

COLLEGE OF POPULATION HEALTH

PopTalk Webinar Series

Controlling High Blood Pressure: An Evidence-Based Blueprint for Change

March 17, 2021 | 12:00-1:00pm ET

Robert Carey, MD

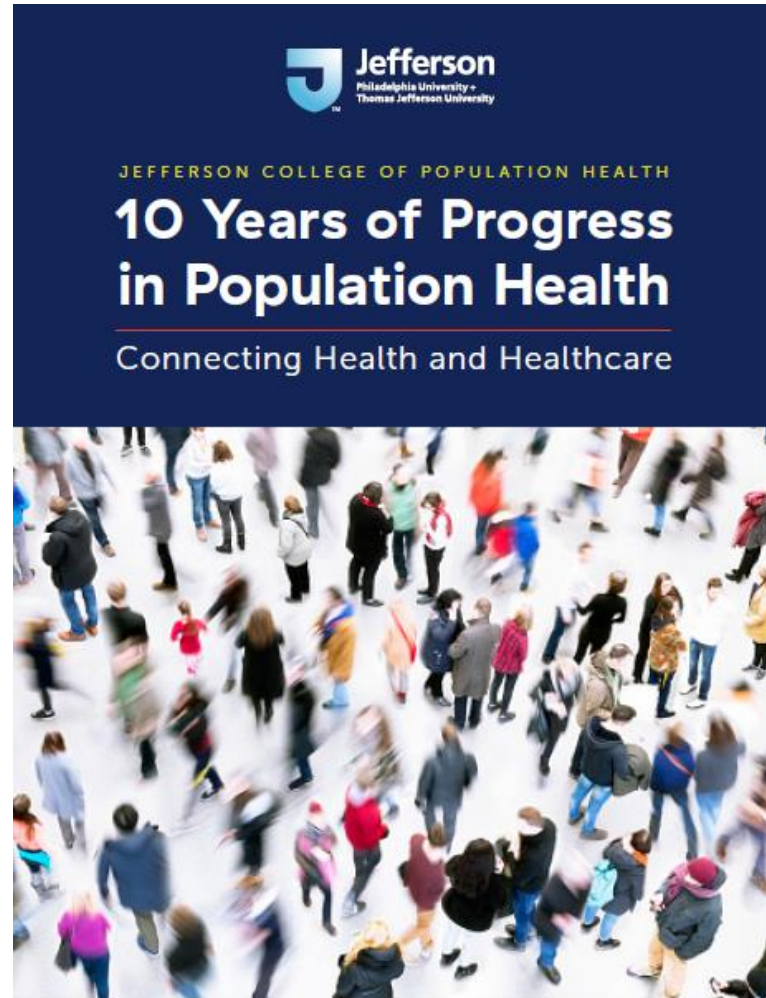
Don Casey, MD, MPH, MBA

Yvonne Commodore-Mensah, PhD, MHS, RN

Alison P. Smith, MPH, BA, BSN, RN



Jefferson College of Population Health



Controlling High Blood Pressure: An Evidence-Based Blueprint for Change

Featuring



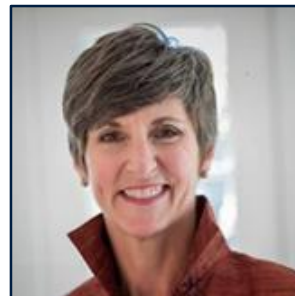
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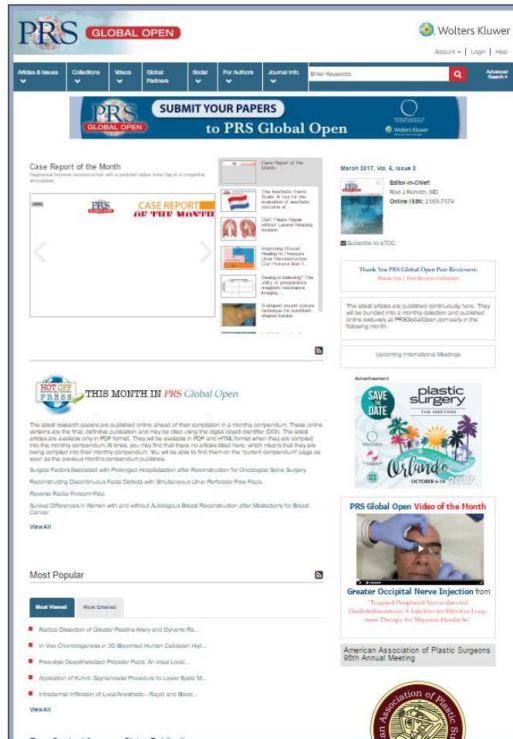
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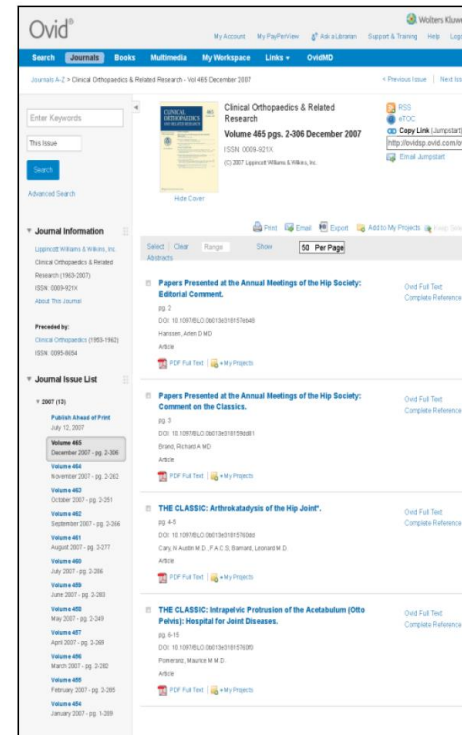
AJMQ has moved to the Wolters Kluwer Health platform!

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Blueprint for Change: Establishing a System of Care for Controlling High Blood Pressure

Don Casey, MD, MPH, MBA, FACP, FAHA, CPE, DFAAPL, DFACMQ



- President, American College of Medical Quality (ACMQ)
- Lead Co-Author of ACC/AHA 2017 Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults
- Chair, ACC/AHA Performance Measures Writing Committee for High Blood Pressure (Published November 12, 2019 in JACC and Circulation QCOR)
- Adjunct Faculty, Jefferson College of Population Health
- Faculty, Rush Medical College
- Affiliate Faculty, University of Minnesota Institute for Health Informatics



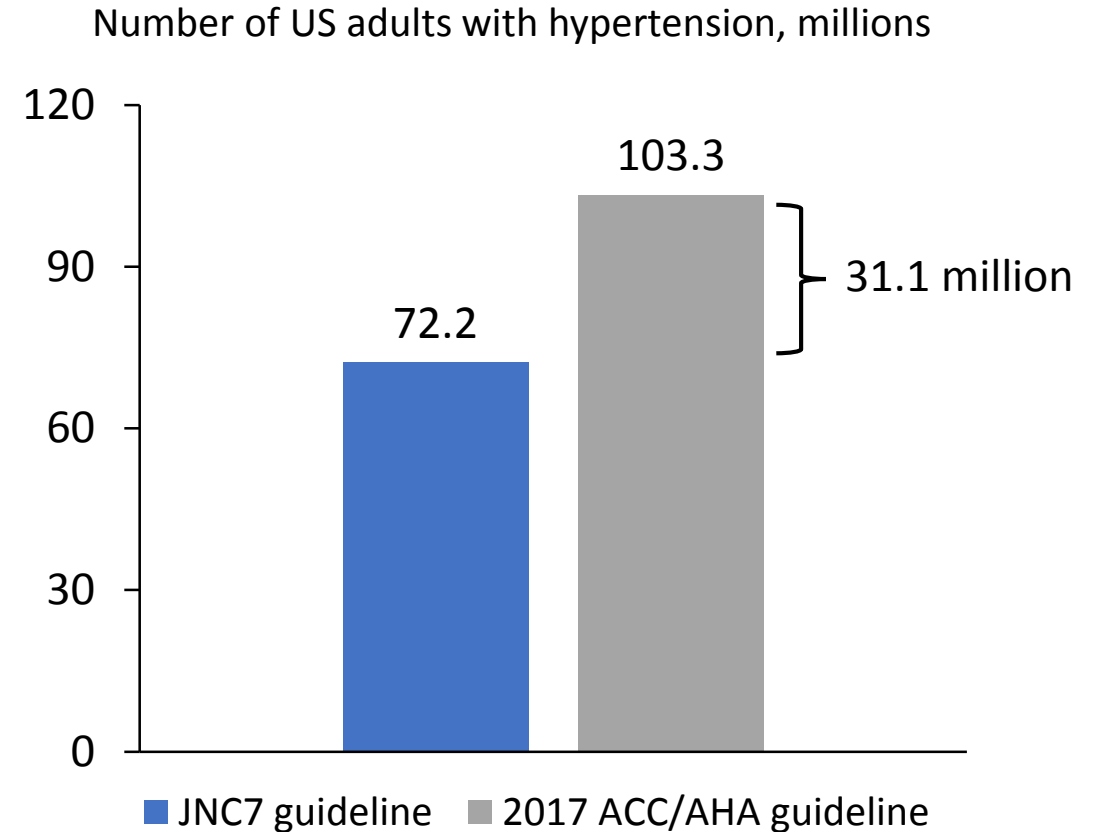
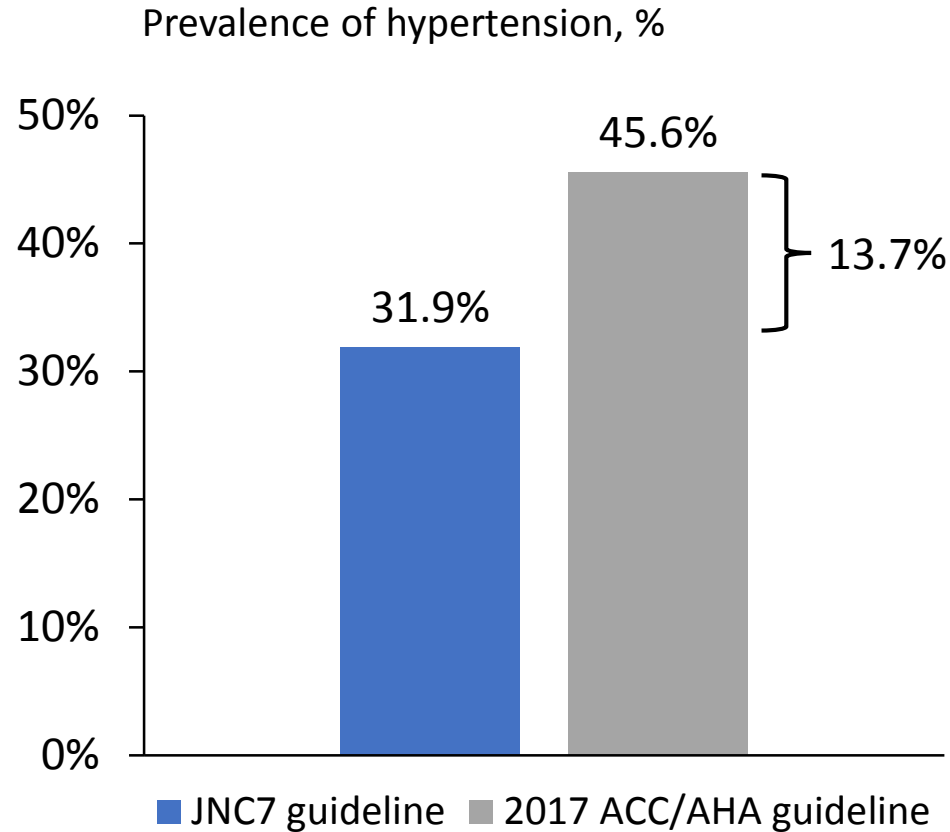


DEARBORN STREET

LOEWS

HOTEL HILTON

Prevalence of Hypertension: 2017 ACC/AHA and JNC7 Guidelines



An additional 12% of US adults have elevated BP (systolic BP 120-129 mm Hg and diastolic BP <80 mm Hg) and are at high risk of developing HBP, and among those taking antihypertensive medication, 53% have uncontrolled HBP.

Population High Blood Pressure Statistics in the US

- 1. Awareness of HBP increased from 70% in 1999-2000 to 85% in 2013-2014, but then declined to 77% in 2017-2018.**
- 2. The prevalence of controlled HBP increased between 1999-2000 and 2007-2008, did not significantly change from 2007-2008 through 2013-2014 (54%), and subsequently decreased to 44% in 2017-2018.**
- 3. Disparities in controlled HBP have been reported among persons who are young (18-44 years), non-Hispanic Black, uninsured, and lack access to a usual healthcare facility.**
- 4. As of 2017, cardiovascular disease remains the leading cause of death in the US, with 859,125 deaths, which, when combined with 146,383 deaths from stroke exceeds 1 million deaths annually or 2,754 deaths per day.**
- 5. It is also recently well documented at the time of this presentation that people with hypertension may be at increased risk for severe illness from COVID-19.**

HEDIS Controlling High Blood Pressure 1999-2018

Measuring what seems to matter doesn't seem to matter.....

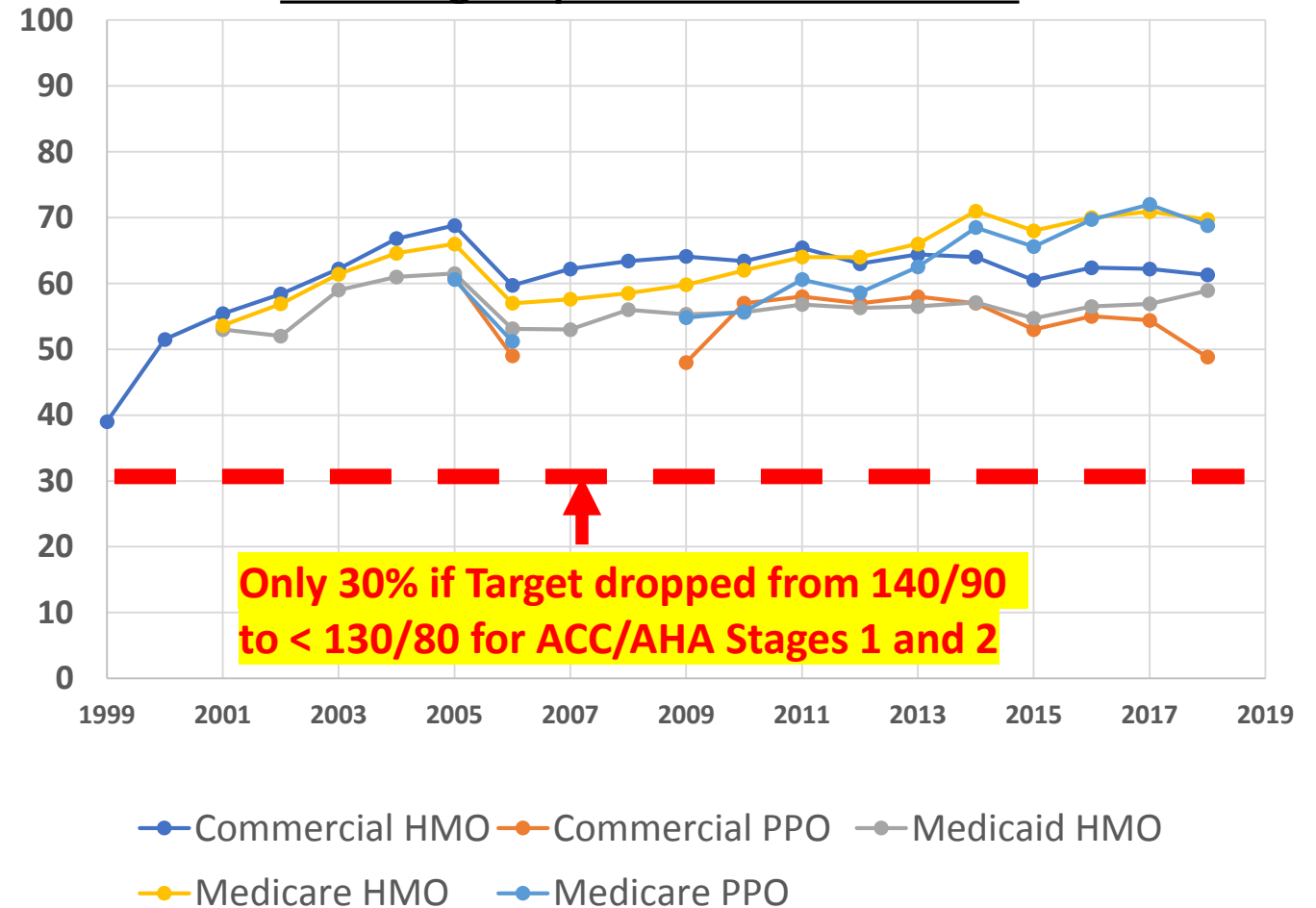
This HEDIS Measure

Assesses adults 18–85 years of age who had a diagnosis of hypertension and whose blood pressure was adequately controlled based on the following criteria:

- ☑ Adults 18-59 years of age whose blood pressure was <140/90 mm Hg.
- ☑ Adults 60-85 years of age, with a diagnosis of diabetes, whose blood pressure was <140/90 mm Hg.
- ☑ Adults 60-85 years of age, without a diagnosis of diabetes, whose blood pressure was <150/90 mm Hg. (Lowered to < 140/90 in 2018)

	Commercial		Medicaid	Medicare	
	HMO	PPO	HMO	HMO	PPO
2018	61	49	59	70	69
2017	62	54	57	71	72
2016	62	55	57	70	70
2015	61	53	55	68	66
2014	64	57	57	71	69
2013	64	58	57	66	63
2012	63	57	56	64	59
2011	65	58	57	64	61
2010	63	57	56	62	56
2009	64	48	55	60	55
2008	63		56	59	
2007	62		53	58	
2006	60	49	53	57	51
2005	69	61	62	66	61
2004	67		61	65	
2003	62		59	61	
2002	58		52	57	
2001	55		53	54	
2000	52				
1999	39				

Percentage of patients with BP Control



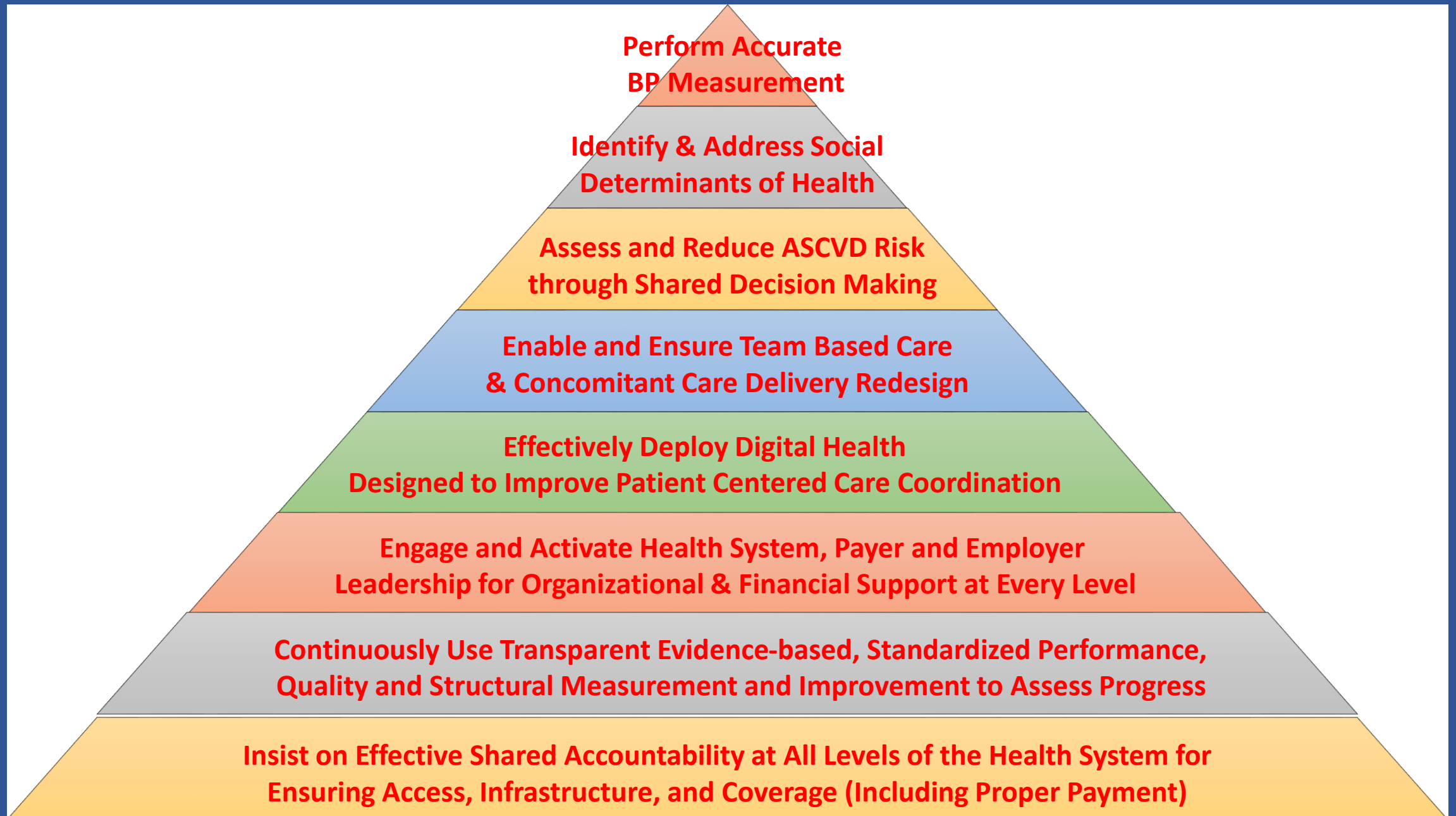
CAUTION: THIS MEASURE EXCLUDES ACC/AHA Stage 1 HBP!!

Hypertension Expenditures in the United States

- 1. National medical costs associated with hypertension are estimated to account for about \$131 billion in annual healthcare expenditure averaged over 12 years from 2003 to 2014.**
- 2. Individuals with hypertension face nearly \$2000 higher annual healthcare expenditure compared with their non-hypertensive peers.**
- 3. The incremental cost associated with hypertension for US adults has remained steady from 2003 to 2014.**
- 4. Expenditures associated with hypertension are rapidly shifting from inpatient to outpatient settings.**
- 5. This warrants intense effort toward hypertension prevention and management.**

(J Am Heart Assoc. 2018;7:e008731. DOI: 10.1161/JAHA.118.008731.)

A Comprehensive, Guideline-Based System of Care for People with High Blood Pressure



Blueprint for Change: Establishing a System of Care for Controlling High Blood Pressure

Robert M. Carey, MD, MACP, FRCP, FRCPI, FAHA



- Cardiovascular endocrinologist
- Past President, the Endocrine Society
- Vice-Chair, ACC/AHA 2017 Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults
- Chair, 2018 AHA Scientific Statement on Resistant Hypertension
- Member, 2019 AHA Scientific Statement on Blood Pressure Measurement
- Dean, Emeritus, and Professor of Medicine, University of Virginia School of Medicine
- Recipient of the 2020 AHA Distinguished Scientist Award

Jefferson College of Population Health “Pop Talk” March 17, 2021



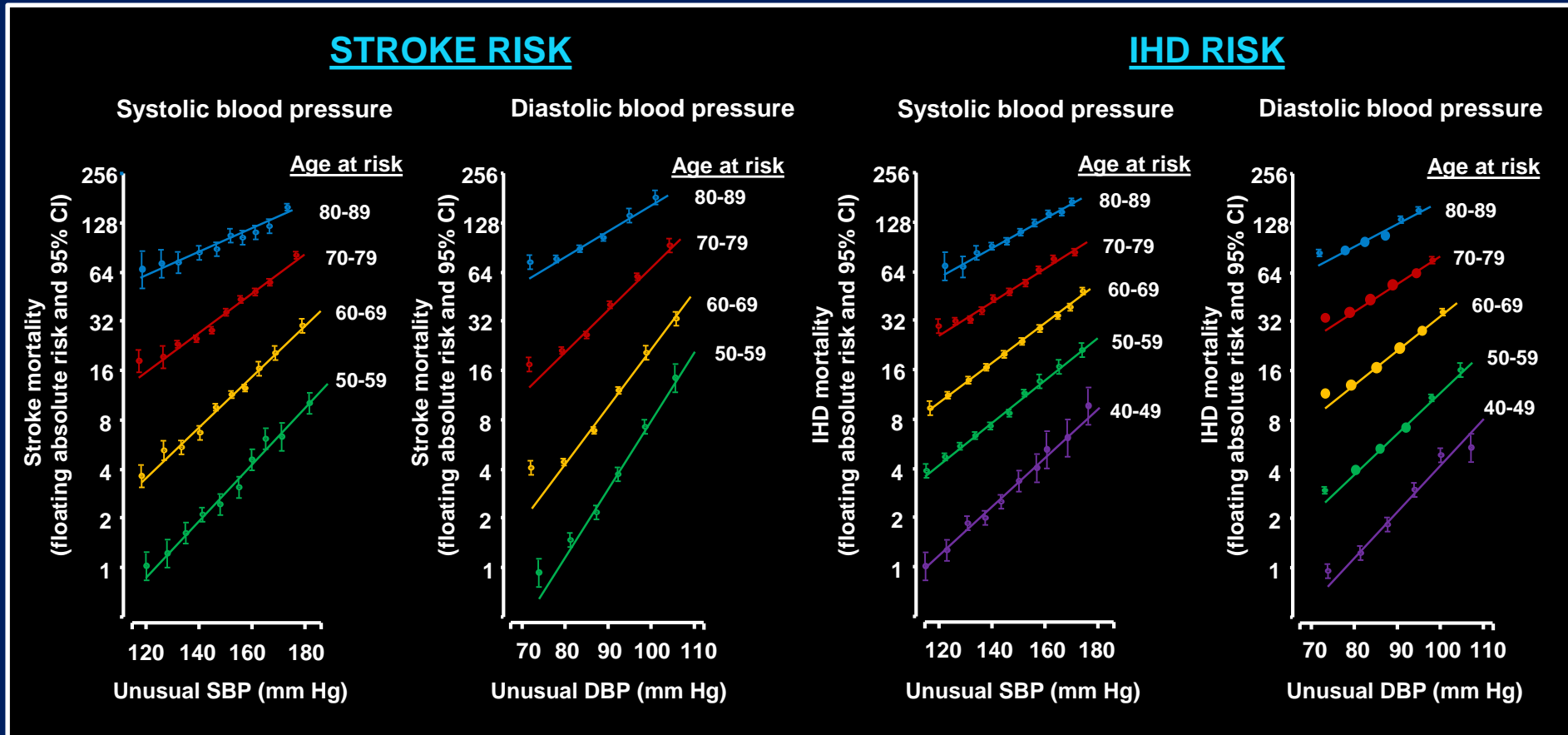
HYPERTENSION

- World's leading risk factor for morbidity and mortality.
- Ranks first worldwide in disability-adjusted life years (7%).
- Affects 27% of the world's adult population – exceeding 1.4 billion people.
- Prevalence 32% in U.S. (72 million adults), or 46% (103 million) using 2017 ACC/AHA guideline.
- The most common reason for visiting a physician for ongoing care in the U.S.



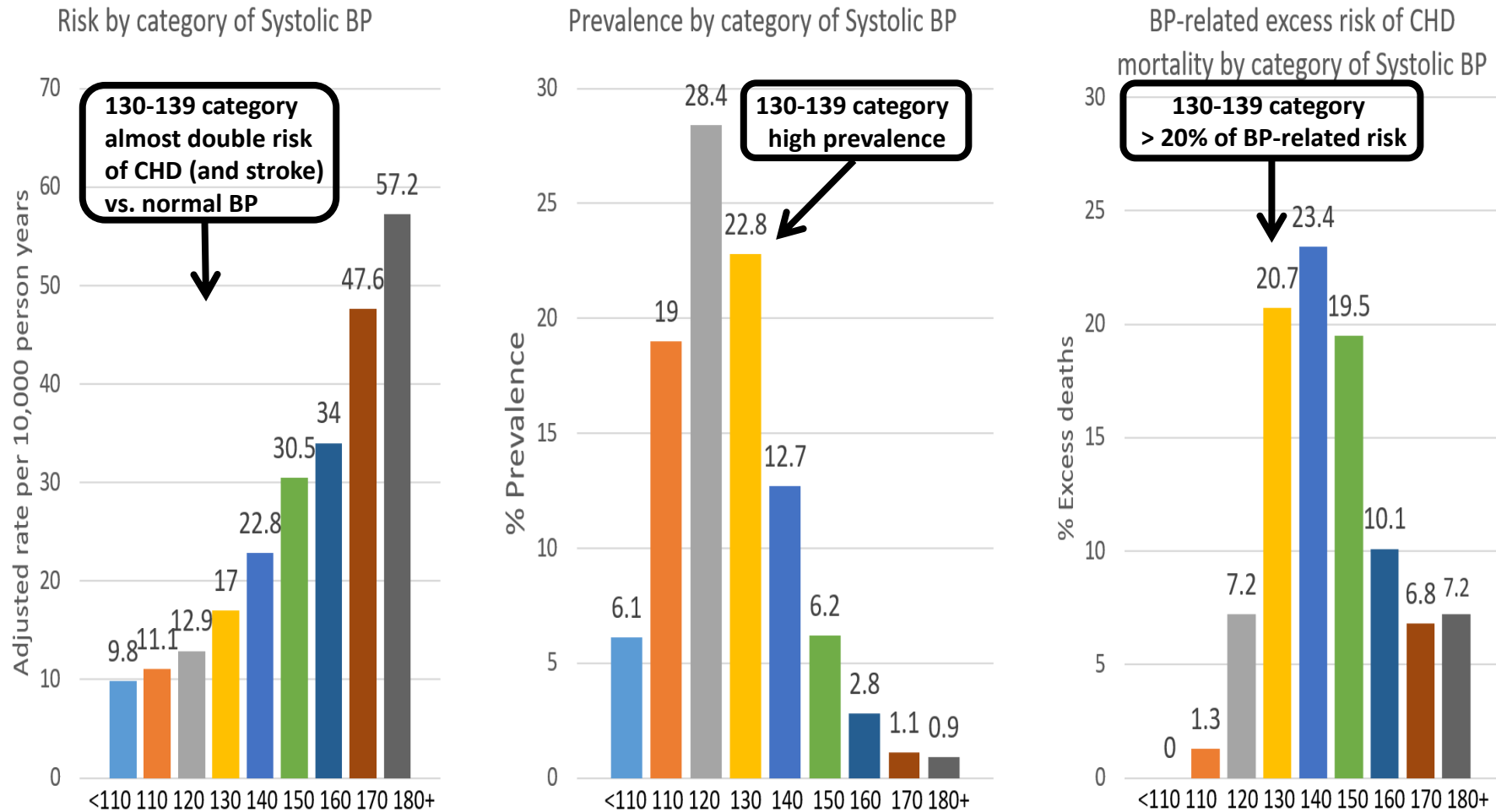
RISK OF HYPERTENSION

BP is continuously related to risk of fatal stroke, ischemic heart disease and non-cardiac vascular disease down to 115/75 mm Hg:



Estimated Risk of BP-related Coronary Heart Disease by Level of Systolic Blood Pressure

Experience during an average of 11.6 years of follow-up in 347,978 adults screened for entry into the Multiple Risk Factor Intervention Trial

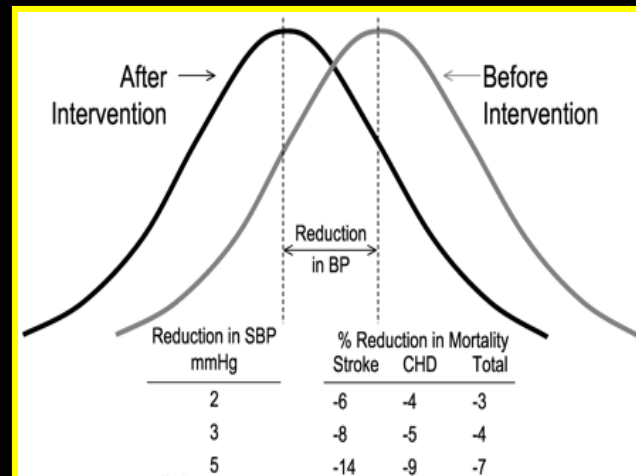


Adapted from Stamler J et al. Arch Intern Med. 1993;153:598-615.



RISK REDUCTION WITH BP CONTROL

- Risk of CVD can be greatly reduced with effective antihypertensive therapy.
- A 10 mm Hg lower systolic or 5 mm Hg lower diastolic BP would predict a **40%** reduction in stroke risk and a **30%** reduction in ischemic heart disease risk.
- Risk is reduced even with as little as a **2 mm Hg** BP reduction:



Therefore, every mm Hg in blood pressure lowering can be of potential clinical importance.

From JNC-VII

BP CLASSIFICATION (JNC 7 and ACC/AHA Guidelines)

<i>SBP</i>		<i>DBP</i>	<i>2003 JNC7</i>	<i>2017 ACC/AHA</i>
<i><120</i>	<i>and</i>	<i><80</i>	<i>Normal BP</i>	<i>Normal BP</i>
<i>120–129</i>	<i>and</i>	<i><80</i>	<i>Prehypertension</i>	<i>Elevated BP</i>
<i>130–139</i>	<i>or</i>	<i>80–89</i>		<i>Stage 1 hypertension</i>
<i>140–159</i>	<i>or</i>	<i>90–99</i>	<i>Stage 1 hypertension</i>	<i>Stage 2 hypertension</i>
<i>≥160</i>	<i>or</i>	<i>≥100</i>	<i>Stage 2 hypertension</i>	<i>Stage 2 hypertension</i>

} Area of difference

- Blood Pressure should be based on an average of ≥ 2 careful readings on ≥ 2 occasions.

PREPARATION FOR BP MEASUREMENT

- The patient should be relaxed, sitting in a chair with feet flat on floor and back supported.
- The patient should be seated for 3–5 min without talking or moving around before recording the first BP reading.
- The patient should avoid caffeine, exercise, and smoking for at least 30 min before measurement.
- Ensure that the patient has emptied his/her bladder.
- Neither the patient nor the observer should talk during the rest period or measurement.
- Remove all clothing covering the location of cuff placement.
- Measurements made while the patient is sitting on an examining table do not fulfill these criteria.

How to Measure your Blood Pressure at Home

Follow These Steps for an Accurate Blood Pressure Reading

1 PREPARE

Avoid caffeine, cigarettes and other stimulants 30 minutes before you measure your blood pressure.

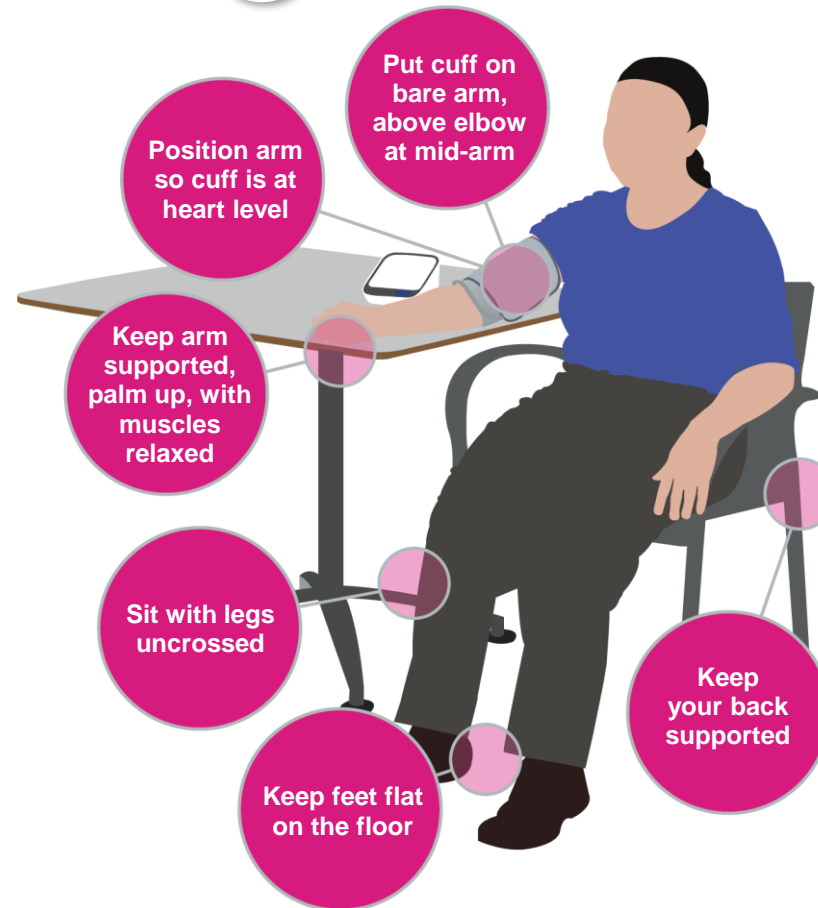
Wait at least 30 minutes after a meal.

If you're on blood pressure medication, measure your BP before you take your medication.

Empty your bladder beforehand.

Find a quiet space where you can sit comfortably without distraction.

2 POSITION



3 MEASURE

Rest for five minutes while in position before starting.

Take two or three measurements, one minute apart.

Keep your body relaxed and in position during measurements.

Sit quietly with no distractions during measurements—avoid conversations, TV, phones and other devices.

Record your measurements when finished.



This *Prepare, position, measure* handout was adapted with permission of the American Medical Association and The Johns Hopkins University. The original copyrighted content can be found at <https://www.ama-assn.org/ama-johns-hopkins-blood-pressure-resources>.

ACC/AHA POOLED COHORT EQUATIONS

To estimate the 10-year risk of ASCVD

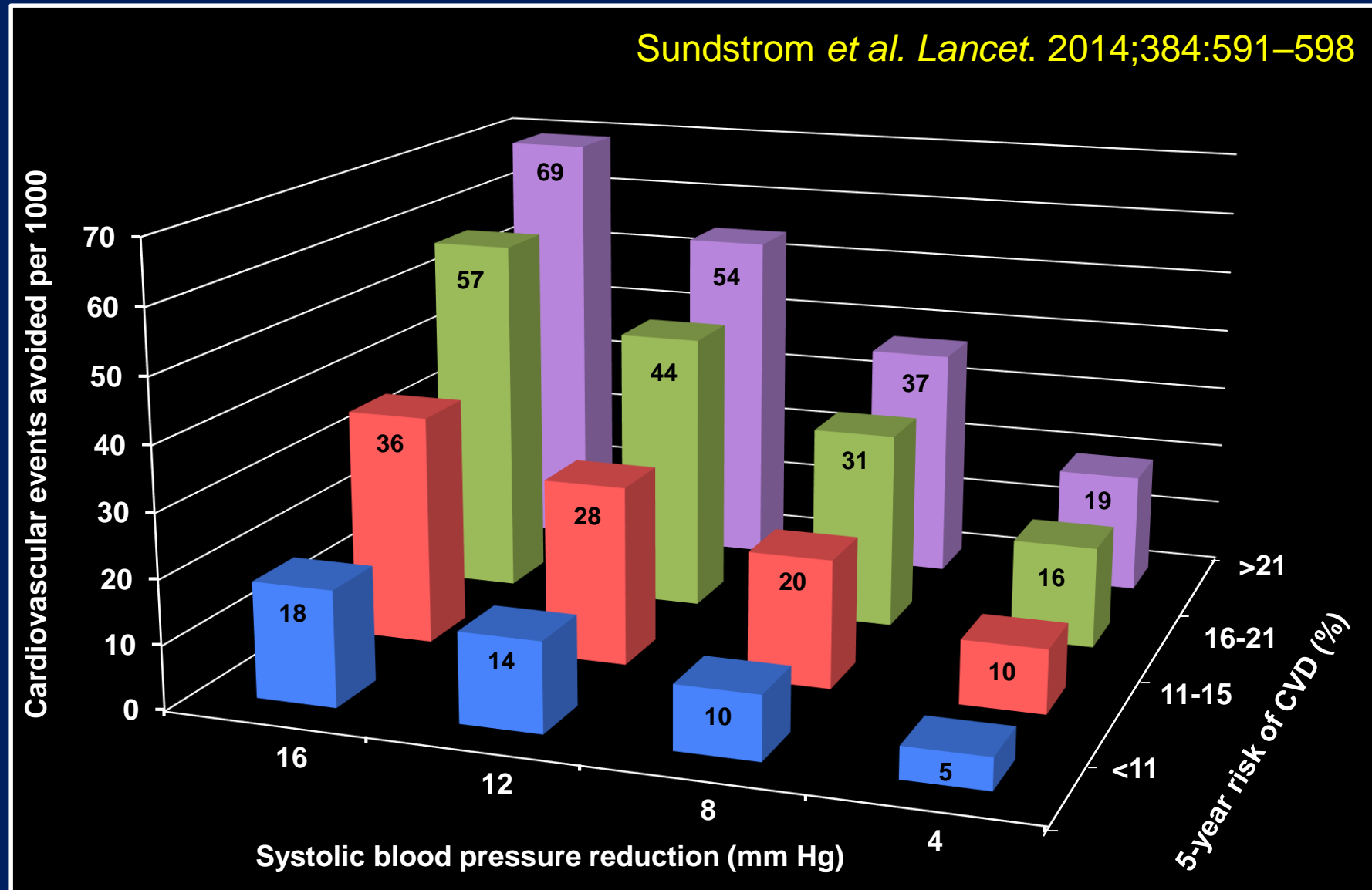
Based on age, race, sex, total cholesterol, LDL cholesterol, HDL cholesterol, treatment with a statin, systolic BP, treatment for hypertension, history of diabetes, current smoker, aspirin therapy

Validated for adults 40-79 years of age.

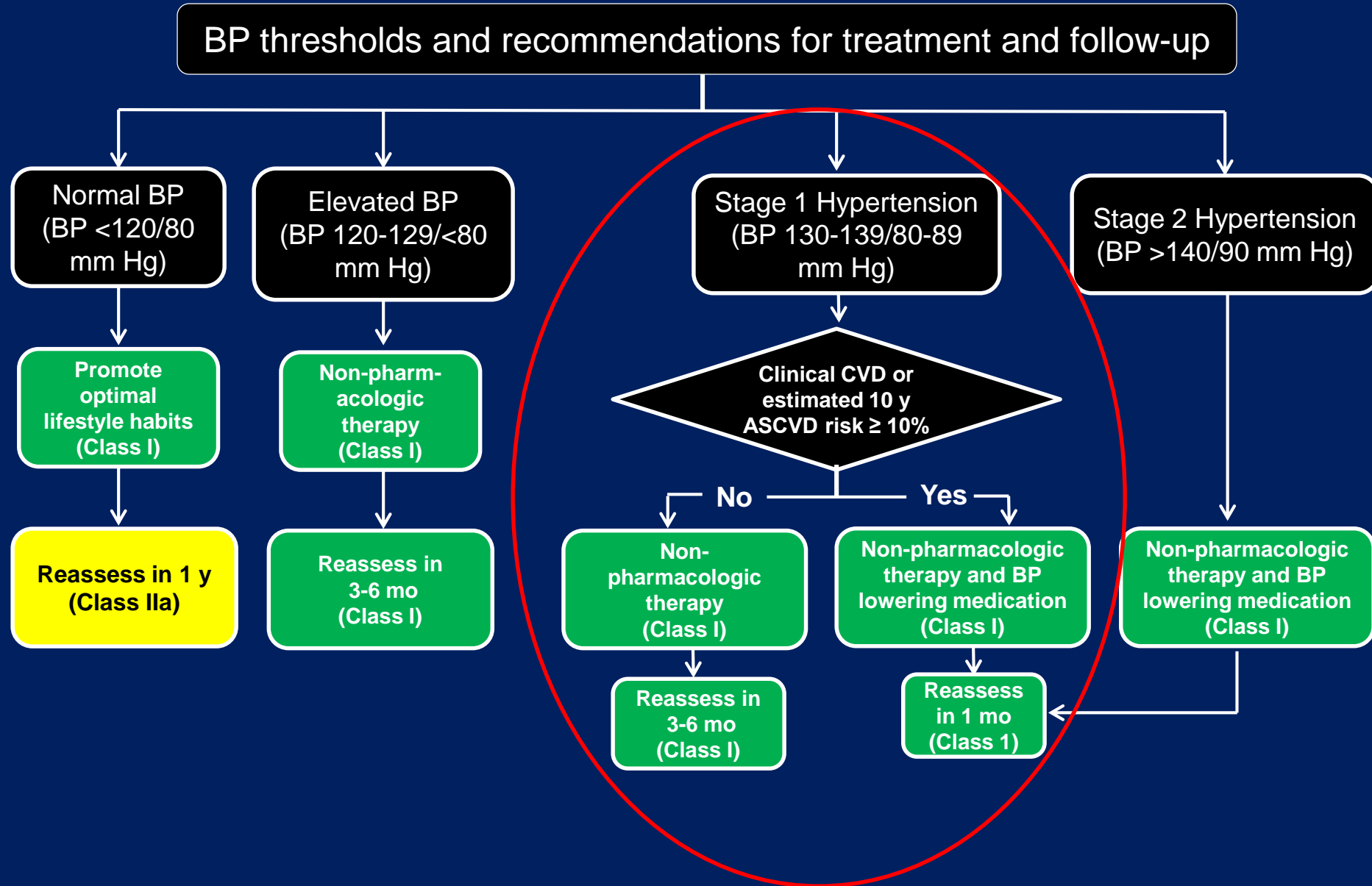
<http://tools.acc.org/ASCVD-Risk-Estimator/>
APP Store: ASCVD Risk Estimator Plus

CVD EVENTS AVOIDED BY BASELINE RISK AND MAGNITUDE OF SBP LOWERING

Sundstrom *et al. Lancet.* 2014;384:591–598



BP THRESHOLDS AND RECOMMENDATIONS FOR TREATMENT AND FOLLOW UP



Blueprint for Change: Establishing a System of Care for Controlling High Blood Pressure

Yvonne Commodore-Mensah, PhD, MHS, RN, FPCNA, FAHA, FAAN



- Cardiovascular Nurse Epidemiologist
- Assistant Professor, Johns Hopkins School of Nursing and Bloomberg School of Public Health
- Board Member, Preventive Cardiovascular Nurses Association
- Co-author, 2019 ACC/AHA Performance and Quality Measures for Adults with High Blood Pressure
- Member, Organizing Committee, National Hypertension Control Roundtable

Patient-Centered Approaches for Controlling Blood Pressure

Yvonne Commodore-Mensah, PhD, MHS, RN, FPCNA, FAHA, FAAN

Assistant Professor, Johns Hopkins School of Nursing and Bloomberg School of Public Health

Co-author, The 2019 ACC/AHA Performance and Quality Measures for Adults with High Blood

Member, Organizing Committee, National Hypertension Control Roundtable

FINANCIAL DISCLOSURE:

No relevant financial relationship exists

Summary of 2019 ACC/AHA Performance and Quality Measures for the Diagnosis and Management of High Blood Pressure

Measure No.	Measure Title/Description	ACC/AHA Stage 2 HBP	ACC/AHA Stage 1 HBP	ACC/AHA Elevated BP	COR/LOE
Performance Measures (PM)					
PM-1a	ACC/AHA Stage 2 High Blood Pressure Control Systolic BP < 140 mm Hg	+			1A
PM-1b	ACC/AHA Stage 2 High Blood Pressure Control Systolic BP < 130 mm Hg	+			1A/IIaC-EO
PM-2	ACC/AHA Stage 1 High Blood Pressure Control Systolic BP < 130 mm Hg		+		1A
PM-3	ACC/AHA Stage 2 and Stage 1 High Blood Pressure Control Systolic BP < 130 mm Hg (PM-1b + PM-2 Composite)	+	+		1A/IIaC-EO
PM-4	Nonpharmacological interventions for ACC/AHA Stage 2 High Blood Pressure	+			1A
PM-5	Home blood pressure monitoring (HBPM) for ACC/AHA Stage 2 management	+			1A
Process Quality Measures (QM)					
QM-1	Nonpharmacological interventions for ACC/AHA Elevated Blood Pressure			+	1A
QM-2	Nonpharmacological interventions for ACC/AHA Stage 1 High Blood Pressure		+		1A
QM-3	Nonpharmacological interventions for all ACC/AHA stages of High Blood Pressure (PM4 + QM1 + QM2 Composite)	+	+	+	1A
QM-4	Medication Adherence to Drug Therapy for ACC/AHA Stage 1 with ASCVD Risk \geq 10% and ACC/AHA Stage 2 High Blood Pressure	+	+		1A
QM-5	Home blood pressure monitoring (HBPM) for management of ACC/AHA Stage 1 High Blood Pressure with ASCVD risk \geq 10%		+		1A
QM-6	Home blood pressure monitoring (HBPM) for management of ACC/AHA Stage 1 with ASCVD risk \geq 10% and ACC/AHA Stage 2 (PM-5 + QM-5 Composite)	+	+		1A

Summary of 2019 ACC/AHA Structural Measures for the Diagnosis and Management of High Blood Pressure

Measure No.	Measure Title/Description	ACC/AHA Stage 2 HBP	ACC/AHA Stage 1 HBP	ACC/AHA Elevated BP	COR/LOE
Structural Quality Measures (SM)					
Diagnosis, Assessment and Accurate Measurement					
SM-1	Use of a Standard Protocol to consistently and correctly measure Blood Pressure	+	+	+	1C-EO
SM-2	Use of a standard process for assessing ASCVD risk (Prevention GL)	+	+	+	IB-NR
SM-3	Use of a standard process for properly screening all adults 18 years and older for High Blood Pressure (USPSTF)	+	+	+	A (USPSTF)
SM-4	Use of an Electronic Health Record to accurately diagnose and assess High Blood Pressure Control	+	+	+	1B-NR
A Patient-Centered Approach for Controlling High Blood Pressure					
SM-5	Use of a standard process to engage patients in shared decision-making, tailored to their personal benefits, goals and values for evidence-based interventions to improve control of High BP (Prevention GL)	+	+	+	IB-R
SM-6	Demonstration of infrastructure and personnel that assesses and addresses social determinants of health of patients with High Blood Pressure (Prevention GL)	+	+	+	IB-NR
Implementation of a System of Care for Patients with High Blood Pressure					
SM-7	Use of Team Based Care to better manage High Blood Pressure	+	+	+	1A
SM-8	Use of Telehealth, m-health and e-health and other digital technologies to better diagnose and manage High Blood Pressure	+	+	+	IIaA/1A
SM-9	Use of a single, standardized plan of care for all patients with High Blood Pressure	+	+	+	1C-EO
Use of Performance Measures to Improve Care for High Blood Pressure					
SM-10	Use of performance measures to improve quality of care for patients with	+	+		IIaB-NR

Self-Measured Blood Pressure Monitoring (SMBP)



- SMBP plus additional clinical support is more effective than usual care in lowering blood pressure and improving control among patients with hypertension¹
- Clinical support includes:
 - One-on-one counseling
 - Web-based or telephonic support
 - Educational classes

Shared Decision Making

1. An approach wherein clinicians and patients share the best available evidence when faced with the task of making decisions, and where patients are supported to consider options to achieve informed preferences.”¹
2. “Meeting of two experts” in the clinical encounter. ²
3. Decision aids, question prompts, motivational interviewing, visuals, and other communication strategies may be used
4. Potential to advance equity and improve hypertension care. ³

1. Elwyn et al. (2012). *J Gen Intern Med*.
2. Elwyn et al. (2017). *BMJ*.
3. Langford et al. (2019). *Ethn Dis*



Social Determinants of Health

- The circumstances in which people are born, grow, live, work, and age, and the systems put in place to deal with illness. ¹
- The AHA has identified key SDoH including **race, ethnicity, racism and discrimination, socioeconomic status, geography, housing, and healthcare access**, are associated with the prevalence and control of HBP and CVD outcomes. ²
- Among 21,664 adults in NHANES (2011-2018)
 - HTN and stage 2 HTN prevalence higher among **Black** and **Asian** than White adults.
 - **Black adults** had lower prevalence of controlled BP than White adults.
 - Compared to college graduates, men and women with **less education** had a higher prevalence of hypertension and stage 2 hypertension.
 - Men and women with **no routine place for healthcare** had lower prevalence of controlled BP than those who had a routine place for healthcare.
 - **Uninsured men and women** had lower prevalence of controlled BP than those insured.

1. Marmot M et al. (2008). *Lancet*

2. Havranek EP et al. (2015). *Circulation*

3. Commodore-Mensah Y et al.(2021). *Am J Hypertens*.

Blueprint for Change: Establishing a System of Care for Controlling High Blood Pressure

Alison P. Smith, MPH, BA, BSN, RN



- Program Director for the American Heart Association’s and American Medical Association’s National Initiative for Control Blood Pressure, Target: BP
- AHA Cooperative Agreement Team Member for National Hypertension Control Initiative funded by the Office of Minority Health and the Health Resource Services Administration
- National Advisory Board Member, Johns Hopkins University School of Nursing
- Public Member, Accreditation Council of Graduate Medical Education, Family Medicine Review Committee
- Medical-surgical, telemetry nurse and public health professional



Creating Better Systems of Care

JEFFERSON POP TALK | MARCH 17, 2021

ALISON P. SMITH, MPH, BA, BSN, RN

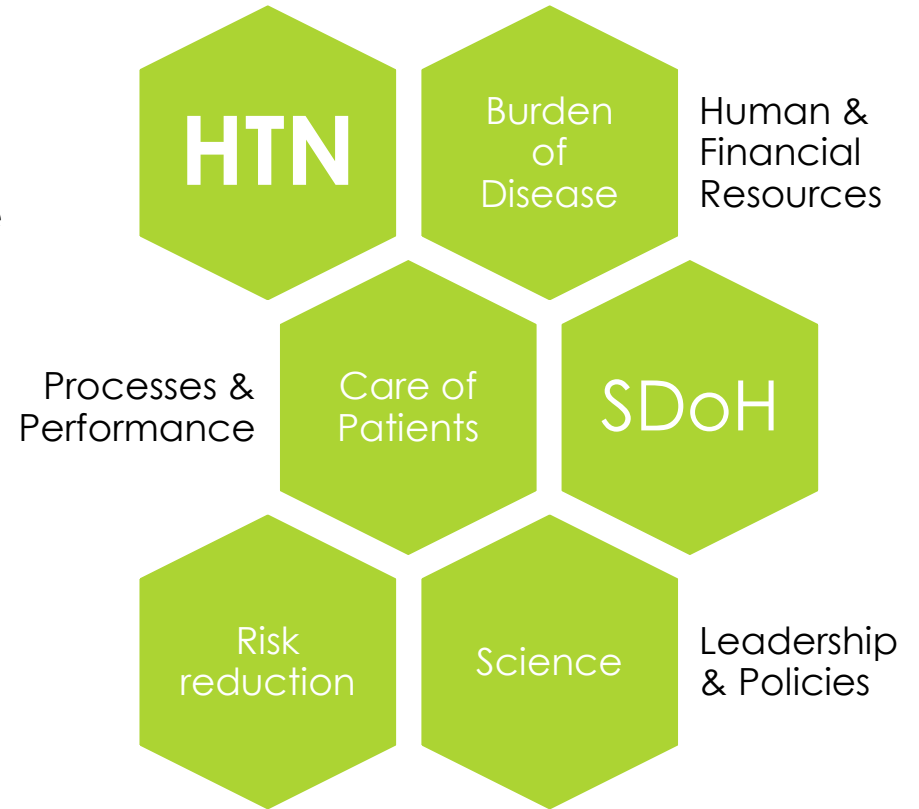
PROGRAM DIRECTOR, AHA-AMA INITIATIVE TO IMPROVE BLOOD PRESSURE – TARGET: BP

Disclosure / Disclaimer

- ▶ Employee of the American Medical Association and consultant to the American Heart Association
- ▶ No other conflicts of interest
- ▶ The views and opinions expressed in this presentation are those of the author and do not necessarily reflect the official policy, opinion, or position of the AMA or AHA.

Creating Better Systems of Care

- ▶ Elevating the Evidence
- ▶ Translating the Evidence into Practice
- ▶ Leveraging Resources, Processes, & Performance
- ▶ Aligning Science & Policy



SECTION 12	COR	LOE	Recommendations
MEDICATION ADHERENCE	I	B-R	In adults with hypertension, dosing of antihypertensive medication once daily rather than multiple times daily is beneficial to improve adherence. §12.1.1-1-§12.1.1-3
	Ila	B-NR	Use of combination pills rather than free individual components can be useful to improve adherence to antihypertensive therapy. §12.1.1-4-§12.1.1-7
LIFESTYLE MODIFICATION	I	C-EO	Effective behavioral and motivational strategies to achieve a healthy lifestyle (ie, tobacco cessation, weight loss, moderation in alcohol intake, increased physical activity, reduced sodium intake, and consumption of a healthy diet) are recommended for adults with hypertension. §12.1.2-1,§12.1.2-2
TEAM-BASED CARE	I	A	A team-based care approach is recommended for adults with hypertension. §12.2-1-§12.2-7
EHRs & PATIENT REGISTRIES	I	B-NR	Use of the EHR and patient registries is beneficial for identification of patients with undiagnosed or undertreated hypertension. §12.3.1-1-§12.3.1-3
	I	B-NR	Use of the EHR and patient registries is beneficial for guiding quality improvement efforts designed to improve hypertension control. §12.3.1-1-§12.3.1-3
TELEHEALTH	Ila	A	Telehealth strategies can be useful adjuncts to interventions shown to reduce BP for adults with hypertension. §12.3.2-1-§12.3.2-5
PERFORMANCE MEASURES	Ila	B-NR	Use of performance measures in combination with other quality improvement strategies at patient-, provider-, and system-based levels is reasonable to facilitate optimal hypertension control. §12.4.1-1-§12.4.1-3
QI STRATEGIES	Ila	B-R	Use of quality improvement strategies at the health system, provider, and patient levels to improve identification and control of hypertension can be effective. §12.4.2-1-§12.4.2-8
FINANCIAL INCENTIVES	Ila	B-R	Financial incentives paid to providers can be useful in achieving improvements in treatment and management of patient populations with hypertension. §12.5-1-§12.5-3
	Ila	B-NR	Health system financing strategies (eg, insurance coverage and copayment benefit design) can be useful in facilitating improved medication adherence and BP control in patients with hypertension. §12.5-4

Elevating the Evidence

2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults
SECTION 12 Strategies to Improve Hypertension Treatment and Control

<https://doi.org/10.1161/HYP.000000000000065Hypertension.2018;71:e13-e115>

Translating Evidence into Practice



Esperanza Health Centers Chicago, IL

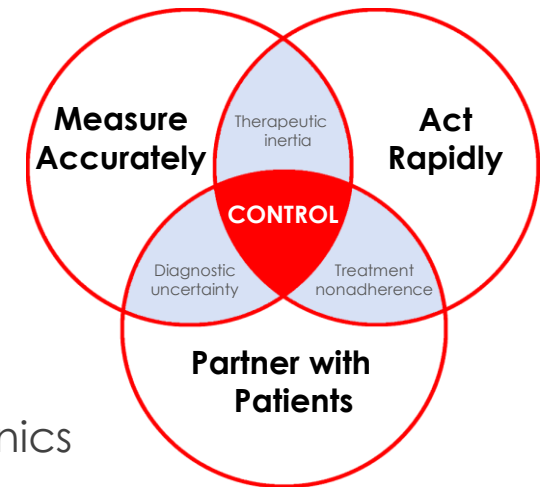
- HRSA-funded Health Center
- 75% pts below 100% poverty level
- Nearly half uninsured
- Team-based care
- EMR performance data
- Socio-cultural relevant practices
- 82% BP Control Rate

TARGET: **BP**



MAP Framework

- 16 Family Medicine Clinics
- **M**easure Accurately
- **A**ct Rapidly
- **P**artner with Patients
- Leading metrics
- 6 mo practice facilitation
- 74% control rate at 6 and 12 mo



Leveraging Resources, Processes, & Performance



Train

- Every 6-12 months in BP measurement

Purchase

- Validated office, home BP devices
- US Blood Pressure Validated Device Listing (VDL™)

Maintain

- Calibrate as directed

Team

- Diverse, trusted voices
- Defined roles

Processes

- SMBP, lifestyle program
- Defined info and workflow

EHR

- Find & track patients
- Capture representative BPs
- Prompt tx intensification, 1 pill qday

Measure

- Leading / Lagging
- Performance, process quality, structural measures

Evaluate

- Staff, provider adherence
- Patient response

Improve

- Strategic priority
- Accountability

Aligning Science & Policy

“p” Institutional policy

- ▶ Device procurement
- ▶ Team training standards
- ▶ EHR capabilities and standards
- ▶ Employer sponsored health coverage

“P” Coverage & Reimbursement Policy

Medicare

- ▶ SMBP CPT codes: Education (99473), Monitoring/Mgmt (99474)
- ▶ Requested National Coverage Determination for home BP monitors

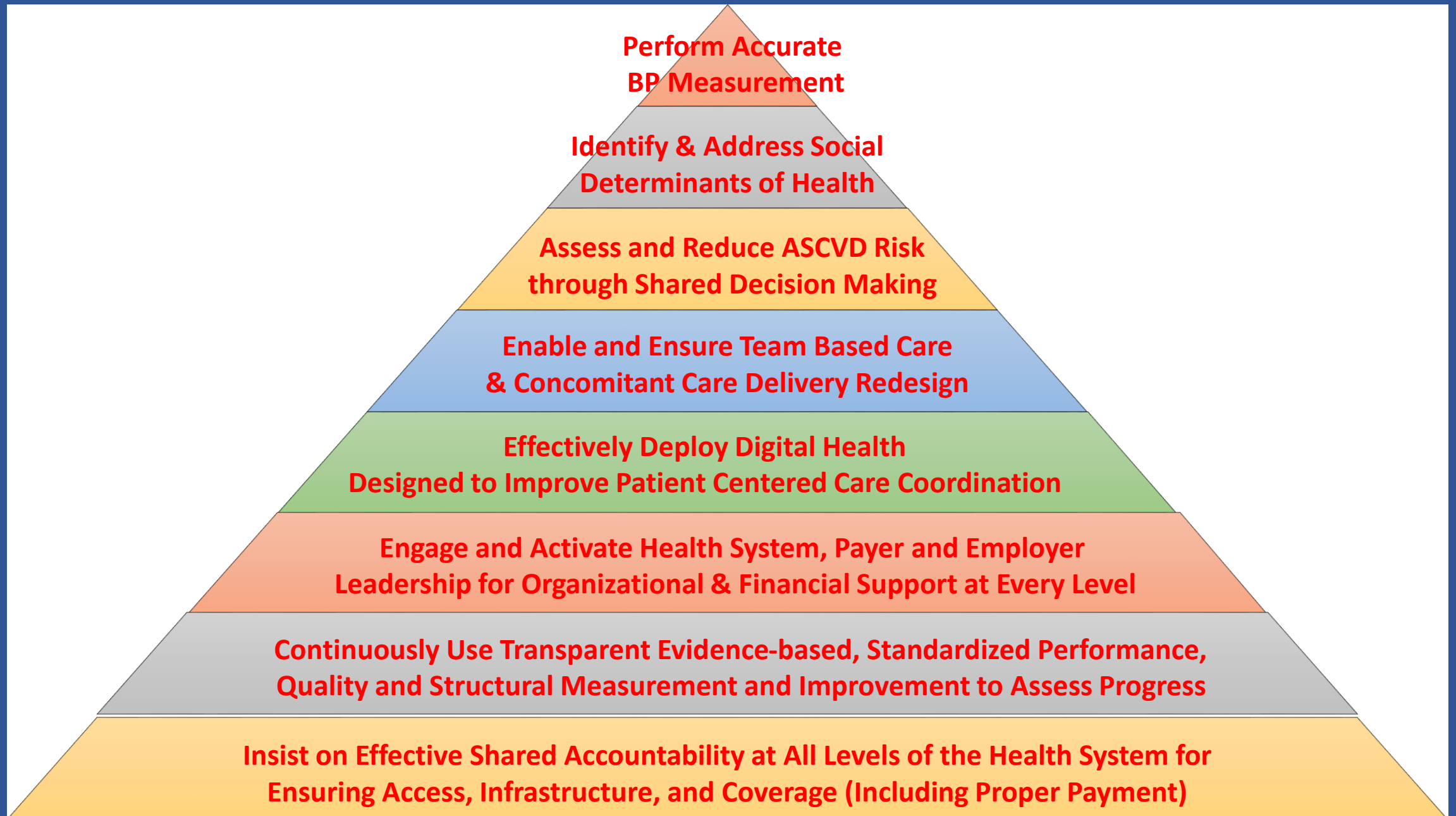
Medicaid

- ▶ Growing, nuanced coverage/reimbursement for HCPCS, CPT code
- ▶ 2020-21: AZ, GA, IA, IL, KS, MA, NC, NY, OR, TX, WA

Commercial

- ▶ Private (20), Medicaid FFS (10), MCO (7), Medicare Adv (5)

A Comprehensive, Guideline-Based System of Care for People with High Blood Pressure



The “Blueprint For Change” to control High Blood Pressure

Health system and payer leadership (managerial, clinical and operational) should:

1. commit appropriate resources to ensure **accurate BP measurement** and the appropriate use of validated, calibrated BP monitoring devices consistent with current clinical practice guidelines throughout the entire healthcare system.
2. strongly **encourage and support home BP monitoring (HBPM)** of all patients with hypertension and should ensure accurate out-of-office measurements and secure data collection.
3. commit appropriate resources to ensure that **adults 40-75 years of age are consistently evaluated for ASCVD risk estimation** and subsequent guideline-based opportunities for prevention.
4. should strongly encourage and promote **assessment and addressing the Social Determinants of Health (SDoH)** in clinical settings for patients with HBP.
5. implement a standardized process of evidence-based interventions designed to **engage patients and their clinicians in shared decision-making (SDM)** and tailored to their personal benefits, goals, and values to improve control of HBP.
6. **implement team-based care** designed to fully support and achieve successful care for people with HBP in accordance with the guideline-based “Blueprint for Change” recommendations 1-5 noted above.
7. actively collaborate at the local, regional, and national levels to **create and support a coordinated system of guideline-based care** delivery for adults with HBP as outlined in this Blueprint for Change.

The 2019 AHA/ACC Clinical Performance and Quality Measures (CPQMs) for Adults with HBP provides an excellent framework for health systems and payers to evaluate and monitor the success of collaborative “Blueprint for Change” initiatives designed to improve guideline-based care delivery for more than 100 million Americans with HBP.

References

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