

# Hypertension Control: The Pharmacist's Perspective

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## Objectives

- Discuss the current hypertension guidelines as they relate to goals of therapy
- Recognize the importance of proper BP assessment
- Review the role of the pharmacist in team-based management of hypertension

# Joint National Committee (JNC)

- Federally funded program to produce hypertension guidelines
  - Latest iteration was JNC 7 published in 2003
- NHLBI announced in June 2013 that it is withdrawing from guideline development, which would then be performed by “partner organizations”
- In August 2013, NHLBI established a “partnership” with AHA and ACC to develop hypertension, cholesterol, and obesity guidelines.
  - While the cholesterol and obesity guidelines were released in November 2013, the hypertension guidelines were never developed.

# 2013 HTN Guidelines

## *Major Change #1: BP Goals*

	JNC-8	ASH/ISH	JNC-7 or ADA*
< 60 yrs. old, no comorbidities	<140/90 mmHg	<140/90 mmHg	<140/90 mmHg
60-79 yrs. old, no comorbidities	<b>&lt;150/90 mmHg</b>	<140/90 mmHg	<140/90 mmHg
≥ 80 yrs. old, no comorbidities	<b>&lt;150/90 mmHg</b>	<b>&lt;150/90 mmHg</b>	<140/90 mmHg
Kidney disease	<b>&lt;140/90 mmHg</b>	<b>&lt;140/90 mmHg</b>	<130/80 mmHg
Diabetes	<b>&lt;140/90 mmHg</b>	<b>&lt;140/90 mmHg</b>	<b>&lt;140/80 mmHg*</b> <130/80 mmHg optional goal*

# 2013 HTN Guidelines

*Major change #2: Drug of choice for treating uncomplicated HTN*

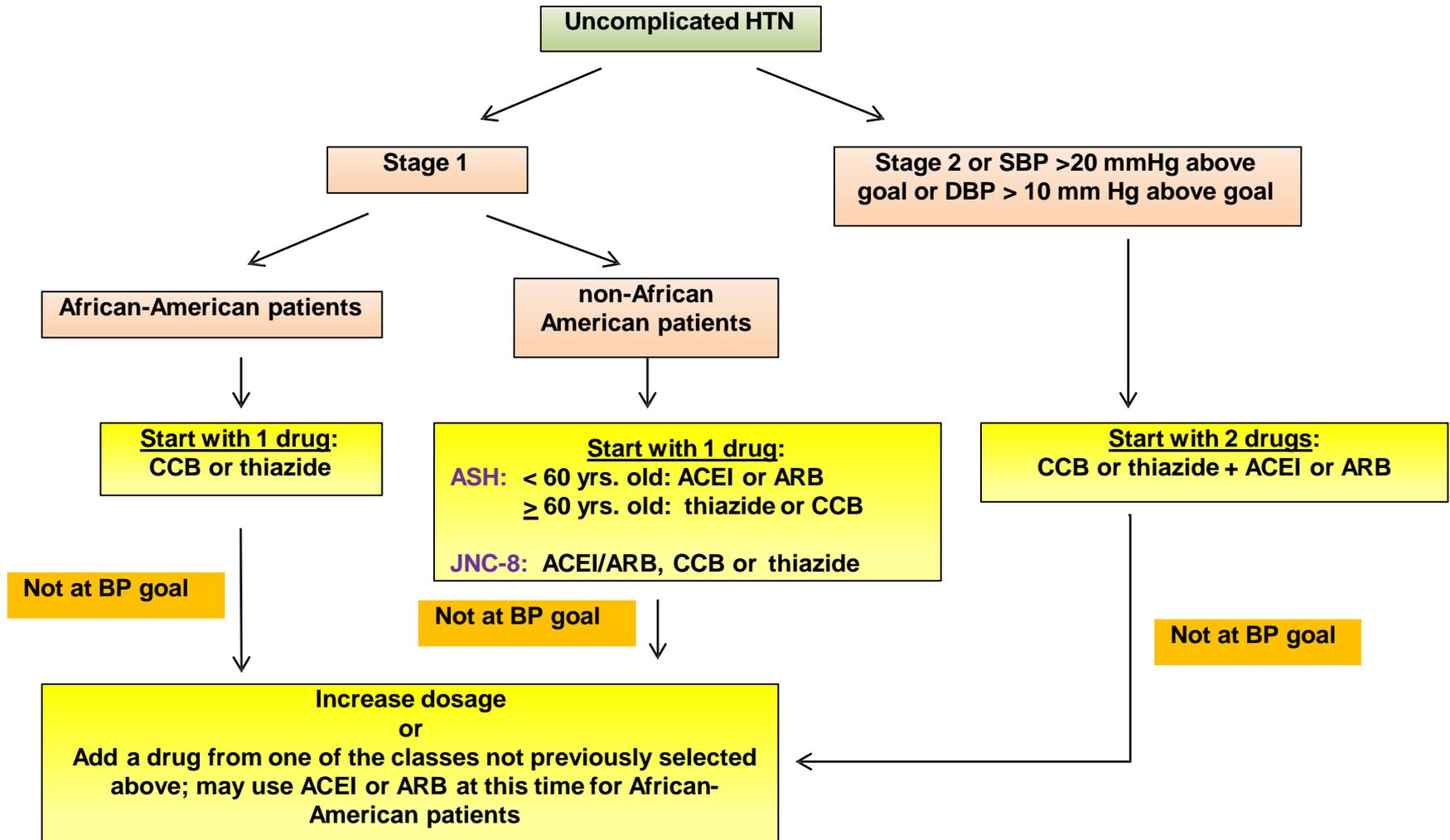
	JNC-8	ASH/ISH	JNC-7
< 60 yrs. old	Thiazide, CCB, or ACEI/ARB	ACEI/ARB	Thiazide
≥ 60 yrs. old	Thiazide, CCB, or ACEI/ARB	Thiazide or CCB	Thiazide

# 2013 HTN Guidelines

*Major change #3: Drug of choice for treating HTN in a patient with diabetes (and no kidney disease)*

	JNC-8	ASH/ISH	JNC-7	ADA 2014
Non-African-American	Thiazide, CCB, or ACEI/ARB	ACEI/ARB	ACEI/ARB or Thiazide	ACEI/ARB
African - American	Thiazide or CCB	ACEI/ARB or Thiazide or CCB	ACEI/ARB or Thiazide	ACEI/ARB

# 2013 HTN Guidelines



# Guideline Discord

- JNC-8 stance: Evidence-based medicine
- ASH stance:
  - JNC report relied almost entirely on RCT results; did not include all available evidence
  - Other guidelines do not consider medication adverse effects
    - Greatest number of side effects is with thiazides, incl. impotence and
    - questionable issue of increasing sudden cardiac death
    - ACEI/ARBs considered the safest
- ESH stance: Getting BP to goal is what's important, regardless of how one gets there

## Guideline Discord

- Await results of The Systolic Blood Pressure Intervention Trial (SPRINT)
  - 9,250 participants aged  $\geq 50$  years with SBP  $\geq 130$  mm Hg and at least one additional CVD risk factor.
  - Randomized to target SBP goals of  $<120$  or  $<140$  mm Hg
  - Primary endpoint: first occurrence of a MI, acute coronary syndrome (ACS), stroke, HF, or CVD death
  - Expected duration 6 years ( $\sim 2018$ )

# Assessing Blood Pressure

- AHA BP monitoring recommendations
  - Remove clothing from upper arm
  - Sit quietly for 5 minutes
  - Legs uncrossed, back and arm supported
  - Mid-point of cuff even with mid-point of sternum
  - Cuff size determined by arm circumference
  - Lower end of cuff 2-3 cm above antecubital fossa
  - Cuff inflated to 30 mmHg above the point when the radial pulse disappears/ deflated at a rate of 2-3 mmHg/second
  - Bilateral measurement, the higher of the two arms should be used

# BP Assessment Study

- To determine difference in BP during triage versus AHA BP methods in HTN patients (n=40) presenting to UNMH IM clinic
- Results
  - No significant difference in mean SBP
  - DBP was significantly lower with the triage method (77.6 mmHg  $\pm$  11.9) compared to the AHA method (80.4 mmHg  $\pm$  10.5; p=0.02)
  - However, 93%(n=37/40) of patients' SBP differed by  $\geq$  5 mmHg or DBP differed by  $\geq$  2 mmHg
  - Overall, 65% not at goal BP per AHA versus 52% with the triage method (p<0.001)
  - Importantly, these BP differences would have resulted in treatment differences (8 or 9 patients depending on provider)

# Errors in BP Assessment

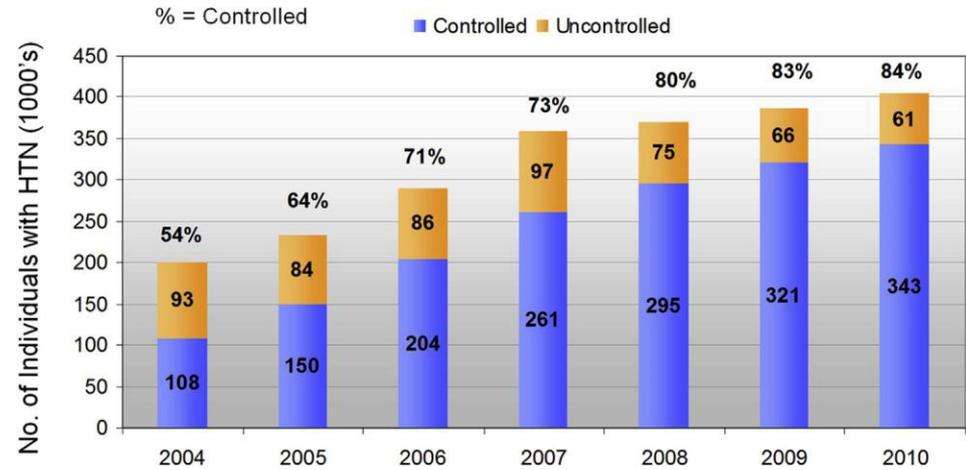
**Table 2. Adherence to American Heart Association (AHA) Recommendations for Proper Blood Pressure Measurement for Each Measurement Technique**

Criterion	AHA Measurement (%)	Triage Measurement (%)
Legs Uncrossed	100	90
Feet Flat on Ground	100	52.5
Back Supported	100	80
Arm Supported	100	87.5
Arm at Heart Level	100	55
Bare Arm	100	7.5
Sat Quietly x 5 minutes Before Measurement	100	7.5
Quiet During Measurement	100	75
Bilateral Measurement	100	0
Measurement Used: Right	52.5	85
Measurement Used: Left	47.5	15
Correct Cuff Size Used	100	60
Overcuffed	0	37.5
Undercuffed	0	2.5

# Accuracy in BP measurement

## Kaiser Permanente of Southern California

- Created HTN registry
- Standardized BP measurement
- Created internal treatment algorithm
- Embraced multidisciplinary approach including MA's, RN's, and RPh's



*“The easy access to nonphysician providers to help manage hypertension has been a cornerstone of the coordinated effort for hypertension control.”*

# Utilization of Pharmacists to Improve BP Control

- Margolis KL, et al. HealthPartners Med Group
  - Assessed home BP telemonitoring with RPh case management to usual care
  - 450 patients with uncontrolled BP
  - Case management
    - Initial 1 hr visit, phone f/u every 2 wks x until BP sustained x 6 weeks, then every 1 – 2 months x total 12 months
  - Primary outcome: Proportion of patients with controlled BP at 6 and 12 months and 6 months post-intervention

# Utilization of Pharmacists to Improve BP Control

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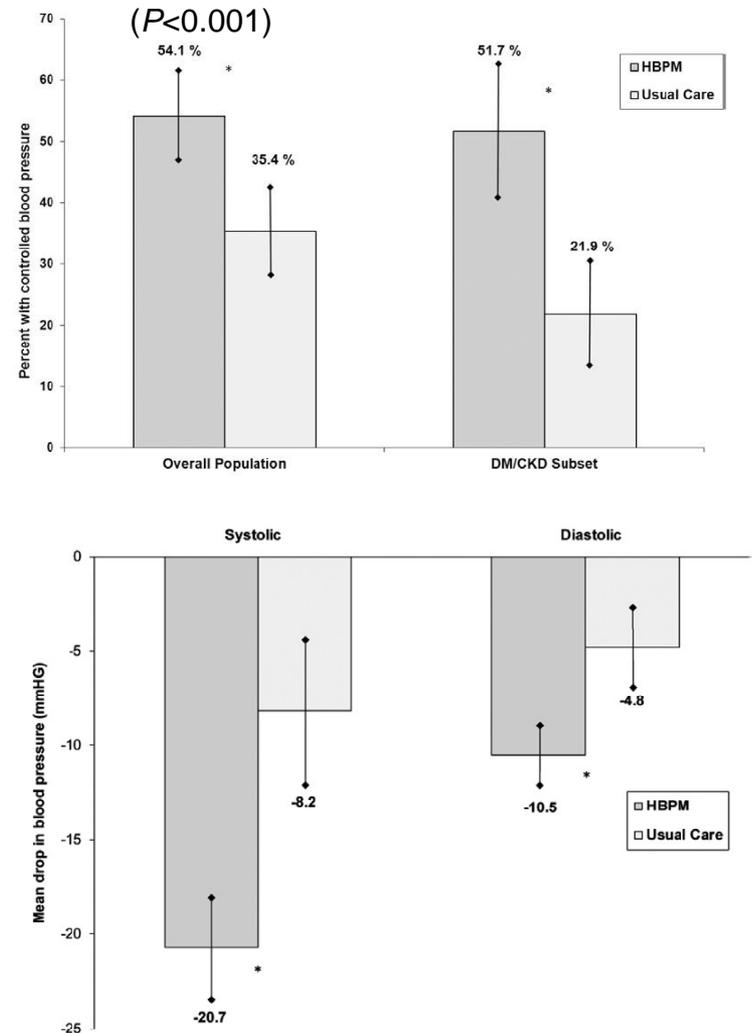
Table 2. Composite and Blood Pressure (BP) Control

	Telemonitoring Intervention		Usual Care		Differential Change From Baseline, % (95% CI)	P Value <sup>a</sup>
	No. of Patients	% (95% CI)	No. of Patients	% (95% CI)		
Composite BP control						
At 6 and 12 mo	113	57.2 (44.8-68.7)	58	30.0 (23.2-37.8)	27.2 (13.4-40.0)	.001
At 6, 12, and 18 mo	96	50.9 (36.9-64.8)	42	21.3 (14.4-30.4)	29.6 (13.1-46.0)	.002
BP control						
At 6 mo	148	71.8 (65.6-77.3)	89	45.2 (39.2-51.3)	26.6 (19.1-33.1)	<.001
At 12 mo	141	71.2 (62.0-78.9)	102	52.8 (45.4-60.2)	18.4 (7.9-27.0)	.005
At 18 mo	135	71.8 (65.0-77.8)	104	57.1 (51.5-62.6)	14.7 (7.0-21.4)	.003

<sup>a</sup> Study group difference for composite BP control and at each individual time point.

# Pharmacist-led Home BP Monitoring Program

- Kaiser Permanente Colorado
- Randomized 348 pts with uncontrolled HTN to UC or RPh-led HBPM group utilizing Heart360 web application
  - <https://www.heart360.org>
- Primary outcome BP control at 6 months
- BP Control improved as well as greater decrease in SBP and DBP in RPh-led group



# NM Advanced Pharmacist Practice: Pharmacist Clinician (PhC)

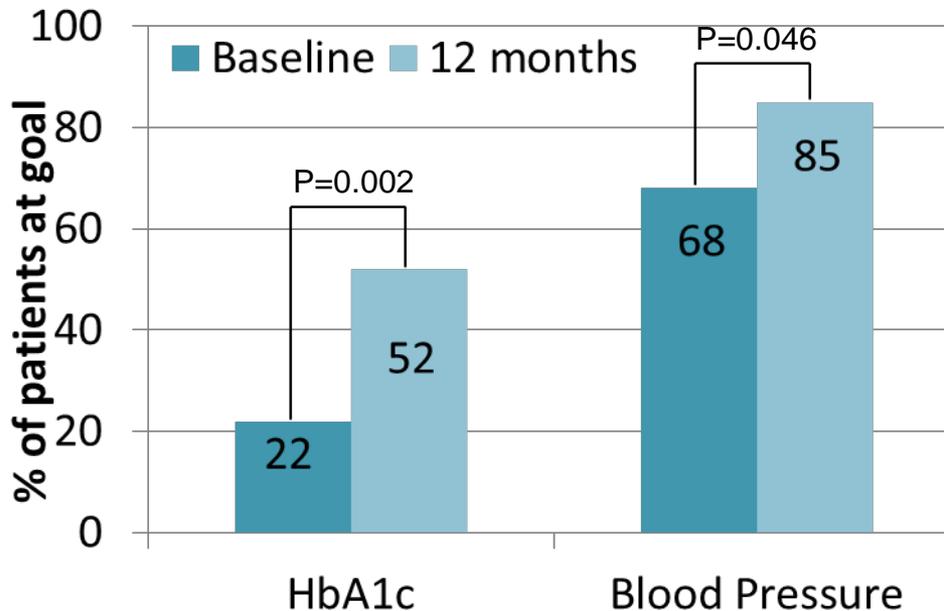
- Pharmacist prescriptive authority under collaborative drug therapy management protocol
- PhC requirements
  - NM Registered Pharmacist (RPh)
  - Completion of BOP-approved 60-hour physical assessment course
  - Completion of direct care preceptorship
    - 150 hours
    - 300 patient contacts
    - Supervised by practitioner with prescriptive authority (physicians, NPs, PAs, or PhCs)

## Evidence of PhC Benefit

- Health Centers of Northern New Mexico (HCNNM) now El Centro Family Health
  - As part of a HRSA Clinical Pharmacy Demonstration Project, UNM COP partnered with HCNNM to conduct outcomes study
  - Objective: To document the impact of a PhC in the management of patients enrolled in DM disease state management program (DDSM)
    - Primary Endpoint: change in Hba1c
    - Secondary Endpoints: % of patients at goal for Hba1c, BP, lipids
  - Enrolled 50 patients in a pre/post design of 12 months duration

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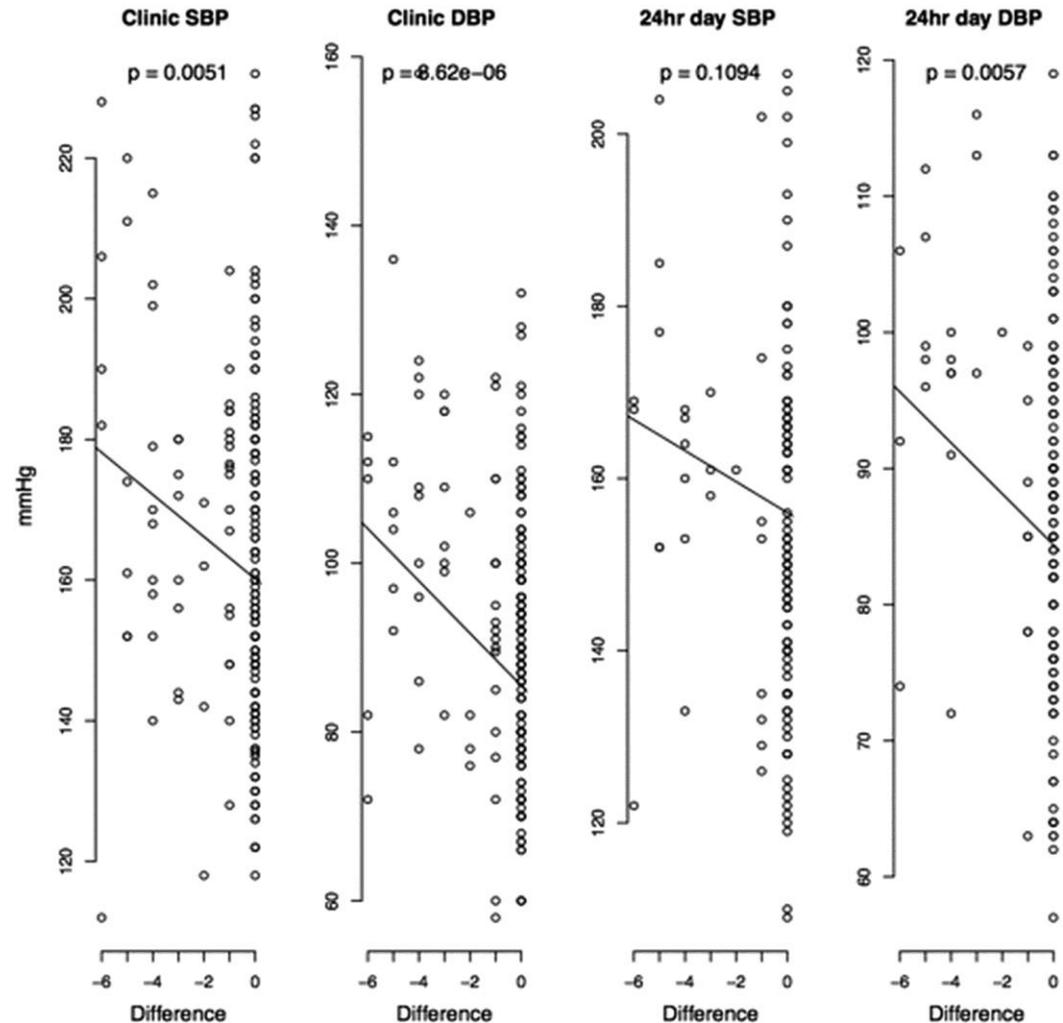


# Role for all Pharmacists: Adherence to BP medication

- Medication adherence to anti-hypertensives is poor
  - Primary non-adherence 29% (J Gen Intern Med 2010;25:284–90.)
  - 50% adherent to therapy after 1 year (Am J Hypertens 1997; 10: 697–704.)
- Reasons for non-adherence are multifactorial
  - Therefore, a successful intervention needs to identify each individual patient's barriers to adherence

# Are Patients Refractory or Non-adherent?

- 208 hypertensive patients with inadequate BP control referred to specialty clinic
- Analyzed urine using HPLC for presence of meds and compared to dose
- Differences in BP calculated for every unit change in differences between detected & prescribed meds
- Every unit difference associated with an increase of 3 and 3.1 mmHg in SBP & DBP, respectively.



# Utilization of Pharmacist to Improve BP Control

- Improve medication adherence and utilization
  - Health plans can identify non-adherence from pharmacy claims data (Medication Possession Ratio or MPR)
    - MPR < 80% or perhaps < 50%
  - Refer to RPhs who can work with patient to identify and remove barriers
- Serve as case-manager for patient home BP monitoring program
  - Monitor response to therapy