eCQM Title eCQM Identifier (Measure Authoring Tool)	Preventive Care and Screening: Screening for High Blood Pressure	e and Follow-Up Documented eCQM Version Number	13.0.000
CBE Number Measurement Period	January 1, 20XX through December 31, 20XX	GUID	9a033a94-3d9b-11e1-8634-00237d5bf174
Measure Steward Measure Developer Endorsed By	Centers for Medicare & Medicaid Services (CMS) Mathematica None		
Description	Percentage of patient visits for patients aged 18 years and older seen during the measurement period who were screened for high blood pressure AND a recommended follow-up plan is documented, as indicated, if blood pressure is elevated or hypertensive Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary code sets should obtain all necessary licenses from the owners of these code sets		
Copyright	all necessary licenses from the owners of these code sets. CPT(R) contained in the Measure specifications is copyright 2004-2023 American Medical Association. LOINC(R) is copyright 2004- 2023 Regenstrief Institute, Inc. This material contains SNOMED Clinical Terms(R) (SNOMED CT[R]) copyright 2004-2023 International Health Terminology Standards Development Organisation. ICD-10 is copyright 2023 World Health Organization. All Rights Reserved. These performance measures are not clinical guidelines and do not establish a standard of medical care, and have not been tested for		
Disclaimer	all potential applications. THE MEASURES AND SPECIFICATIONS ARE PROVIDED "AS Due to technical limitations, registered trademarks are indicated b [TM].	IS" WITHOUT WARRANTY OF ANY KIND	
Measure Scoring Measure Type	Proportion Process		
Stratification Risk Adjustment	None None		
Rate Aggregation	None Hypertension is a prevalent condition that affects approximately 6 percent of the adult population has hypertension; the majority of p 2013 and Luehr et al., 2012). Winter (2013) noted that 1 in 3 Ame hypertension is 90 percent. The African American population or no kidney disease are at increased risk of stroke, myocardial infarction prevalence at 38.6 percent (Winter et al., 2013). Hypertension is a hypertrophy, renal failure, stroke and dementia (Luehr et al., 2012) hypertension are complementary approaches to reducing cardiov provides the optimal means of reducing risk and avoiding harmful	people over age 65 have a hypertension dia rican adults have hypertension and the life on-Hispanic Blacks, the elderly, diabetics a on and renal disease. Non-Hispanic Blacks a major risk factor for ischemic heart diseas t). Prevention of hypertension and the treat ascular disease risk in the population, but p consequences. Periodic blood pressure (E	agnosis (Appleton et al., time risk of developing nd those with chronic s have the highest se, left ventricular ment of established prevention of hypertension BP) screening can identify
	individuals who develop elevated BP over time. More frequent BP atherosclerotic cardiovascular disease (ASCVD) risk (Whelton et Hypertension is the most common reason for adult office visits oth ambulatory visits were attributed to hypertension (Garrison & Obe drugs. Numerous resources and treatment options are available, blood pressure under control (<140/90) (Appleton et al., 2013 and	al., 2018). her than pregnancy. Garrison (2013) stated rhelman, 2013). It also has the highest utili yet only about 40-50 percent of the hyperte I Luehr et al., 2012). In addition to medicati	I that in 2007, 42 million ization of prescription ensive patients have their ion non-compliance, poor
Rationale	outcomes are also attributed to poor adherence to lifestyle change limiting alcohol intake. Many adults find it difficult to continue med Symptoms of elevated blood pressure usually do not occur until s infarction, stroke, heart failure and renal insufficiency) (Luehr et al Appropriate follow-up after blood pressure measurement is a pivo development of heart disease. Detection of marginally or fully elev provider familiar with the management of hypertension and prehy	ications and lifestyle changes when they an econdary problems arise such as with vaso I., 2012). tal component in preventing the progression vated blood pressure by a specialty clinicia	re asymptomatic. cular diseases (myocardial on of hypertension and the
	The American College of Cardiology/American Heart Association ASCVD risk. For additional information please refer to the 2017 A points-to-remember/2017/11/09/11/41/2017-guideline-for-high-blc	(ACC/AHA) 2017 Guidelines provide updat CC/AHA guidelines: https://www.acc.org/la	
	Lifestyle modifications have demonstrated effectiveness in lowerin 2003). The synergistic effect of several lifestyle modifications resu diagnostic/laboratory testing establishes if a co-existing underlying damage from hypertension has already occurred. Landmark trials Prevent Heart Attack Trial (ALLHAT) have repeatedly proven the reduce the complications of hypertension. A review of 35 studies is counseling and patient education. Twenty-nine of the 35 studies is	Its in greater benefits than a single modific g condition is the etiology of hypertension a such as the Antihypertensive and Lipid-Lo efficacy of pharmacologic therapy to contro found that the pharmacist-led interventions showed statistically significant improvement	cation alone. Baseline and evaluates if end organ wering Treatment to of blood pressure and involved medication t in BP levels of the
Clinical Recommendation Statement	intervention groups at follow-up (Reeves et al., 2020). Follow-up i the 2017 ACC/AHA guideline and the United States Preventive Se The U.S. Preventive Services Task Force (USPSTF, 2021) recom older. This is a grade A recommendation.	ervices Task Force (Whelton et al., 2018; U	ISPSTF, 2021).
Improvement Notation Reference	Higher score indicates better quality Reference Type: CITATION Reference Text: 'Appleton, S. L., Neo, C., Hill, C. L., Douglas, K. A	· / /	
Reference	patient factors and beliefs associated with under-treatment in a po https://doi.org/10.1038/jhh.2012.62' Reference Type: CITATION Reference Text: 'Garrison, G. M. & Oberhelman, S. (2013). Scree		
Reference	of Family Medicine, 11 (2), 116-121. doi:10.1370/afm.1467' Reference Type: CITATION		
	Reference Text: 'Luehr, D., Woolley, T., Burke, R., Dohmen, F., Ha diagnosis and treatment; Institute for Clinical Systems Improveme Reference Type: CITATION	ent health care guideline. Updated Novemb	per, 2012'
Reference	Reference Text: 'Reeves, L., Robinson, K., McClelland, T., Adedo Interventions in the Management of Blood Pressure Control and A Randomized Controlled Trials. Journal of Pharmacy Practice. Ava October 5, 2020' Reference Type: CITATION	Adherence to Antihypertensive Medications	A Systematic Review of
Reference	Reference Text: 'U.S. Department of Health and Human Services, Institute & National High Blood Pressure Education Program (200 Prevention, Detection, Evaluation, and Treatment of High Blood P Reference Type: CITATION	3). The Seventh Report of the Joint Nation	al Committee on the
Reference	Reference Text: 'U.S. Preventive Services Task Force (USPSTF) Task Force reaffirmation recommendation statement. Journal of th doi:10.1001/jama.2021.4987' Reference Type: CITATION		
Reference	Reference Text: 'Whelton, P.K., Carey, R.M., Aronow, W.S., Casey, S., Jamerson, K.A., Jones, D.W., MacLaughlin, E.J, Muntener, P., Thomas, R.J., Williams, K. A., Williamson, J.D., Wright, J.T., (2014 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA of High Blood Pressure in Adults: A Report of the American Collec Practice Guidelines. Hypertension, 71(6), e13-e115. doi.org/10.11	Ovbiaggele, B., Smith, S.C., Spencer, C.C 8). 2017 Guideline for the Prevention, Detection, Ev ge of Cardiology/American Heart Association	C., Stafford, R.S., Taler, S.J., valuation, and Management
Reference	Reference Type: CITATION Reference Text: 'Winter, K. H., Tuttle, L. A. & Viera, A.J. (2013). H doi:10.1016/j.pop.2012.11.008'	ypertension. Primary Care Clinics in Office	Practice, 40, 179-194.
	Blood Pressure (BP) Classification: BP is defined by four (4) BP reading classifications: Normal, Eleva -Normal BP: Systolic BP (SBP) < 120 mmHg AND Diastolic BP (D -Elevated BP: SBP of 120-129 mmHg AND DBP < 80 mmHg -First Hypertensive Reading: SBP of >= 130 mmHg OR DBP of >= 80 mmHg during the 12 months prior to the encounter -Second Hypertensive Reading: Requires a SBP >= 130 mmHg OR BP reading within the last 12 months SBP >= 130 mmHg OR DBF Recommended BP Follow-Up:	DBP) < 80 mmHg = 80 mmHg without a previous SBP of >= 1 DR DBP >= 80 mmHg during the current en	130 mmHg OR DBP of >=
	The 2017 Guideline for the Prevention, Detection, Evaluation and College of Cardiology and American Heart Association recommen Classifications and recommends interventions based on the curre Up Interventions" below (Whelton et al., 2018). The time periods for follow-up actions specified for the elevated a classifications slightly differ from time periods given in the 2017 G and stability of the measure specification over time.	nds BP screening thresholds as defined und ant BP reading as listed in the "Recommend nd the second hypertensive (130-139 DBP	der Blood Pressure ded Blood Pressure Follow- 9 OR 80-89 SBP) BP
	The types of Recommended Nonpharmacologic Interventions, sur- Recommended Follow-Up Interventions based on BP Classification Recommended Blood Pressure Follow-Up Interventions: -Normal BP: No follow-up required for SBP < 120 mmHg AND DB -Elevated BP: Patients with SBP of 120-129 mmHg AND DBP < 8	on. :P < 80 mmHg	wing the section on
Definition	-Referral to Alternate/Primary Care Health Care Professional OR -Follow-up with rescreen within 6 months AND recommend non -First Hypertensive BP Reading: Patients with one elevated readin OR DBP >= 80 mmHg:	pharmacologic interventions	
	-Referral to Alternate/Primary Care Health Care Professional OR -Follow-up with rescreen within 4 weeks AND recommend non -Second Hypertensive BP Reading: -Second Hypertensive BP Reading: Patients with second elevat	ted reading of	
	SBP of 130-139 mmHg OR DBP of 80-89 mmHg (and not -Referral to Alternate/Primary Care Healthcare Professiona OR -Nonpharmacologic intervention AND reassessment within AND an order for a laboratory test or ECG for hypertension -Second Hypertensive BP Reading: SBP>=140 or DBP>=90:	l 6 months on	
	-Referral to Alternate/Primary Care Healthcare Professiona OR -Nonpharmacologic intervention AND BP-lowering medicati AND reassessment within 4 weeks AND an order for a labo	on	
	The 2017 Guideline outlines nonpharmacologic interventions (life indicated: -Weight Reduction -A "heart-healthy diet," such as Dietary Approaches to Stop Hyper -Dietary Sodium Restriction -Increased Physical Activity -Moderation in alcohol consumption		e or more of the following as
	This eCQM is an episode-based measure. An episode is defined the measurement period. This measure should be reported for ev (i.e., diastolic and systolic) be obtained during each visit in order t intervention is needed. Both the systolic and diastolic blood pressure measurements are	ery visit. The measure requires that blood point of the blood pressure reading us	pressure measurements red to evaluate if an
Guidance	during a patient visit, only the last, or most recent, pressure meas The intent of this measure is to screen patients for high blood pre- documented follow-up plan must be related to the current blood p care provider for BP management." Telehealth encounters are not eligible for this measure because th	urement will be used to evaluate the meas ssure and provide recommended follow-up ressure reading as indicated, example: "Pa	ure requirements. as indicated. The atient referred to primary
	telehealth. This version of the eCQM uses QDM version 5.6. Please refer to information on the QDM.	the eCQI resource center (https://ecqi.heal	thit.gov/qdm) for more
Transmission Format Initial Population Denominator	TBD All patient visits for patients aged 18 years and older at the beginn Equals Initial Population	ning of the measurement period	
Denominator Exclusions Numerator	Patient has an active diagnosis of hypertension Patient visits where patients were screened for high blood pressu indicated, if the blood pressure is elevated or hypertensive	re AND have a recommended follow-up pla	an documented, as
Numerator Exclusions Denominator Exceptions	Not Applicable Documentation of medical reason(s) for not screening for high blc situation where time is of the essence and to delay treatment wou		r emergent medical
Supplemental Data Elements	Documentation of patient reason(s) for not screening for blood pre intervention if patient BP is elevated or hypertensive (e.g., patient For every patient evaluated by this measure also identify payer, re	refuses).	n appropriate follow-up
Table of Contents			

Population Criteria Definitions Functions Terminology Data Criteria (QDM Data Elements) Supplemental Data Elements **Risk Adjustment Variables** 

## **Population Criteria**

#### ▲ Initial Population

"Qualifying Encounter during Measurement Period" QualifyingEncounter where AgeInYearsAt(date from start of "Measurement Period") >= 18

Denominator

"Initial Population"

## ▲ Denominator Exclusions

"Qualifying Encounter during Measurement Period" QualifyingEncounter with ["Diagnosis": "Diagnosis of Hypertension"] Hypertension such that Hypertension.prevalencePeriod overlaps before QualifyingEncounter.relevantPeriod

#### Numerator

"Encounter with Normal Blood Pressure Reading" union ("Encounter with Elevated Blood Pressure Reading SBP 120 to 129 AND DBP less than 80 and Interventions") union ("Encounter with First Hypertensive Reading SBP Greater than or Equal to 130 OR DBP Greater than or Equal to 80 and Interventions") union ("Encounter with Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89 and Interventions")

union ("Encounter with Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90 and Interventions")

## Numerator Exclusions

None

#### Denominator Exceptions

"Encounter with Medical Reason for Not Obtaining or Patient Declined Blood Pressure Measurement" union "Encounter with Order for Hypertension Follow Up Declined by Patient"

Stratification

None

# **Definitions**

Denominator

# "Initial Population"

Denominator Exceptions

"Encounter with Medical Reason for Not Obtaining or Patient Declined Blood Pressure Measurement" union "Encounter with Order for Hypertension Follow Up Declined by Patient"

## Denominator Exclusions

)

)

)

"Qualifying Encounter during Measurement Period" QualifyingEncounter with ["Diagnosis": "Diagnosis of Hypertension"] Hypertension

such that Hypertension.prevalencePeriod overlaps before QualifyingEncounter.relevantPeriod

## ▲ Encounter with Elevated Blood Pressure Reading SBP 120 to 129 AND DBP less than 80

"Qualifying Encounter during Measurement Period" QualifyingEncounter let EncounterLastSystolicBP: Last(["Physical Exam, Performed": "Systolic blood pressure"] SystolicBP where Global."NormalizeInterval" (SystolicBP.relevantDatetime, SystolicBP.relevantPeriod) during day of QualifyingEncounter.relevantPeriod

- sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)
- EncounterLastDiastolicBP: Last(["Physical Exam, Performed": "Diastolic blood pressure"] DiastolicBP where Global."NormalizeInterval"(DiastolicBP.relevantDatetime, DiastolicBP.relevantPeriod) during day of QualifyingEncounter.relevantPeriod
- sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)
- where ( EncounterLastSystolicBP.result included in Interval[120 'mm[Hg]', 129 'mm[Hg]'] and EncounterLastDiastolicBP.result included in Interval[1 'mm[Hg]', 80 'mm[Hg]' )

## Encounter with Elevated Blood Pressure Reading SBP 120 to 129 AND DBP less than 80 and Interventions

( "Encounter with Elevated Blood Pressure Reading SBP 120 to 129 AND DBP less than 80" ElevatedEncounter with "Follow up with Rescreen Within 6 Months" RescreenWithin6Mo

such that RescreenWithin6Mo.authorDatetime during day of ElevatedEncounter.relevantPeriod

such that Referral.authorDatetime during day of ElevatedEncounter.relevantPeriod

- with "NonPharmacological Interventions" NonPharmInterventions such that NonPharmInterventions.authorDatetime during day of ElevatedEncounter.relevantPeriod
- union ("Encounter with Elevated Blood Pressure Reading SBP 120 to 129 AND DBP less than 80" ElevatedEncounter with "Referral to Alternate or Primary Healthcare Professional for Hypertensive Reading" Referral

# Encounter with First Hypertensive Reading SBP Greater than or Equal to 130 OR DBP Greater than or Equal to 80

( "Qualifying Encounter during Measurement Period" QualifyingEncounter

- let EncounterLastSystolicBP: Last(["Physical Exam, Performed": "Systolic blood pressure"] SystolicBP where Global."NormalizeInterval"(SystolicBP.relevantDatetime, SystolicBP.relevantPeriod) during day of QualifyingEncounter.relevantPeriod sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)
- EncounterLastDiastolicBP: Last(["Physical Exam, Performed": "Diastolic blood pressure"] DiastolicBP
- where Global."NormalizeInterval"(DiastolicBP.relevantDatetime, DiastolicBP.relevantPeriod) during day of QualifyingEncounter.relevantPeriod sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)
- where EncounterLastSystolicBP.result > 0 'mm[Hg]' and EncounterLastDiastolicBP.result > 0 'mm[Hg]
- and (EncounterLastSystolicBP.result >= 130 'mm[Hg]' or EncounterLastDiastolicBP.result >= 80 'mm[Hg]

# except "Encounter with Hypertensive Reading Within Year Prior"

Encounter with First Hypertensive Reading SBP Greater than or Equal to 130 OR DBP Greater than or Equal to 80 and Interventions

"Encounter with First Hypertensive Reading SBP Greater than or Equal to 130 OR DBP Greater than or Equal to 80" FirstHTNEncounter with "First Hypertensive Reading Interventions or Referral to Alternate Professional" FirstHTNIntervention such that FirstHTNIntervention.authorDatetime during day of FirstHTNEncounter.relevantPeriod

## ▲ Encounter with Hypertensive Reading Within Year Prior

"Qualifying Encounter during Measurement Period" QualifyingEncounter

let EncounterLastSystolicBP: Last(["Physical Exam, Performed": "Systolic blood pressure"] SystolicBP where Global."NormalizeInterval"(SystolicBP.relevantDatetime, SystolicBP.relevantPeriod) ends 1 year or less before day of QualifyingEncounter.relevantPeriod sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)

EncounterLastDiastolicBP: Last(["Physical Exam, Performed": "Diastolic blood pressure"] DiastolicBP

where Global."NormalizeInterval"(DiastolicBP.relevantDatetime, DiastolicBP.relevantPeriod) ends 1 year or less before day of QualifyingEncounter.relevantPeriod sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)

where EncounterLastSystolicBP.result > 0 'mm[Hg]'

and EncounterLastDiastolicBP.result > 0 'mm[Hg]' and (EncounterLastSystolicBP.result >= 130 'mm[Hg]' or EncounterLastDiastolicBP.result >= 80 'mm[Hg]'

Encounter with Medical Reason for Not Obtaining or Patient Declined Blood Pressure Measurement

"Qualifying Encounter during Measurement Period" QualifyingEncounter with ( ["Physical Exam, Not Performed": "Systolic blood pressure"] union ["Physical Exam, Not Performed": "Diastolic blood pressure"] ) NoBPScreen

such that (NoBPScreen.negationRationale in "Medical Reason" or NoBPScreen.negationRationale in "Patient Declined"

) and NoBPScreen.authorDatetime during day of QualifyingEncounter.relevantPeriod

## Encounter with Normal Blood Pressure Reading

"Qualifying Encounter during Measurement Period" QualifyingEncounter

let EncounterLastSystolicBP: Last(["Physical Exam, Performed": "Systolic blood pressure"] SystolicBP where Global."NormalizeInterval"(SystolicBP.relevantDatetime, SystolicBP.relevantPeriod) during day of QualifyingEncounter.relevantPeriod sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)

EncounterLastDiastolicBP: Last(["Physical Exam, Performed": "Diastolic blood pressure"] DiastolicBP where Global."NormalizeInterval"(DiastolicBP.relevantDatetime, DiastolicBP.relevantPeriod) during day of QualifyingEncounter.relevantPeriod sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)

where EncounterLastSystolicBP.result included in Interval[1 'mm[Hg]', 120 'mm[Hg]') and EncounterLastDiastolicBP.result included in Interval [1 'mm[Hg]', 80 'mm[Hg]')

#### ▲ Encounter with Order for Hypertension Follow Up Declined by Patient

("Encounter with Elevated Blood Pressure Reading SBP 120 to 129 AND DBP less than 80" ElevatedBPEncounter

with ( "NonPharmacological Intervention Not Ordered" union ["Intervention, Not Ordered": "Referral to Primary Care or Alternate Provider"] union ["Intervention, Not Ordered": "Follow Up Within 6 Months"] ) ElevatedBPDeclinedInterventions

such that ElevatedBPDeclinedInterventions.negationRationale in "Patient Declined" and ElevatedBPDeclinedInterventions.authorDatetime during day of ElevatedBPEncounter.relevantPeriod

union ("Encounter with First Hypertensive Reading SBP Greater than or Equal to 130 OR DBP Greater than or Equal to 80" FirstHTNEncounter with ( "NonPharmacological Intervention Not Ordered"

union ["Intervention, Not Ordered": "Follow Up Within 4 Weeks"] union ["Intervention, Not Ordered": "Referral to Primary Care or Alternate Provider"] ) FirstHTNDeclinedInterventions

such that FirstHTNDeclinedInterventions.negationRationale in "Patient Declined" and FirstHTNDeclinedInterventions.authorDatetime during day of FirstHTNEncounter.relevantPeriod

union ("Encounter with Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89" SecondHTNEncounter

with "Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89 Interventions Declined" SecondHTNDeclinedInterventions such that SecondHTNDeclinedInterventions.authorDatetime during day of SecondHTNEncounter.relevantPeriod

union ("Encounter with Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90" SecondHTN140Over90Encounter with "Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90 Interventions Declined" SecondHTN140Over90DeclinedInterventions such that SecondHTN140Over90DeclinedInterventions.authorDatetime during day of SecondHTN140Over90Encounter.relevantPeriod

## ▲ Encounter with Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89

( "Qualifying Encounter during Measurement Period" QualifyingEncounter let EncounterLastSystolicBP: Last(["Physical Exam, Performed": "Systolic blood pressure"] SystolicBP where Global."NormalizeInterval" (SystolicBP.relevantDatetime, SystolicBP.relevantPeriod) during day of QualifyingEncounter.relevantPeriod sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)

EncounterLastDiastolicBP: Last(["Physical Exam, Performed": "Diastolic blood pressure"] DiastolicBP where Global."NormalizeInterval"(DiastolicBP.relevantDatetime, DiastolicBP.relevantPeriod) during day of QualifyingEncounter.relevantPeriod sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)

where (EncounterLastSystolicBP.result in Interval[130 'mm[Hg]', 139 'mm[Hg]']

or EncounterLastDiastolicBP.result in Interval[80 'mm[Hg]', 89 'mm[Hg]']

and not ( EncounterLastSystolicBP.result >= 140 'mm[Hg]' or EncounterLastDiastolicBP.result >= 90 'mm[Hg]'

)

)

)

intersect "Encounter with Hypertensive Reading Within Year Prior"

## Encounter with Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89 and Interventions

("Encounter with Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89" SecondHTNEncounterReading with "Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89 Interventions" EncounterInterventions

such that EncounterInterventions.authorDatetime during day of SecondHTNEncounterReading.relevantPeriod

#### union ("Encounter with Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89" SecondHTNEncounterReading with "Referral to Alternate or Primary Healthcare Professional for Hypertensive Reading" ReferralForHTN

such that ReferralForHTN.authorDatetime during day of SecondHTNEncounterReading.relevantPeriod

## ▲ Encounter with Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90

(( "Qualifying Encounter during Measurement Period" QualifyingEncounter let EncounterLastSystolicBP: Last(["Physical Exam, Performed": "Systolic blood pressure"] SystolicBP where Global."NormalizeInterval"(SystolicBP.relevantDatetime, SystolicBP.relevantPeriod) during day of QualifyingEncounter.relevantPeriod

sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)

. EncounterLastDiastolicBP: Last(["Physical Exam, Performed": "Diastolic blood pressure"] DiastolicBP where Global."NormalizeInterval"(DiastolicBP.relevantDatetime, DiastolicBP.relevantPeriod) during day of QualifyingEncounter.relevantPeriod

sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)

where EncounterLastSystolicBP.result > 0 'mm[Hg]' and EncounterLastDiastolicBP.result > 0 'mm[Hg]

and (EncounterLastSystolicBP.result >= 140 'mm[Hg]' or EncounterLastDiastolicBP.result >= 90 'mm[Hg]

intersect "Encounter with Hypertensive Reading Within Year Prior"

Encounter with Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90 and Interventions

("Encounter with Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90" SecondHTNEncounterReading140Over90 with "Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90 Interventions" SecondHTN140Over90Interventions such that SecondHTN140Over90Interventions.authorDatetime during day of SecondHTNEncounterReading140Over90.relevantPeriod

union "Encounter with Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90" SecondHTNEncounterReading140Over90 with "Referral to Alternate or Primary Healthcare Professional for Hypertensive Reading" ReferralToProfessional such that ReferralToProfessional.authorDatetime during day of SecondHTNEncounterReading140Over90.relevantPeriod

## First Hypertensive Reading Interventions or Referral to Alternate Professional

## ( ["Intervention, Order": "Follow Up Within 4 Weeks"] FourWeekRescreen

with "NonPharmacological Interventions" NonPharmInterventionsHTN such that FourWeekRescreen.authorDatetime during day of "Measurement Period"

# and NonPharmInterventionsHTN.authorDatetime during day of "Measurement Period"

union ( "Referral to Alternate or Primary Healthcare Professional for Hypertensive Reading" )

## Follow up with Rescreen Within 6 Months

["Intervention, Order": "Follow Up Within 6 Months"]

## **⊿** Initial Population

)

)

"Qualifying Encounter during Measurement Period" QualifyingEncounter where AgeInYearsAt(date from start of "Measurement Period") >= 18

## ▲ Laboratory Test or ECG for Hypertension

(["Diagnostic Study, Order": "12 lead EKG panel"]

union ["Diagnostic Study, Order": "EKG study"] union ["Laboratory Test, Order": "Laboratory Tests for Hypertension"] )

## ▲ Laboratory Test or ECG for Hypertension Not Ordered

( ["Diagnostic Study, Not Ordered": "12 lead EKG panel"] union ["Diagnostic Study, Not Ordered": "EKG study"] union ["Laboratory Test, Not Ordered": "Laboratory Tests for Hypertension"]

## ▲ NonPharmacological Intervention Not Ordered

( ["Intervention, Not Ordered": "Lifestyle Recommendation"] union ["Intervention, Not Ordered": "Weight Reduction Recommended"] union ["Intervention, Not Ordered": "Dietary Recommendations"]

union ["Intervention, Not Ordered": "Recommendation to Increase Physical Activity"] union ["Intervention, Not Ordered": "Referral or Counseling for Alcohol Consumption"]

## ▲ NonPharmacological Interventions

(["Intervention, Order": "Lifestyle Recommendation"] union ["Intervention, Order": "Weight Reduction Recommended"] union ["Intervention, Order": "Dietary Recommendations"] union ["Intervention, Order": "Recommendation to Increase Physical Activity"]

union ["Intervention, Order": "Referral or Counseling for Alcohol Consumption"]

# Numerator

"Encounter with Normal Blood Pressure Reading" union ("Encounter with Elevated Blood Pressure Reading SBP 120 to 129 AND DBP less than 80 and Interventions")

union ("Encounter with First Hypertensive Reading SBP Greater than or Equal to 130 OR DBP Greater than or Equal to 80 and Interventions") union ("Encounter with Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89 and Interventions")

union ("Encounter with Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90 and Interventions")

### ▲ Qualifying Encounter during Measurement Period

["Encounter, Performed": "Encounter to Screen for Blood Pressure"] ValidEncounter where ValidEncounter.relevantPeriod during day of "Measurement Period" and ValidEncounter.class !~ "virtual"

### Referral to Alternate or Primary Healthcare Professional for Hypertensive Reading ["Intervention, Order": "Referral to Primary Care or Alternate Provider"] Referral

where Referral reason in "Finding of Elevated Blood Pressure or Hypertension"

## ▲ SDE Ethnicity

["Patient Characteristic Ethnicity": "Ethnicity"]

#### ▲ SDE Payer

["Patient Characteristic Payer": "Payer Type"]

### SDE Race

["Patient Characteristic Race": "Race"]

## ▲ SDE Sex

#### ["Patient Characteristic Sex": "ONC Administrative Sex"]

#### ▲ Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89 Interventions

- "Follow up with Rescreen Within 6 Months" RescreenWithin6Mo
- with "Laboratory Test or ECG for Hypertension" LabECGIntervention such that RescreenWithin6Mo.authorDatetime during day of "Measurement Period"
- and LabECGIntervention.authorDatetime during day of "Measurement Period" with "NonPharmacological Interventions" NonPharmSecondIntervention
- such that NonPharmSecondIntervention.authorDatetime during day of "Measurement Period"

## ▲ Second Hypertensive Reading SBP 130 to 139 OR DBP 80 to 89 Interventions Declined

- (["Intervention, Not Ordered": "Referral to Primary Care or Alternate Provider"] union "Laboratory Test or ECG for Hypertension Not Ordered"
- union ["Intervention, Not Ordered": "Follow Up Within 6 Months"] union "NonPharmacological Intervention Not Ordered" ) SecondHTNDeclinedInterventions
- where SecondHTNDeclinedInterventions.negationRationale in "Patient Declined"

#### Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90 Interventions

- ( ["Intervention, Order": "Follow Up Within 4 Weeks"] WeeksRescreen with "Laboratory Test or ECG for Hypertension" ECGLabTest such that WeeksRescreen.authorDatetime during day of "Measurement Period" and ECGLabTest.authorDatetime during "Measurement Period" with "NonPharmacological Interventions" HTNInterventions such that HTNInterventions.authorDatetime during day of "Measurement Period"
- with ["Medication, Order": "Pharmacologic Therapy for Hypertension"] Medications such that Medications.authorDatetime during day of "Measurement Period"

# Second Hypertensive Reading SBP Greater than or Equal to 140 OR DBP Greater than or Equal to 90 Interventions Declined

- (["Intervention, Not Ordered": "Referral to Primary Care or Alternate Provider"] union ["Medication, Not Ordered": "Pharmacologic Therapy for Hypertension"]
- union "Laboratory Test or ECG for Hypertension Not Ordered" union ["Intervention, Not Ordered": "Follow Up Within 4 Weeks"]
- union "NonPharmacological Intervention Not Ordered" ) SecondHTN140Over90InterventionsNotOrdered where SecondHTN140Over90InterventionsNotOrdered.negationRationale in "Patient Declined"

#### **Functions**

- Global.NormalizeInterval(pointInTime DateTime, period Interval<DateTime>)
  - if pointInTime is not null then Interval[pointInTime, pointInTime]
  - else if period is not null then period else null as Interval<DateTime>

## **Terminology**

- code "12 lead EKG panel" ("LOINC Code (34534-8)")

   code "Diastolic blood pressure" ("LOINC Code (8462-4)")

   code "EKG study" ("LOINC Code (11524-6)")

   code "Systolic blood pressure" ("LOINC Code (8480-6)")

   code "virtual" ("ActCode Code (VR)")

   valueset "Diagnosis of Hypertension" (2.16.840.1.113883.3.600.263)

   valueset "Dietary Recommendations" (2.16.840.1.113883.3.600.1515)

   valueset "Encounter to Screen for Blood Pressure" (2.16.840.1.113883.3.600.1920)

   valueset "Enhicity" (2.16.840.1.114222.4.11.837)

   valueset "Follow Up Within 4 Weeks" (2.16.840.1.113883.3.526.3.1578)

   valueset "Follow Up Within 6 Months" (2.16.840.1.113883.3.526.3.1578)

   valueset "Follow Up Within 6 Months" (2.16.840.1.113883.3.526.3.1578)

   valueset "Laboratory Tests for Hypertension" (2.16.840.1.113883.3.526.3.1581)

   valueset "Medical Reason" (2.16.840.1.113883.3.526.3.1007)

   valueset "Patient Declined" (2.16.840.1.113883.3.526.3.1581)

   valueset "Patient Declined" (2.16.840.1.113883.3.526.3.1582)

   valueset "Referral or Counseling for Hypertension" (2.16.840.1.113883.3.526.1577)

   valu

### Data Criteria (QDM Data Elements)

- "Diagnosis: Diagnosis of Hypertension" using "Diagnosis of Hypertension (2.16.840.1.113883.3.600.263)" "Diagnostic Study, Not Ordered: 12 lead EKG panel" using "12 lead EKG panel (LOINC Code 34534-8)"
  - "Diagnostic Study, Not Ordered: EKG study" using "EKG study (LOINC Code 11524-6)" "Diagnostic Study, Order: 12 lead EKG panel" using "12 lead EKG panel (LOINC Code 34534-8)" "Diagnostic Study, Order: EKG study" using "EKG study (LOINC Code 11524-6)"

  - "Encounter, Performed: Encounter to Screen for Blood Pressure" using "Encounter to Screen for Blood Pressure (2.16.840.1.113883.3.600.1920)"
  - "Intervention, Not Ordered: Dietary Recommendations" using "Dietary Recommendations (2.16.840.1.113883.3.600.1515)" "Intervention, Not Ordered: Follow Up Within 4 Weeks" using "Follow Up Within 4 Weeks (2.16.840.1.113883.3.526.3.1578)" "Intervention, Not Ordered: Follow Up Within 6 Months" using "Follow Up Within 6 Months (2.16.840.1.113762.1.4.1108.125)"
  - "Intervention, Not Ordered: Lifestyle Recommendation" using "Lifestyle Recommendation (2.16.840.1.113883.3.526.3.1581)" "Intervention, Not Ordered: Recommendation to Increase Physical Activity" using "Recommendation to Increase Physical Activity (2.16.840.1.113883.3.600.1518)"
  - "Intervention, Not Ordered: Referral or Counseling for Alcohol Consumption" using "Referral or Counseling for Alcohol Consumption (2.16.840.1.113883.3.526.3.1583)" "Intervention, Not Ordered: Referral to Primary Care or Alternate Provider" using "Referral to Primary Care or Alternate Provider (2.16.840.1.113883.3.526.3.1580)"
  - ntervention, Not Ordered: Weight Reduction Recommended" using "Weight Reduction Recommended (2.16.840.1.113883.3.600.1510)
  - "Intervention, Order: Dietary Recommendations" using "Dietary Recommendations (2.16.840.1.113883.3.600.1515)" "Intervention, Order: Follow Up Within 4 Weeks" using "Follow Up Within 4 Weeks (2.16.840.1.113883.3.526.3.1578)"
  - "Intervention, Order: Follow Up Within 6 Months" using "Follow Up Within 6 Months (2.16.840.1.113762.1.4.1108.125)" "Intervention, Order: Lifestyle Recommendation" using "Lifestyle Recommendation (2.16.840.1.113883.3.526.3.1581)"
  - "Intervention, Order: Recommendation to Increase Physical Activity" using "Recommendation to Increase Physical Activity (2.16.840.1.113883.3.600.1518)" "Intervention, Order: Referral or Counseling for Alcohol Consumption" using "Referral or Counseling for Alcohol Consumption (2.16.840.1.113883.3.526.3.1583)"
  - "Intervention, Order: Referral to Primary Care or Alternate Provider" using "Referral to Primary Care or Alternate Provider (2.16.840.1.113883.3.526.3.1580)" "Intervention, Order: Weight Reduction Recommended" using "Weight Reduction Recommended (2.16.840.1.113883.3.600.1510)"
  - "Laboratory Test, Not Ordered: Laboratory Tests for Hypertension" using "Laboratory Tests for Hypertension (2.16.840.1.113883.3.600.1482)" "Laboratory Test, Order: Laboratory Tests for Hypertension" using "Laboratory Tests for Hypertension (2.16.840.1.113883.3.600.1482)"
  - "Medication, Not Ordered: Pharmacologic Therapy for Hypertension" using "Pharmacologic Therapy for Hypertension (2.16.840.1.113883.3.526.1577)" "Medication, Order: Pharmacologic Therapy for Hypertension" using "Pharmacologic Therapy for Hypertension (2.16.840.1.113883.3.526.1577)"
  - "Patient Characteristic Ethnicity: Ethnicity" using "Ethnicity (2.16.840.1.114222.4.11.837)" "Patient Characteristic Payer: Payer Type" using "Payer Type (2.16.840.1.114222.4.11.3591)"
  - "Patient Characteristic Race: Race" using "Race (2.16.840.1.114222.4.11.836)"
- "Patient Characteristic Sex: ONC Administrative Sex" using "ONC Administrative Sex (2.16.840.1.113762.1.4.1)"
- "Physical Exam, Not Performed: Diastolic blood pressure" using "Diastolic blood pressure (LOINC Code 8462-4)" "Physical Exam, Not Performed: Systolic blood pressure" using "Systolic blood pressure (LOINC Code 8480-6)" "Physical Exam, Performed: Diastolic blood pressure" using "Diastolic blood pressure (LOINC Code 8462-4)"
- "Physical Exam, Performed: Systolic blood pressure" using "Systolic blood pressure (LOINC Code 8480-6)"

# **Supplemental Data Elements**

- ▲ SDE Ethnicity
- ["Patient Characteristic Ethnicity": "Ethnicity"]

## ▲ SDE Payer

["Patient Characteristic Payer": "Payer Type"]

## **⊿** SDE Race

["Patient Characteristic Race": "Race"]

## ▲ SDE Sex

["Patient Characteristic Sex": "ONC Administrative Sex"]

## **Risk Adjustment Variables**

None

Measure Set