

eMeasure Title	Preventive Care and Screening: Screening for High Blood Pressure and Follow-Up Documented		
eMeasure Identifier (Measure Authoring Tool)	22	eMeasure Version number	5.1.000
NQF Number	Not Applicable	GUID	9a033a94-3d9b-11e1-8634-00237d5bf174
Measurement Period	January 1, 20XX through December 31, 20XX		
Measure Steward	Centers for Medicare & Medicaid Services (CMS)		
Measure Developer	Quality Insights of Pennsylvania		
Endorsed By	None		
Description	Percentage of patients aged 18 years and older seen during the reporting period who were screened for high blood pressure AND a recommended follow-up plan is documented based on the current blood pressure (BP) reading as indicated		
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Measure Scoring	Proportion		
Measure Type	Process		
Stratification	None		
Risk Adjustment	None		
Rate Aggregation	None		
Rationale	<p>Hypertension is a prevalent condition that affects approximately 66.9 million people in the United States. It is estimated that about 20-40% of the adult population has hypertension; the majority of people over age 65 have a hypertension diagnosis (Appleton SL, et. al., 2012 and Luehr D, et. al., 2012). Winter (2013) noted that 1 in 3 American adults have hypertension and the lifetime risk of developing hypertension is 90% (Winter KH, et. al., 2013). The African American population or non-Hispanic Blacks, the elderly, diabetics and those with chronic kidney disease are at increased risk of stroke, myocardial infarction and renal disease. Non-Hispanic Blacks have the highest prevalence at 38.6% (Winter KH, et. al., 2013). Hypertension is a major risk factor for ischemic heart disease, left ventricular hypertrophy, renal failure, stroke and dementia (Luehr D, et. al., 2012).</p> <p>Hypertension is the most common reason for adult office visits other than pregnancy. Garrison (2013) stated that in 2007, 42 million ambulatory visits were attributed to hypertension (Garrison GM and Oberhelman S, 2013). It also has the highest utilization of prescription drugs. Numerous resources and treatment options are available, yet only about 40-50% of the hypertensive patients have their blood pressure under control (<140/90) (Appleton SL, et. al., 2012, Luehr D, et. al., 2012). In addition to medication non-compliance, poor outcomes are also attributed to poor adherence to lifestyle changes such as a low-sodium diet, weight loss, increased exercise and limiting alcohol intake. Many adults find it difficult to continue medications and lifestyle changes when they are asymptomatic. Symptoms of elevated blood pressure usually do not occur until secondary problems arise such as with vascular diseases (myocardial infarction, stroke, heart failure and renal insufficiency) (Luehr D, et. al., 2012).</p> <p>Appropriate follow-up after blood pressure measurement is a pivotal component in preventing the progression of hypertension and the development of heart disease. Detection of marginally or fully elevated blood pressure by a specialty clinician warrants referral to a provider familiar with the management of hypertension and prehypertension. The 2010 ACCF/AHA Guideline for the Assessment of Cardiovascular Risk in Asymptomatic Adults continues to support using a global risk score such as the Framingham Risk Score, to assess risk of coronary heart disease (CHD) in all asymptomatic adults (Greenland P, et. al., 2010). Lifestyle modifications have demonstrated effectiveness in lowering blood pressure (JNC 7, 2003). The synergistic effect of several lifestyle modifications results in greater benefits than</p>		

	a single modification alone. Baseline diagnostic/laboratory testing establishes if a co-existing underlying condition is the etiology of hypertension and evaluates if end organ damage from hypertension has already occurred. Landmark trials such as ALLHAT have repeatedly proven the efficacy of pharmacologic therapy to control blood pressure and reduce the complications of hypertension. Follow-up intervals based on blood pressure control have been established by the JNC 7 and the USPSTF.
Clinical Recommendation Statement	The U.S. Preventive Services Task Force (USPSTF) recommends screening for high blood pressure in adults age 18 years and older. This is a grade A recommendation.
Improvement Notation	Higher score indicates better quality
Reference	U.S. Preventive Services Task Force (USPSTF) (2007). Screening for high blood pressure: U.S. Preventive Services Task Force reaffirmation recommendation statement. <i>Annals of Internal Medicine</i> ; 147(11):783-6
Reference	U.S. Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute & National High Blood Pressure Education Program (2003). The Seventh Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7). NIH Publication No. 03-5233
Reference	Garrison GM & Oberhelman S (2013). Screening for hypertension annually compared with current practice. <i>Annals of Family Medicine</i> , 11 (2), 116-121.
Reference	Luehr D, Woolley T, Burke R, Dohmen F, Hayes R, Johnson M, Kerandi H, Margolis K, Marshall M, O'Connor P, Pereira C, Reddy G, Schlichte A & Schoenleber M (2012). Hypertension diagnosis and treatment; Institute for Clinical Systems Improvement health care guideline. Updated November, 2012.
Reference	Appleton SL, Neo C, Hill C L, Douglas K A & Adams R J (2012). Untreated hypertension: prevalence and patient factors and beliefs associated with under-treatment in a population sample. <i>Journal of Human Hypertension</i> , advance online publication December 13, 2012.
Reference	Winter K H, Tuttle L A & Viera A J (2013). Hypertension. <i>Prim Care Clin Office Pract</i> , 40, 179-194.
Definition	<p>Blood Pressure (BP) Classification: BP is defined by four (4) BP reading classifications: Normal, Pre-Hypertensive, First Hypertensive, and Second Hypertensive Readings</p> <p>Recommended BP Follow-Up: The Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) recommends BP screening intervals, lifestyle modifications and interventions based on the current BP reading as listed in the "Recommended Blood Pressure Follow-Up Interventions" listed below</p> <p>Recommended Lifestyle Modifications: The JNC 7 report outlines lifestyle modifications which must include one or more of the following as indicated:</p> <ul style="list-style-type: none"> * Weight Reduction * Dietary Approaches to Stop Hypertension (DASH) Eating Plan * Dietary Sodium Restriction * Increased Physical Activity * Moderation in alcohol (ETOH) Consumption <p>Second Hypertensive Reading: Requires a BP reading of Systolic BP \geq 140 mmHg OR Diastolic BP \geq 90 mmHg during the current encounter AND a most recent BP reading within the last 12 months Systolic BP \geq 140 mmHg OR Diastolic BP \geq 90 mmHg</p> <p>Second Hypertensive Reading BP Interventions: The JNC 7 report outlines BP follow-up interventions for a second hypertensive BP reading and must include one or more of the following as indicated:</p> <ul style="list-style-type: none"> * Anti-Hypertensive Pharmacologic Therapy * Laboratory Tests * Electrocardiogram (ECG) <p>Recommended Blood Pressure Follow-Up Interventions:</p> <ul style="list-style-type: none"> * Normal BP: No follow-up required for Systolic BP $<$ 120 mmHg AND Diastolic BP $<$ 80 mmHg * Pre-Hypertensive BP: Follow-up with rescreen every year with systolic BP of 120-139 mmHg OR diastolic BP of 80-89 mmHg AND recommend lifestyle modifications OR referral to Alternative/Primary Care Provider * First Hypertensive BP Reading: Patients with one elevated reading of systolic BP \geq 140 mmHg OR diastolic BP \geq 90 mmHg: <ul style="list-style-type: none"> * Follow-up with rescreen $>$ 1 day and $<$ 4 weeks AND recommend lifestyle modifications OR referral to Alternative/Primary Care Provider * Second Hypertensive BP Reading: Patients with second elevated reading of systolic BP \geq 140 mmHg OR diastolic BP \geq 90 mmHg: <ul style="list-style-type: none"> * Follow-up with Recommended lifestyle recommendations AND one or more of the Second Hypertensive Reading Interventions OR referral to Alternative/Primary Care Provider
Guidance	<p>Both the systolic and diastolic blood pressure measurements are required for inclusion. If there are multiple blood pressures on the same date of service, use the most recent as the representative blood pressure.</p> <p>Eligible professionals who report the measure must perform the blood pressure screening at the time of a qualifying visit by an eligible professional and may not obtain measurements from external sources.</p>

	The intent of this measure is to screen patients for high blood pressure and provide recommended follow-up as indicated. The documented follow-up plan must be related to the current BP reading as indicated, example: "Patient referred to primary care provider for BP management."
Transmission Format	TBD
Initial Population	All patients aged 18 years and older before the start of the measurement period with at least one eligible encounter during the measurement period
Denominator	Equals Initial Population
Denominator Exclusions	Patient has an active diagnosis of hypertension
Numerator	Patients who were screened for high blood pressure AND have a recommended follow-up plan documented, as indicated if the blood pressure is pre-hypertensive or hypertensive
Numerator Exclusions	Not Applicable
Denominator Exceptions	<p>Patient Reason(s): Patient refuses to participate (either BP measurement or follow-up)</p> <p>OR</p> <p>Medical Reason(s): Patient is in an urgent or emergent medical situation where time is of the essence and to delay treatment would jeopardize the patient's health status. This may include but is not limited to severely elevated BP when immediate medical treatment is indicated.</p>
Supplemental Data Elements	For every patient evaluated by this measure also identify payer, race, ethnicity and sex

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Population Criteria

- **Initial Population =**
 - AND: Age \geq 18 year(s) at: "Measurement Period"
 - AND: "Occurrence A of Encounter, Performed: BP Screening Encounter Codes" during "Measurement Period"
- **Denominator =**
 - AND: Initial Population
- **Denominator Exclusions =**
 - OR: "Diagnosis: Diagnosis of hypertension" starts before start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
- **Numerator =**
 - AND: Most Recent:
 - "Occurrence A of Encounter, Performed: BP Screening Encounter Codes" satisfies all:
 - overlaps "Physical Exam, Performed: Diastolic Blood Pressure (result)"
 - overlaps "Physical Exam, Performed: Systolic Blood Pressure (result)"
 - AND:
 - OR:
 - AND: "Physical Exam, Performed: Systolic Blood Pressure" satisfies all:
 - Most Recent: during "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result $<$ 120 mmHg)
 - AND: "Physical Exam, Performed: Diastolic Blood Pressure" satisfies all:
 - Most Recent: during "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result $<$ 80 mmHg)
 - OR:
 - AND:
 - OR:
 - AND: "Physical Exam, Performed: Systolic Blood Pressure" satisfies all:
 - Most Recent: during "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result \geq 120 mmHg)
 - (result $<$ 140 mmHg)
 - AND: "Physical Exam, Performed: Diastolic Blood Pressure" satisfies

- all:
 - Most Recent: during "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result < 90 mmHg)
 - OR:
 - AND: "Physical Exam, Performed: Diastolic Blood Pressure" satisfies all:
 - Most Recent: during "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result >= 80 mmHg)
 - (result < 90 mmHg)
 - AND: "Physical Exam, Performed: Systolic Blood Pressure" satisfies all:
 - Most Recent: during "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result < 140 mmHg)
 - AND:
 - OR: "Intervention, Order: Referral to Alternative Provider / Primary Care Provider (reason: Finding of Hypertension)" <= 1 day(s) starts after or concurrent with start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - OR:
 - AND: \$HypertensionRecommendations <= 1 day(s) starts after or concurrent with start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - AND: "Intervention, Order: Followup within one year (reason: Finding of Hypertension)" <= 1 day(s) starts after or concurrent with start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
- OR:
 - AND:
 - OR:
 - AND NOT: "Physical Exam, Performed: Systolic Blood Pressure (result)" < 1 year(s) starts before start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - AND NOT: "Physical Exam, Performed: Diastolic Blood Pressure (result)" < 1 year(s) starts before start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - OR:
 - AND: "Physical Exam, Performed: Systolic Blood Pressure" satisfies all:
 - Most Recent: < 1 year(s) starts before start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result < 140 mmHg)
 - AND: "Physical Exam, Performed: Diastolic Blood Pressure" satisfies all:
 - Most Recent: < 1 year(s) starts before start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result < 90 mmHg)
 - AND:
 - OR: "Physical Exam, Performed: Systolic Blood Pressure" satisfies all:
 - Most Recent: during "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result >= 140 mmHg)
 - OR: "Physical Exam, Performed: Diastolic Blood Pressure" satisfies all:
 - Most Recent: during "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result >= 90 mmHg)
 - AND:
 - OR: "Intervention, Order: Referral to Alternative Provider / Primary Care Provider (reason: Finding of Hypertension)" <= 1 day(s) starts after or concurrent with start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - OR:
 - AND: \$HypertensionRecommendations <= 1 day(s) starts after or concurrent with start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - AND: "Intervention, Order: Followup within 4 weeks (reason: Finding of Hypertension)" <= 1 day(s) starts after or concurrent with start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
- OR:
 - AND:
 - OR: "Physical Exam, Performed: Systolic Blood Pressure" satisfies all:
 - Most Recent: < 1 year(s) starts before start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result >= 140 mmHg)
 - OR: "Physical Exam, Performed: Diastolic Blood Pressure" satisfies all:
 - Most Recent: < 1 year(s) starts before start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"

- Encounter, Performed: BP Screening Encounter Codes"
 - (result >= 90 mmHg)
 - AND:
 - OR: "Physical Exam, Performed: Systolic Blood Pressure" satisfies all:
 - Most Recent: during "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result >= 140 mmHg)
 - OR: "Physical Exam, Performed: Diastolic Blood Pressure" satisfies all:
 - Most Recent: during "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - (result >= 90 mmHg)
 - AND:
 - OR: "Intervention, Order: Referral to Alternative Provider / Primary Care Provider (reason: Finding of Hypertension)" <= 1 day(s) starts after or concurrent with start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - OR:
 - AND: \$HypertensionRecommendations <= 1 day(s) starts after or concurrent with start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - AND: Union of:
 - "Medication, Order: Anti-Hypertensive Pharmacologic Therapy"
 - "Laboratory Test, Order: Laboratory Tests for Hypertension"
 - "Diagnostic Study, Order: ECG 12 lead or study order"
 - <= 1 day(s) starts after or concurrent with start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
- **Numerator Exclusions =**
 - None
- **Denominator Exceptions =**
 - OR: Union of:
 - "Physical Exam, Performed not done: Medical or Other reason not done" for "Diastolic Blood Pressure"
 - "Physical Exam, Performed not done: Patient Reason refused" for "Diastolic Blood Pressure"
 - "Physical Exam, Performed not done: Medical or Other reason not done" for "Systolic Blood Pressure"
 - "Physical Exam, Performed not done: Patient Reason refused" for "Systolic Blood Pressure"
 - starts during "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
 - OR: Union of:
 - "Intervention, Order not done: Patient Reason refused" for "Referral to Alternative Provider / Primary Care Provider"
 - "Intervention, Order not done: Patient Reason refused" for "Lifestyle Recommendation"
 - "Intervention, Order not done: Patient Reason refused" for "Weight Reduction Recommended"
 - "Intervention, Order not done: Patient Reason refused" for "Dietary Recommendations"
 - "Intervention, Order not done: Patient Reason refused" for "Physical Activity Recommendation"
 - "Intervention, Order not done: Patient Reason refused" for "Moderation of ETOH Consumption Recommendation"
 - "Medication, Order not done: Patient Reason refused" for "Anti-Hypertensive Pharmacologic Therapy"
 - "Laboratory Test, Order not done: Patient Reason refused" for "Laboratory Tests for Hypertension"
 - "Diagnostic Study, Order not done: Patient Reason refused" for "ECG 12 lead or study order"
 - <= 1 day(s) starts after or concurrent with start of "Occurrence A of Encounter, Performed: BP Screening Encounter Codes"
- **Stratification =**
 - None

Data Criteria (QDM Variables)

- **\$HypertensionRecommendations =**
 - Union of:
 - "Intervention, Order: Lifestyle Recommendation"
 - "Intervention, Order: Weight Reduction Recommended"
 - "Intervention, Order: Dietary Recommendations"
 - "Intervention, Order: Physical Activity Recommendation"
 - "Intervention, Order: Moderation of ETOH Consumption Recommendation"

Data Criteria (QDM Data Elements)

- "Diagnosis: Diagnosis of hypertension" using "Diagnosis of hypertension Grouping Value Set (2.16.840.1.113883.3.600.263)"
- "Diagnostic Study, Order: ECG 12 lead or study order" using "ECG 12 lead or study order Grouping Value Set (2.16.840.1.113883.3.600.2448)"
- "Diagnostic Study, Order not done: Patient Reason refused" using "Patient Reason refused SNOMEDCT Value Set (2.16.840.1.113883.3.600.791)"

- "Encounter, Performed: BP Screening Encounter Codes" using "BP Screening Encounter Codes Grouping Value Set (2.16.840.1.113883.3.600.1920)"
- "Intervention, Order: Dietary Recommendations" using "Dietary Recommendations Grouping Value Set (2.16.840.1.113883.3.600.1515)"
- "Intervention, Order: Followup within 4 weeks" using "Followup within 4 weeks SNOMEDCT Value Set (2.16.840.1.113883.3.600.1537)"
- "Intervention, Order: Followup within one year" using "Followup within one year SNOMEDCT Value Set (2.16.840.1.113883.3.600.1474)"
- "Intervention, Order: Lifestyle Recommendation" using "Lifestyle Recommendation SNOMEDCT Value Set (2.16.840.1.113883.3.600.1508)"
- "Intervention, Order: Moderation of ETOH Consumption Recommendation" using "Moderation of ETOH Consumption Recommendation SNOMEDCT Value Set (2.16.840.1.113883.3.600.823)"
- "Intervention, Order: Physical Activity Recommendation" using "Physical Activity Recommendation Grouping Value Set (2.16.840.1.113883.3.600.1518)"
- "Intervention, Order: Referral to Alternative Provider / Primary Care Provider" using "Referral to Alternative Provider / Primary Care Provider SNOMEDCT Value Set (2.16.840.1.113883.3.600.1475)"
- "Intervention, Order: Weight Reduction Recommended" using "Weight Reduction Recommended Grouping Value Set (2.16.840.1.113883.3.600.1510)"
- "Intervention, Order not done: Patient Reason refused" using "Patient Reason refused SNOMEDCT Value Set (2.16.840.1.113883.3.600.791)"
- "Laboratory Test, Order: Laboratory Tests for Hypertension" using "Laboratory Tests for Hypertension Grouping Value Set (2.16.840.1.113883.3.600.1482)"
- "Laboratory Test, Order not done: Patient Reason refused" using "Patient Reason refused SNOMEDCT Value Set (2.16.840.1.113883.3.600.791)"
- "Medication, Order: Anti-Hypertensive Pharmacologic Therapy" using "Anti-Hypertensive Pharmacologic Therapy RXNORM Value Set (2.16.840.1.113883.3.600.1476)"
- "Medication, Order not done: Patient Reason refused" using "Patient Reason refused SNOMEDCT Value Set (2.16.840.1.113883.3.600.791)"
- "Physical Exam, Performed: Diastolic Blood Pressure" using "Diastolic Blood Pressure Grouping Value Set (2.16.840.1.113883.3.526.3.1033)"
- "Physical Exam, Performed: Systolic Blood Pressure" using "Systolic Blood Pressure Grouping Value Set (2.16.840.1.113883.3.526.3.1032)"
- "Physical Exam, Performed not done: Medical or Other reason not done" using "Medical or Other reason not done SNOMEDCT Value Set (2.16.840.1.113883.3.600.1.1502)"
- "Physical Exam, Performed not done: Patient Reason refused" using "Patient Reason refused SNOMEDCT Value Set (2.16.840.1.113883.3.600.791)"
- Attribute: "Reason: Finding of Hypertension" using "Finding of Hypertension SNOMEDCT Value Set (2.16.840.1.113883.3.600.2395)"

Supplemental Data Elements

- "Patient Characteristic Ethnicity: Ethnicity" using "Ethnicity CDCREC Value Set (2.16.840.1.114222.4.11.837)"
- "Patient Characteristic Payer: Payer" using "Payer SOP Value Set (2.16.840.1.114222.4.11.3591)"
- "Patient Characteristic Race: Race" using "Race CDCREC Value Set (2.16.840.1.114222.4.11.836)"
- "Patient Characteristic Sex: ONC Administrative Sex" using "ONC Administrative Sex AdministrativeGender Value Set (2.16.840.1.113762.1.4.1)"

Risk Adjustment Variables

- None

Measure Set	Preventive Care and Screening
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