

# Hypertension: What's Up is Down

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# Disclosures

- Dr. Herman is a speaker for Novo Nordisk
- Dr. Herman has deferred accepting an honorarium for this presentation

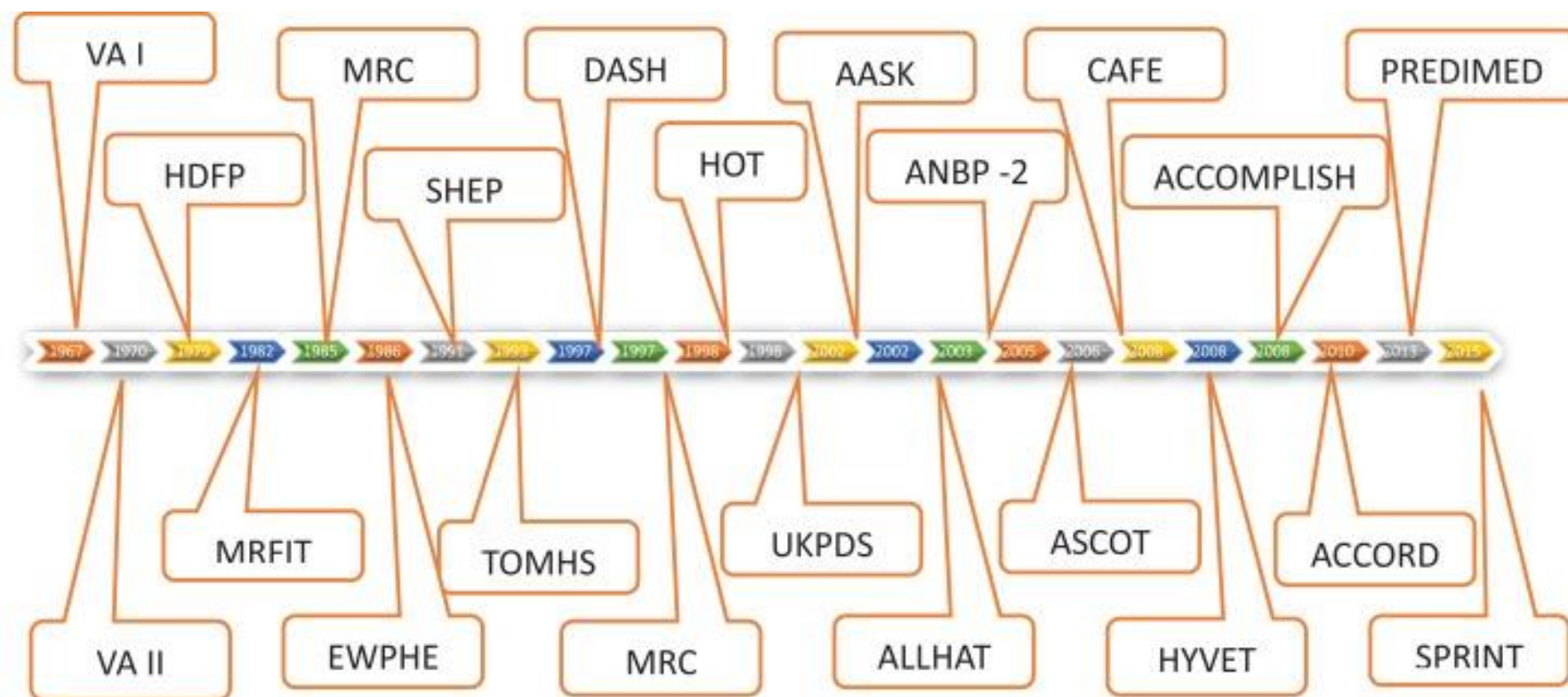


# Learning Objectives

- At the completion of this presentation participants will:
  - Understand the long- and short-term trends in hypertension prevalence, including special populations
  - Implement guideline-based therapeutic choices, utilizing shared decision-making, to effect hypertension control for individual patients
  - Evaluate strategies to increase practitioner and patient adherence and positively impact population health with respect to hypertension sequelae



# History of Major CV/HTN Trials



1967  2020



# Previous Guideline (JNC-7)

- A 104 page document detailing the prevalence of hypertension, along with the burden of the disease
- Detailed treatment beginning with lifestyle changes, pharmacologic treatment utilizing compelling indications for drug choice
- Discussed both secondary and resistant hypertension
- Defined:
  - Normal B/P < 120/80 mmHg
  - Pre-hypertension 120-139/80-90 mmHg
  - Stage I Hypertension 140-159/90-99 mmHg
  - Stage II Hypertension > 160/100 mmHg



# All Roads Start with Lifestyle Modifications (JNC-7)

- Weight loss (range of ~ systolic BP reduction, 5-20 mm Hg per 10 kg)
- Limit alcohol intake to no more than 1 oz (30 mL) of ethanol per day for men or 0.5 oz (15 mL) of ethanol per day for women and people of lighter weight (range ~ SBP reduction, 2-4 mm Hg)
- Reduce sodium intake to no more than (2.4 g sodium or 6 g sodium chloride; range ~ SBP reduction, 2-8 mm Hg)
- Maintain adequate intake of dietary potassium (~ 90 mmol/day)
- Maintain adequate intake of dietary calcium and magnesium for general health
- Stop smoking and reduce intake of dietary saturated fat and cholesterol for overall cardiovascular health
- Engage in aerobic exercise at least 30 minutes daily for most days (range of ~ SBP reduction, 4-9 mm Hg)





# JNC 8 Published in *JAMA* February 5, 2014 (Online December 18, 2013)

- 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC 8)



# JNC-8: A *Very* Different Approach From JNC-7

- Based upon RCTs, what does the best evidence say about treating hypertension? More specifically:
  - In adults with hypertension, does initiating anti-hypertensive pharmacologic therapy at specific blood pressure thresholds improve outcomes?
  - In adults with hypertension, does treatment with antihypertensive pharmacologic therapy to a specific blood pressure goal lead to improvements in outcomes?
  - In adults with hypertension, do antihypertensive drugs – or classes of drugs – differ in comparative benefits and harms on specific outcomes?





# Strength and Level (Quality) of Evidence

CLASS (STRENGTH) OF RECOMMENDATION	LEVEL (QUALITY) OF EVIDENCE‡
<b>CLASS I (STRONG)</b> Benefit >>> Risk Suggested phrases for writing recommendations: <ul style="list-style-type: none"> <li>Is recommended</li> <li>Is indicated/useful/effective/beneficial</li> <li>Should be performed/administered/other</li> <li>Comparative-Effectiveness Phrases†:               <ul style="list-style-type: none"> <li>Treatment/strategy A is recommended/indicated in preference to treatment B</li> <li>Treatment A should be chosen over treatment B</li> </ul> </li> </ul>	<b>LEVEL A</b> <ul style="list-style-type: none"> <li>High-quality evidence‡ from more than 1 RCT</li> <li>Meta-analyses of high-quality RCTs</li> <li>One or more RCTs corroborated by high-quality registry studies</li> </ul>
<b>CLASS IIa (MODERATE)</b> Benefit >> Risk Suggested phrases for writing recommendations: <ul style="list-style-type: none"> <li>Is reasonable</li> <li>Can be useful/effective/beneficial</li> <li>Comparative-Effectiveness Phrases†:               <ul style="list-style-type: none"> <li>Treatment/strategy A is probably recommended/indicated in preference to treatment B</li> <li>It is reasonable to choose treatment A over treatment B</li> </ul> </li> </ul>	<b>LEVEL B-R (Randomized)</b> <ul style="list-style-type: none"> <li>Moderate-quality evidence‡ from 1 or more RCTs</li> <li>Meta-analyses of moderate-quality RCTs</li> </ul>
<b>CLASS IIb (WEAK)</b> Benefit ≥ Risk Suggested phrases for writing recommendations: <ul style="list-style-type: none"> <li>May/might be reasonable</li> <li>May/might be considered</li> <li>Usefulness/effectiveness is unknown/unclear/uncertain or not well established</li> </ul>	<b>LEVEL B-NR (Nonrandomized)</b> <ul style="list-style-type: none"> <li>Moderate-quality evidence‡ from 1 or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies</li> <li>Meta-analyses of such studies</li> </ul>
<b>CLASS III: No Benefit (MODERATE)</b> Benefit = Risk <small>(Generally, LOE A or B use only)</small> Suggested phrases for writing recommendations: <ul style="list-style-type: none"> <li>Is not recommended</li> <li>Is not indicated/useful/effective/beneficial</li> <li>Should not be performed/administered/other</li> </ul>	<b>LEVEL C-LD (Limited Data)</b> <ul style="list-style-type: none"> <li>Randomized or nonrandomized observational or registry studies with limitations of design or execution</li> <li>Meta-analyses of such studies</li> <li>Physiological or mechanistic studies in human subjects</li> </ul>
<b>CLASS III: Harm (STRONG)</b> Risk > Benefit Suggested phrases for writing recommendations: <ul style="list-style-type: none"> <li>Potentially harmful</li> <li>Causes harm</li> <li>Associated with excess morbidity/mortality</li> <li>Should not be performed/administered/other</li> </ul>	<b>LEVEL C-EO (Expert Opinion)</b> Consensus of expert opinion based on clinical experience

COR and LOE are determined independently (any COR may be paired with any LOE).

A recommendation with LOE C does not imply that the recommendation is weak. Many important clinical questions addressed in guidelines do not lend themselves to clinical trials. Although RCTs are unavailable, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

\* The outcome or result of the intervention should be specified (an improved clinical outcome or increased diagnostic accuracy or incremental prognostic information).

† For comparative-effectiveness recommendations (COR I and IIa; LOE A and B only), studies that support the use of comparator verbs should involve direct comparisons of the treatments or strategies being evaluated.

‡ The method of assessing quality is evolving, including the application of standardized, widely used, and preferably validated evidence grading tools; and for systematic reviews, the incorporation of an Evidence Review Committee.

COR indicates Class of Recommendation; EO, expert opinion; LD, limited data; LOE, Level of Evidence; NR, nonrandomized; R, randomized; and RCT, randomized controlled trial.



# JNC 8 Literature Search

- Publication search dates: initially, January 1, 1966, through December 31, 2009 and utilizing PubMed and CINAHL
  - Subsequently amended to include publications through August 2013
- The study was a major study in hypertension (e.g., ACCORD-BP)
- The study had at least 2000 participants
- The study was multicentered
- The study met all the other inclusion/exclusion criteria



# Associated Guidelines and Statements

- There are at least 19 additional guidelines, including but not limited to items such as management of primary aldosteronism, hypertension in pregnancy, and management of overweight and obesity in adults
- There are at least 9 additional statements, including cardiovascular team-based care and the role of advanced practice providers, ambulatory blood pressure monitoring, and performance measures for adults with coronary artery disease and hypertension
- These associated guidelines have been promulgated by at least 21 different organizations as long ago as 2004 and as recently as 2017



# ACC/AHA Guidelines

- 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: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines
- 113 page document, 66 references
- Specific BP thresholds for and goals of pharmacological therapy for patients with hypertension according to 11 clinical conditions

Whelton PK, Carey RM, Aronow WS, et al. 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: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Hypertension*. 2018;71:e13–e115. DOI: 10.1161/HYP.000000000000065.



# US Hypertension Guidelines and Confusion

- At approximately the same time *JAMA* released JNC-8 (without any organizational endorsement):
  - ASH/ISH released joint Guidelines for the Management of Hypertension in the Community with different targets for adults 60-79 YOA
  - ADA annually release guidelines with BP goals of < 140/90 mm Hg for most, but <130/80 mm Hg for some
  - NKF released guidelines for those with CKD
- And then *Hypertension* released the AHA/ACC “version” of JNC 8 (endorsed by 11 organizations including AAPA, ANA)



# 2017 ACC/AHA Hypertension Defined

- The classification of pre-hypertension was replaced with two categories:
  - Elevated BP: SBP 120-129 mm Hg and DBP < 80 mm Hg
  - Stage I hypertension: SBP 130-139 mm Hg or DBP 80-89 mm Hg
- Primary or essential hypertension (90-95% of adult cases) caused by environmental or genetics
- Secondary hypertension (2-10% of adult cases) caused by multiple etiologies
  - Differentiation requires accurate BP measurements, a focused H&P, routine lab studies, a 12-lead ECG, and appropriate studies in patients suspected of secondary hypertension and/or evidence of target-organ disease



# Blood Pressure Classification

Blood Pressure	JNC 1-8	ACC/AHA 2017
< 120 / < 80 mm Hg	“Normal”	“Normal”
120 – 129 / < 80 mm Hg	“Pre-hypertension”	“Elevated”
130 – 139 / 80 – 89 mm Hg	“Pre-hypertension”	Stage 1 Hypertension*
140 – 159 / 90 – 99 mm Hg	Stage 1 Hypertension	Stage 2 Hypertension
≥ 160 / ≥ 100 mm Hg	Stage 2 Hypertension	Stage 2 Hypertension

\* Stage 1 hypertension treated with blood pressure pharmacotherapy only if 10-year CV risk > 10%





# Blood Pressure Targets for the USA

Population	JNC 8	ACC/AHA	ADA	NKF *
Age < 60 YOA	< 140/90 mm Hg	< 130/80 mm Hg *	N/A	N/A
Age ≥ 60 YOA	< 150/90 mm Hg	< 130/80 mm Hg	N/A	N/A
Diabetics	< 140/90 mm Hg	< 130/80 mm Hg	< 140/80 mm Hg, < 130/80 for some	N/A
With CKD	< 140/90 mm Hg	< 130/80 mm Hg	N/A	< 140/90 mm Hg, < 130/80 suggested
With CVD	< 140/90 mm Hg	< 130/80 mm Hg	N/A	N/A

\* If 10-year CV risk is > 10%; otherwise < 140/90 mm Hg



# The Target Is Moving Constantly

- Multiple trials have examined specific sub-populations and released evidence that lower blood pressures for specific populations have better outcomes (viz. SPRINT)
  - As is the case with all clinical trials, the specifics of trial designs including size, population inclusion/exclusion criteria, follow-up length, primary and secondary outcomes, and rigor of these trials is variable, as may be the subsequent conclusions as well as value
  - EBM proponents: it is impossible to compare apples to oranges
- Better outcomes were demonstrated for lower blood pressures for anyone > 60 YOA, some < 60 YOA with established CVD, and those with CKD, and more
  - These conclusions warrant further investigation



# Regardless of guidelines utilized, worrisome trends

- HTN remains the most common primary diagnosis in the US and is increasing
- Affects ~ 86 million (34%) adults  $\geq 20$  YOA and is a major risk factor for stroke, CVD, and CKD
- In addition, previous data from NHANES estimated that 52.6% to 55.8% of adults have pre-hypertension, defined as an untreated SBP of 120-139 mm Hg or untreated DBP of 80-89 mmHg
- NHANES 2005-2006 data that showed 29% of US adults were hypertensive and that 7% of these hypertensive adults had never been told that they had hypertension
- NHANES 2013-2014 data showed that 15.9% of hypertensive adults are unaware they are hypertensive, more than double
  - More recent data reveal trends worsening still, especially in disenfranchised populations, even before COVID-19



# Current Recommendations for Rx Management of B/P

Guideline (year)	Population	Goal B/P (mm Hg)	Initial Rx Options	B/P Grade of Recommendation*
American Diabetes Assoc (2013)	Pts w/ diabetes	< 140/80	General: ACE-I or ARB	B
American Society of HTN/Intl Society of HTN (2014)	General ≥ 80 YOA General < 80 YOA	< 150/90 < 140/90	Non-blacks: Thiazide, ACE-I, ARB, or CCB Blacks: Thiazide or CCB Non-blacks: Thiazide, ACE-I, ARB, or CCB	N/A N/A
Eighth Joint National Committee (2014)	General ≥ 60 YOA	< 150/90	Non-blacks: Thiazide, ACE-I, ARB, or CCB Blacks: Thiazide or CCB	A
	General < 60 YOA	< 140/90	ACE-I or ARB	Syst BP: E/Diast BP: A
	Patients with diabetes	< 140/90	ACE-I or ARB	E
	Patients with CKD	< 140/90	Thiazide, beta-blocker, CCB, ACE-I, or ARB	E
European Society of Hypertension/European Society of Cardiology (2013)	General ≥ 80 YOA	< 150/90	Thiazide, β-blocker, CCB, ACE-I, or ARB	A
	General < 80 YOA	< 140/90	ACE-I or ARB	B
	Pts with DM	< 140/90	ACE-I or ARB	A
	Pts w/ CKD w/o proteinuria	< 140/90	ACE-I or ARB	B
	Pts w/ CKD w/ proteinuria	< 130/90		B
Kidney Disease: Improving Global Outcome (2012)	Pts w/ CKD w/o proteinuria	≤ 140/90	ACE-I or ARB	B
	Pts w/ CKD w/ proteinuria	≤ 130/80	ACE-I or ARB	C

\* A = strong recommendation; B = moderate recommendation; C = weak recommendation; D = recommendation against; E = expert opinion.



# BP Thresholds for & Goals of Pharmacological Therapy in Patients With HTN According to Clinical Guidelines

General	BP Threshold, mm/Hg	BP Goal, mm Hg
Clinical CVD or 10-year ASCVD risk $\geq$ 10%	$\geq$ 130/80	< 130/80
No clinical CVD and 10-year ASCVD risk < 10%	$\geq$ 140/90	< 130/80
Older persons ( $\geq$ 65 YOA; non-institutionalized, ambulatory, community living)	$\geq$ 130 (SBP)	< 130 (SPB)
Specific Comorbidities		
Diabetes mellitus	$\geq$ 130/80	< 130/80
Chronic kidney disease*	$\geq$ 130/80	< 130/80
Chronic kidney disease after renal transplant*	$\geq$ 130/80	< 130/80
Heart failure	$\geq$ 130/80	< 130/80
Stable ischemic heart disease	$\geq$ 130/80	< 130/80
Secondary stroke prevention	$\geq$ 140/90	< 130/80
Peripheral artery disease	$\geq$ 130/80	< 130/80

- New guidelines for patients with CKD were released in November from the Kidney Disease: Improving Global Outcomes (KDIGO Group) and you are encouraged to participate in another presentation detailing those changes within this conference.
- ASCVD: atherosclerotic cardiovascular disease; BP: blood pressure; CVD: cardiovascular disease; SBP: systolic blood pressure



# 2017 ACP/AAFP Guidelines: Management of Hypertension in the Elderly

- Clinicians should initiate treatment in patients aged 60 YOA or older who have persistent SBP at or above 150 mm Hg to achieve a target of below 150 mm Hg to reduce the risk for stroke, cardiac events, and death
- If patients 60 YOA or older have a history of stroke or transient ischemic attack or have a high cardiovascular risk, clinicians should consider starting or increasing drug therapy to achieve an SBP of less than 140 mm Hg to reduce the risk for stroke and cardiac events
  - Generally, an increased cardiovascular risk includes known cardiovascular disease, diabetes, or chronic kidney disease with a GFR of less than 45 mL/min/1.73 m<sup>2</sup>

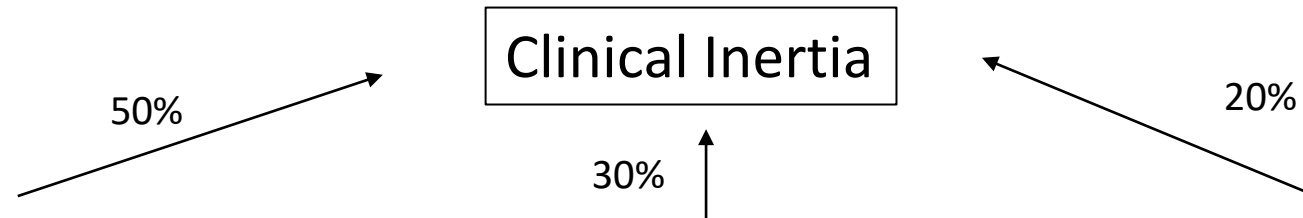


# Strategies To Improve Outcomes





# Clinical Inertia: a failure to intensify therapy appropriately when treatment goals have not been met



## Provider Factors

- Goal Setting Pathologies
- Fail to initiate treatment
- Fail to titrate treatment to treatment goal
- Fail to identify and manage comorbid conditions (such as depression)
- Patient highjacks clinical encounter (thematic vagabonding)
- Insufficient time
- Reactive rather than proactive care

## Patient Factors

- Deny having the disease
- Believe disease is not serious
- Low health literacy
- Cost of medication
- Too many medications
- Medication side effects
- Poor communication between provider and patient
- Do not trust provider
- Depression, substance abuse

## Office System Factors

- No clinical guideline
- No disease registry
- No visit planning
- No active outreach
- No decision support
- No team approach to care
- Poor communication between provider and staff



# ACC/AHA Clinician's Sequential Flow Chart for the Management of Hypertension

- Measure office BP correctly
- Detect white coat hypertension or masked hypertension using ABPM/ HBPM
- Evaluate for secondary hypertension
- Identify target organ damage
- Introduce lifestyle interventions
- Identify and discuss treatment goals
- Use ASCVD risk estimation to guide BP threshold for drug therapy
- Align treatment options with comorbidities
- Account for age, race, ethnicity, sex, and special circumstance in antihypertensive treatment
- Initiate antihypertensive pharmacological therapy
- Insure appropriate follow-up
- Use team-based care
- Connect patient to clinician via telehealth
- Detect and reverse non-adherence
- Detect white coat effect or masked uncontrolled hypertension
- Use health information technology for remote monitoring and self-monitoring of BP



# Adherence Strategies for Hypertension Control

- Up to 25% of patients do not fill their initial prescription for antihypertensive therapy
- During the first year of therapy only 1 in 5 patients has sufficiently high adherence to achieve the desired benefits
- Factors contributing to poor adherence are complex and multilevel
- Therefore, solutions to improve adherence may be introduced at the patient, provider, and healthcare office/system levels
- Unfortunately, no single intervention is uniquely effective, and a sustained, coordinated efforts targeting all barriers to adherence is likely to be the most – arguably the only – effective approach



# Recommendations for Antihypertensive Medication Adherence Strategies

- Dose medications once daily (71% - 94% adherence) rather than multiple times daily improves adherence<sup>1</sup>
  - Utilize smart phone Apps and alarms, along with individuals who cohabitate, to remind patients
- Whenever possible, use combination pills, rather than individual components, to reduce pill burden and improve adherence
  - Patients count pills, not drugs



# Recommendations to Promote Healthy Lifestyle Modification

- Effective behavioral, motivational, and when appropriate, pharmacological therapies, to achieve a healthy lifestyle, including tobacco cessation, weight loss, moderation in alcohol intake, increased physical activity, reduced sodium intake, and consumption of a healthy diet
- It takes a village! Utilize team-based care including but not limited to pharmacists, nurses, MAs, RDs, CDEs, psychologists, and organizations such as YMCA and Weight Watchers
  - In alliance with the patient, consider tobacco cessation and weight loss medications
- Celebrate small victories, which can have tremendous impact, with patients



# Improve Quality of Care for Resource-Constrained Populations

- Assure that you have accounted for the patient's health literacy
- Alignment, and potential re-alignment, of healthcare priorities for patients
- Whenever possible, make accommodations for the convenience and complexity of management strategy, accessibility of healthcare access and health-related costs, including medications
  - Utilizing telehealth and phones, home BP monitoring, as well as Apps such as GoodRx, can literally be lifesaving for patients, and remove significant barriers
  - When appropriate, utilize scored tables or pill cutters to decrease the cost of medications



# Utilizing Team Based Care

- Delineation of individual team member roles on the basis of knowledge, skill set, and availability, as well as the patient's needs, allows the primary care provider to delegate routine matters to the team, thereby permitting more time to manage complex and critical patient-care issues
- Important implementation aspects, such as type of team member added, role of team members related to medication management, and number of team members, positively influence BP outcomes





# Utilizing Health Information Technology–Based Strategies to Promote Hypertension Control

- Develop and utilize registries/EHRs that permit large-scale queries to support population health management strategies to identify undiagnosed or undertreated hypertension
- To reduce undiagnosed hypertension and improve hypertension management, a multipronged approach may include
  - application of hypertension screening algorithms to EHR databases to identify at-risk patients;
  - contacting at-risk patients to schedule BP measurements;
  - monthly written feedback to clinicians about at-risk patients who have yet to complete a BP measurement; and,
  - electronic prompts for BP measurements whenever at-risk patients visit the clinic



# Utilizing Telehealth Interventions to Improve Hypertension Control

- Telehealth strategies, such as telemedicine, digital health (“eHealth”), and use of mobile computing and communication technologies (“mHealth”), can facilitate improvements in managing patients with hypertension
  - mHealth interventions show promise in reducing SBP in patients with hypertension but with large variability in behavioral targets, intervention components, delivery modalities, and patient engagement
- In addition, there are important implications for the role of social networks, social media, and electronic technology as viable components of weight management and other lifestyle modification and disease management programs



# Utilizing Telehealth Interventions During COVID-19

- Patients with previously documented hypertension treated to goal can have lifestyle interventions reinforced and medications renewed
- Clinicians can utilize HBPM in lieu of in-office blood pressure measurements, and many treatments, including medication titration, continued uninterrupted



# Utilizing a Plan of Care to Improve Hypertension Control

- Studies demonstrate that implementation of a plan of care for hypertension can lead to sustained reduction of BP and attainment of BP targets over several years, including:
  - Health literacy, including communicating alternative behaviors that support self-management of healthy BP in addition to medication adherence
    - This should be done both verbally and in writing, at a level the patient understands
    - For patients with mobile phones, the phone can be used to inform patients and family members of medical instructions after the visit as an additional level of communication
    - Inclusion of a family member or friend that can help interpret and encourage self-management treatment goals is suggested when appropriate
  - Access to health insurance and medication assistance plans
  - Social and community services



# Case Scenario: Mr. Hazard

- A 66 YO male presents to your primary care clinic having recently changed Medicare plans, and you are more convenient and within his network. He has no complaints. His PMHx includes high cholesterol (with an unknown LDL) for which he takes Atorvastatin 20mg. He had one prior hospitalization for chest pain, but was told “nothing was wrong” with his heart after staying overnight. He has a 12 pack-year history of tobacco use and quit 17 years ago. His wife dies of breast cancer 8 years ago. He walks weekdays for 3 miles (hilly neighborhood, in ~ 51 minutes). His girlfriend, who lives with him for two years, cooks for them and prefers a strict Mediterranean diet. He is a retired autoworker. He was adopted as a child.
- On exam, his BP = 148/88 (repeated to verify) and other vital signs are normal. His cardiovascular and eye exam are unremarkable.
- Lab studies reveal a normal CBC, normal serum creatinine, and no proteinuria. His EKG exhibits voltage criteria for LVH.
- How would you manage his BP (assume his reading is verified by home monitoring)?
  1. Encourage more exercise and a better diet
  2. Order 24 hour ambulatory monitoring and decide therapy based on those results
  3. Discuss his beginning therapy with a thiazide-type diuretic
  4. Inform him that based on new guidelines, no anti-hypertension therapy is needed
  5. Let him decide if he wants to take medicines



# Hypertension in the Elderly

- Different organizations define *elderly* differently, and therefore different thresholds for and goals of treatment levels
- ACC/AHA general population > 60 YOA, initiate medication and treat BP to a goal of 150/90 mm Hg (Evidence Level A)
  - In this same population, if treatment results in a BP < 140/90 and is well tolerated, treatment does not need to be adjusted (Evidence Level E)
- For comparison:
  - ASH/ISH: > 80 YOA goal < 150/90
  - ESH/ESC: > 80 YOA or “elderly” < 80 YOA goal < 150/90
  - CHEP: > 80 YOA goal < 150/90
  - NICE: > 80 YOA goal < 150/90



# Hypertension in the *Elderly*

## **Advantages of higher thresholds**

- Decreased medication burdens
- Evidence-based (Evidence level A)

## **Disadvantages of higher thresholds**

- Potential individual consequences
- Potential population consequences





# What Do You Recommend to Mr. Hazard?

- He has borderline-high BP w/ target organ damage (LVH) on ECG
- Looking at JNC 8 and ACC/AHA guidelines for BP threshold *in isolation*, he does not reach the threshold for treatment
  - But, he has evidence of target organ damage, and had a very questionable episode of chest pain; we have no FH
- He is elderly, per JNC 8 and ACC/AHA, but not elderly by European guidelines
- Discussing treatment (with a thiazide diuretic) is warranted, and should he agree, schedule a follow-up in 30 days to assure adherence, no side effects
  - And obtaining copies of his hospital records is warranted, with consideration of a referral to a cardiologist to determine the cause of his episode of chest pain



# Clinical Implications

- Management in accordance with guideline recommendations is effective only when followed by both practitioners and patients
- Adherence to recommendations can be enhanced by shared decision making between clinicians and patients, with patient engagement in selecting interventions on the basis of individual values, preferences, and associated conditions and comorbidities



# Take Home Points: Your Action Plan

- Even before COVID-19, there has been considerable erosion of the number of patients reaching blood pressure goals
- Guidelines can be confusing – and contradictory
- There is a lack of evidence to support lowering blood pressure aggressively and to previous goals
- Continue to evaluate and incorporate new evidence as quality RCTs are promulgated
- There are strategies to eliminate, or ameliorate, provider, patient, and healthcare system barriers to reach goals in the vast majority of patients

