)

## Appendix D. Hypertension Medications with Potential Dental Treatment Interactions

|  |  |  |
| --- | --- | --- |
| **Medication, generic (trade) name** | **Adverse effects** | **Potential treatment interactions** |
| *Note: NSAIDS = non-steroidal anti-inflammatory drugs.* |  |  |
| **Primary agents** |
| ***Angiotensin-converting enzyme inhibitors*** |  |  |
| Benazepril (Lotensin), captopril (Capoten), enalapril (Vasotec), fosinopril (Monopril), lisinopril (Prinivil, Zestril), moexipril (Univasc), perindopril (Aceon), quinapril (Accupril), ramipril (Altace) | Xerostomia, dysgeusia, ageusia, lichenoid reactions, rash, dry cough, angioedema, burning mouth, gingival bleeding, neutropenia | NSAIDs/orthostatic hypotension |
| ***Angiotensin receptor blockers*** |  |  |
| Candesartan (Atacand), eprosartan vasoconstrictor (Teveten), irbesartan (Cozaar), olmesartan (Benicar), telmisartan (Micardis), valsartan (Diovan) | Xerostomia, dysgeusia, angioedema, sinusitis, cough | Systemic antifungals, sedatives/orthostatic hypotension |
| ***Calcium channel blockers*** |  |  |
| Nondihydropyridines: diltiazem (Cardizem), verapamil (Calan) Dihydropyridines: amlodipine (Norvasc), felodipine (Plendil), isradipine (DynaCirc), nicardipine (Cardene), nifedipine (Procardia), nisoldipine (Sular) | Xerostomia, gingival hyperplasia, dysgeusia, erythema multiform | Macrolide antibiotics, NSAIDS |
| ***Thiazide diuretics*** |  |  |
| Chlorothiazide (Diuril), chlorthalidone, hydrochlorothiazide (HydroDIURIL, Microzide), indapamide (Lozol), metolazone (Mykrox, Zaroxolyn), polythiazide (Renese) | Xerostomia, lichenoid reactions | NSAIDS, epinephrine/orthostatic hypotension |
| **Secondary agents** |
| ***Beta blockers*** |  |  |
| Cardioselective - acebutolol (Sectral), atenolol (Tenormin), betaxolol (Kerlone), bisoprolol (Zebeta), metoprolol (Lopressor) | Xerostomia |  |
| Noncardioselective - carteolol (Cartrol), nadolol (Corgard), penbutolol (Levatol), pindolol (Visken), propranolol (Inderal), timolol (Blocadren) | Xerostomia, dysgeusia, lichenoid reactions | NSAIDs, epinephrine |
| ***Alpha 1 blockers*** |  |  |
| Doxazosin (Catapres), prazosin (Minipress), terazosin (Hytrin) | Xerostomia, Dysgeusia | NSAIDS/orthostatic hypotension |
| ***Combined alpha/beta blockers*** |  |  |
| Carvedilol (Coreg), labetalol (Normodyne, Trandate) | Dysgeusia | NSAIDS/orthostatic hypotension |
| ***Central-acting agents*** |  |  |
| Clonidine (Catapres), guanfacine (Tenex), methyldopa (Aldomet), reserpine | Xerostomia, dysgeusia, lichenoid reactions (specific to methyldopa), sedation, parotid pain | Orthostatic hypotension |
| ***Direct-acting vasodilators*** |  |  |
| Hydralazine (Apresoline), minoxidil (Loniten) | Lupus-like oral and skin lesions, lymphadenopathy, gingival bleeding, infections, facial flushing | NSAIDS/orthostatic hypotension |

## Appendix E. Community-based Screening through Delivery Systems

(based off [Cancer Commission Standards for Cancer Screening](https://www.facs.org/quality-programs/cancer-programs/commission-on-cancer/standards-and-resources/2020/))

Definition and Requirements

Blood pressure screening, as part of other preventive screening events or independently, detects increased blood pressure which offers opportunity to intervene early on to address blood pressure and It is recommended that each health system organization, through partnering with community organizations, host events focused on preventive screening including but not limited to blood pressure. Examples of community organizations include, but are not limited to, religious institutions, schools, health districts, local gyms, and others.

The event should be based on evidence-based national guidelines and interventions, where applicable, and have a formal process for follow up on all positive screening. Resources for evidence-based national guidelines and interventions include but are not limited to:

* American Heart Association
* American Medical Association
* Agency for Healthcare Research and Quality
* United States Preventive Task Force

Examples of non-compliant programs/events include, but are not limited to:

* Screening programs performed in the regular course of business
* Events or programs that educate about blood pressure screening or lifestyle interventions for heart disease but that do not provide an actual screening

Report

An event summary must be presented to and discussed with …. The summary must include the following information: the event site, the focus of screening activities (e.g., blood pressure only, blood pressure and diabetes, etc.), the partnering community organizations where applicable, data-driven identification of target audience for screening based on groups with lower than average blood pressure screening or blood pressure control rates, guidelines used in planning the screening event, the detailed process for follow up based on screened blood pressure based on guidelines (e.g., protocols for emergency level blood pressure screening) While it is encouraged that cancer programs hold as many screening events as appropriate for their needs, only one event is submitted for purposes of this standard.

**Suggested Measures of Compliance**

Each calendar year, the organization fulfills all of the compliance criteria:

1. The organization offers at least one screening event annually.
2. Blood pressure screening programs use validated blood pressure measuring devices
3. Where applicable, the screening event is consistent with evidence-based national guidelines and interventions.
4. The screening event has a process for follow up on all positive screening findings.
5. A summary of the screening event is presented to the … and documentation is submitted.

## Appendix E. Accurate Blood Pressure Screening

Accurate blood pressure measurement is a critical to accurately identifying patients with elevated blood pressure or hypertension, and informing clinicians and patients for treatment planning and setting goals of care. Clinicians should adhere to standardized protocols to minimize errors and obtain reliable readings. The following steps provide a detailed guide for ensuring accuracy during blood pressure screening:

Step 1: Preparation

Instruct patients to avoid consuming caffeine, smoking, or engaging in physical exercise for at least 30 minutes before appointments. Recommend not eating a heavy meal and emptying their bladder before reading.

Step 2: Positioning

The patient should be seated in a quiet room, free from distractions, and instructed to rest for 3 to 5 minutes without engaging in conversation. Their back should be supported by the chair, with legs uncrossed and feet flat on the floor. The arm used for measurement should be bare, supported at heart level, with the palm facing upward and muscles fully relaxed.

Step 3: Applying and Using the Cuff

Place the blood pressure cuff on the upper arm, ensuring it is secured above the elbow at mid-arm level. Confirm that the cuff fits snugly but is not overly tight, and position it so the inflatable bladder lies over the brachial artery. The arm should remain stable and supported throughout measurement.

Step 4: Taking the Measurement

Once the cuff is properly positioned, obtain the blood pressure reading. Encourage the patient to remain still and silent during the process. If the reading is elevated (systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg) or abnormally low (systolic ≤90 mmHg or diastolic ≤60 mmHg), allow the patient to rest for 1 to 2 minutes and then repeat the measurement. Multiple readings can help confirm the accuracy of the result.

Confirming a Diagnosis of Hypertension

For patients with consistently elevated readings, clinicians should follow the most updated guidelines from the American Heart Association. This includes taking out-of-office measurements to confirm the diagnosis of hypertension or to titrate medications as needed. Home blood pressure monitoring or 24-hour ambulatory blood pressure monitoring may provide additional data for more precise evaluation. International Consensus Guidelines on Hypertension recommend 2-3 office visits of a blood pressure >/= 140/90 mmHg indicates hypertension.

Resources for Accurate Blood Pressure Reading

[Target BP Graphic](https://targetbp.org/wp-content/uploads/2016/10/MAPHypertension_7StepsInOfficeInfographic_Landscape_English_NoCropsNoBleeds-12.pdf)

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