

eMeasure Title	Hypertension: Improvement in Blood Pressure		
eMeasure Identifier (Measure Authoring Tool)	65	eMeasure Version number	3
NQF Number	Not Applicable	GUID	1d8363ce-a529-490b-8c98-9b54aa75da06
Measurement Period	January 1, 20xx through December 31, 20xx		
Measure Steward	Centers for Medicare & Medicaid Services (CMS)		
Measure Developer	National Committee for Quality Assurance (NCQA)		
Endorsed By	None		
Description	Percentage of patients aged 18-85 years of age with a diagnosis of hypertension whose blood pressure improved during the measurement period.		
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Measure Scoring	Proportion		
Measure Type	Outcome		
Stratification	TBD		
Risk Adjustment	None		
Rate Aggregation	None		
Rationale	<p>High blood pressure is one of the most common risk factors for cardiovascular disease and stroke. Less than half of those with hypertension have their condition controlled. Uncontrolled and untreated hypertension was associated with increased risk of total and cardiovascular mortality among the general hypertensive population. Health-care system improvements, including use of electronic health records with registry and clinical decision support functions, could facilitate better treatment and follow-up management, and improve patient-physician interaction.</p> <p>Epidemiological studies and randomized trials have repeatedly demonstrated that the relative risk of cardiovascular disease increases continuously with increasing levels of BP. The benefit of lowering a high blood pressure is to reduce the risk of developing a cardiovascular disease in the future. For example, it is estimated that reducing a high diastolic blood pressure by 6 mm Hg reduces your relative risk of having a stroke in the future by about 35-40%, and reduces your relative risk of developing heart disease by about 20-25%. Larger reductions in blood pressure provide greater benefits.</p>		
Clinical Recommendation Statement	JNC-7: Treating systolic blood pressure and diastolic blood pressure to targets that are <140/90 mmHg is associated with a decrease in cardiovascular disease complications		
Improvement Notation	A higher score indicates better quality		
Reference	Prevention, Detection, Evaluation, and Treatment of High Blood Pressure - The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. NIH Publication No.03 - 5233 December 2003		
Reference	MacMahon S, Peto R, Cutler J, Collins R, Sorlie P, Neaton J, Abbott R, Godwin J, Dyer A, Stamler J. Blood pressure, stroke, and coronary heart disease, part 1: prolonged differences in blood pressure: prospective observational studies corrected for the regression dilution bias. Lancet. 1990; 335: 765-774. [Medline] [Order article via Infotrieve]		
Reference	Kannel WB, Belanger AJ. Epidemiology of heart failure. Am Heart J. 1991; 121: 951-957. [Medline] [Order article via Infotrieve]		
Reference	Klag MJ, Whelton PK, Randall BL, Neaton JD, Brancati FL, Ford CE, Shulman NB, Stamler J. Blood pressure and end-stage renal disease in men. N Engl J Med. 1996; 334: 13-18. [Medline] [Order article via Infotrieve]		

Reference	He J, Whelton PK. Elevated systolic blood pressure and risk of cardiovascular and renal disease: an overview of evidence from observational epidemiologic studies and randomized controlled trials. Am Heart J. 1999;138:S211–S219.
Reference	Collins R, Peto R, MacMahon S, Hebert P, Fiebach NH, Eberlein KA, Godwin J, Qizilbash N, Taylor JO, Hennekens CH. Blood pressure, stroke, and coronary heart disease, part 2: short-term reductions in blood pressure: overview of randomized drug trials in their epidemiological context. Lancet. 1990;335:827–838.
Reference	http://www.patient.co.uk/health/High-Blood-Pressure-(Hypertension).htm
Definition	<p>Adequate control: a systolic blood pressure < 140 mmHg.</p> <p>Uncontrolled blood pressure: a systolic blood pressure \geq 140 mmHg.</p> <p>Uncontrolled baseline blood pressure: systolic blood pressure \geq 140 mmHg that is taken during the first outpatient encounter of the measurement year in which the patient has an active diagnosis of hypertension. This must occur during the first six months of the year. If the patient with hypertension has adequate blood pressure control during the first outpatient encounter of the measurement year, then do not include the patient in the denominator.</p> <p>Follow-up blood pressure: systolic blood pressure taken during the first outpatient encounter during the measurement year that occurs at least six months after the baseline blood pressure.</p> <p>Improvement in blood pressure: the follow-up blood pressure is at least 10 mmHg less than the baseline systolic blood pressure.</p>
Guidance	Blood pressure readings must be taken while the patient is sitting. If multiple measurements occur on the same date, the last systolic and diastolic readings should be used.
Transmission Format	TBD
Initial Patient Population	All patients aged 18-85 years of age, who had at least one outpatient visit in the first six months of the measurement year, who have a diagnosis of hypertension documented during that outpatient visit, and who have uncontrolled baseline blood pressure at the time of that visit
Denominator	Equals Initial Patient Population
Denominator Exclusions	<p>Exclude from the denominator all patients with evidence of end-stage renal disease (ESRD) on or prior to December 31 of the measurement year. Documentation of dialysis or renal transplant also meets the criteria for evidence of ESRD.</p> <p>Exclude from the denominator all patients with a diagnosis of pregnancy during the measurement year.</p>
Numerator	<p>Patients whose follow-up blood pressure is at least 10 mmHg less than their baseline blood pressure or is adequately controlled.</p> <p>If a follow-up blood pressure reading is not recorded during the measurement year, the patient's blood pressure is assumed "not improved."</p>
Numerator Exclusions	Not Applicable
Denominator Exceptions	None
Measure Population	Not Applicable
Measure Observations	Not Applicable
Supplemental Data Elements	For every patient evaluated by this measure also identify payer, race, ethnicity and sex.

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Population criteria

- **Initial Patient Population =**
 - AND: FIRST: "Occurrence A of Encounter, Performed: Blood Pressure Visit" \leq 6 month(s) starts after start of "Measurement Period"
 - AND: MOST RECENT: "Occurrence A of Physical Exam, Finding: Systolic Blood Pressure (result)" during "Occurrence A of Encounter, Performed: Blood Pressure Visit"
 - AND NOT: "Occurrence A of Diagnosis, Active: Hypertension" ends before start of "Occurrence A of Encounter, Performed: Blood Pressure Visit"

Hypertension: Improvement in Blood Pressure

- AND: "Patient Characteristic Birthdate: birth date" >= 18 year(s) starts before start of "Measurement Period"
- AND: "Patient Characteristic Birthdate: birth date" < 85 year(s) starts before start of "Measurement Period"
- AND: "Occurrence A of Diagnosis, Active: Hypertension" starts before or during "Occurrence A of Encounter, Performed: Blood Pressure Visit"
- AND: "Occurrence A of Physical Exam, Finding: Systolic Blood Pressure (result >= 140 mmHg)"
- **Denominator =**
 - AND: "Initial Patient Population"
- **Denominator Exclusions =**
 - AND:
 - OR: "Procedure, Performed: Renal Transplant" starts before or during "Measurement Period"
 - OR: "Procedure, Performed: Hemodialysis" starts before or during "Measurement Period"
 - OR: "Procedure, Performed: Peritoneal Dialysis" starts before or during "Measurement Period"
 - OR:
 - AND NOT: "Occurrence A of Diagnosis, Active: Pregnancy" ends before start of "Measurement Period"
 - AND: "Occurrence A of Diagnosis, Active: Pregnancy" starts before or during "Measurement Period"
 - OR:
 - AND NOT: "Occurrence A of Diagnosis, Active: End Stage Renal Disease" ends before start of "Measurement Period"
 - AND: "Occurrence A of Diagnosis, Active: End Stage Renal Disease" starts before or during "Measurement Period"
- **Numerator =**
 - AND: FIRST: "Occurrence B of Encounter, Performed: Blood Pressure Visit" >= 6 month(s) starts after end of "Occurrence A of Encounter, Performed: Blood Pressure Visit"
 - AND: MOST RECENT: "Occurrence B of Physical Exam, Finding: Systolic Blood Pressure (result)" during "Occurrence B of Encounter, Performed: Blood Pressure Visit"
 - AND: "Occurrence B of Encounter, Performed: Blood Pressure Visit" ends during "Measurement Period"
 - AND:
 - OR: "Physical Exam, Finding: Delta systolic blood pressure (result >= 10 mmHg)" during "Occurrence B of Encounter, Performed: Blood Pressure Visit"
 - OR: "Occurrence B of Physical Exam, Finding: Systolic Blood Pressure (result < 140 mmHg)"
- **Denominator Exceptions =**
 - None

Data criteria (QDM Data Elements)

- "Diagnosis, Active: End Stage Renal Disease" using "End Stage Renal Disease Grouping Value Set (2.16.840.1.113883.3.526.3.353)"
- "Diagnosis, Active: Hypertension" using "Hypertension Grouping Value Set (2.16.840.1.113883.3.464.1003.104.12.1016)"
- "Diagnosis, Active: Pregnancy" using "Pregnancy Grouping Value Set (2.16.840.1.113883.3.526.3.378)"
- "Encounter, Performed: Blood Pressure Visit" using "Blood Pressure Visit Grouping Value Set (2.16.840.1.113883.3.464.1003.101.12.1056)"
- "Patient Characteristic Birthdate: birth date" using "birth date LOINC Value Set (2.16.840.1.113883.3.560.100.4)"
- "Physical Exam, Finding: Delta systolic blood pressure" using "Delta systolic blood pressure Grouping Value Set (2.16.840.1.113883.3.464.1003.121.12.1013)"
- "Physical Exam, Finding: Systolic Blood Pressure" using "Systolic Blood Pressure Grouping Value Set (2.16.840.1.113883.3.526.3.1032)"
- "Procedure, Performed: Hemodialysis" using "Hemodialysis Grouping Value Set (2.16.840.1.113883.3.526.3.1083)"
- "Procedure, Performed: Peritoneal Dialysis" using "Peritoneal Dialysis Grouping Value Set (2.16.840.1.113883.3.526.3.1084)"
- "Procedure, Performed: Renal Transplant" using "Renal Transplant Grouping Value Set (2.16.840.1.113883.3.464.1003.109.12.1002)"

Reporting Stratification

- None

Supplemental Data Elements

- "Patient Characteristic Ethnicity: Ethnicity" using "Ethnicity CDC Value Set (2.16.840.1.114222.4.11.837)"
- "Patient Characteristic Payer: Payer" using "Payer Source of Payment Typology Value Set (2.16.840.1.114222.4.11.3591)"
- "Patient Characteristic Race: Race" using "Race CDC Value Set (2.16.840.1.114222.4.11.836)"
- "Patient Characteristic Sex: Administrative Sex" using "ONC Administrative Sex Administrative Sex Value Set (2.16.840.1.113762.1.4.1)"

Measure
Set

Not Applicable